Weekly Report on Severe Acute Respiratory Infection (SARI), Week 35 2023 (week ending 03/09/2023)

This report includes data on SARI hospitalised cases, aged 15 years and older who were admitted to St. Vincent's University Hospital (SVUH), Dublin up to week 35 2023.
Please note that this report on SARI surveillance pertains to one hospital site only, data are not nationally representative. Therefore caution is advised when interpreting rates and trends as outlined in the report, which may fluctuate due to the low case numbers.

Key points

- In week 35 2023 (week ending 03/09/2023):
  - There were 3 SARI cases reported in week 35 2023, a decrease compared to 11 SARI cases reported during week 34 2023
  - The incidence rate per emergency hospitalisations was 10.0 per 1,000 emergency admissions, a decrease compared to the rate of 37.5 per 1,000 during week 34 2023
  - The incidence rate per hospital catchment population was 1.0 per 100,000 population aged ≥15 years, a decrease compared to the rate of 3.6 per 100,000 reported in week 34 2023
  - The highest proportion of SARI cases was among those aged 65 years and older (n=3; 100%), the median age was 86 years (interquartile range (IQR): 84-89)
  - Among SARI cases admitted in week 35 2023, all cases were reported as having underlying medical conditions
  - SARS-CoV-2 PCR testing was carried out on all SARI cases, one (33.3%) of whom tested positive, stable compared to one (9.1%) positive case in week 34 2023
  - Influenza PCR testing was carried out on all SARI cases, none of whom tested positive for influenza, the last positive influenza case was in week 31 2023
  - Respiratory syncytial virus (RSV) PCR testing was carried out on all SARI cases, none of whom tested positive for RSV, the last positive RSV case was in week 15 2023
- There were 42 SARI cases admitted to the SARI hospital site between weeks 32 and 35 2023. In total, during 2023 (weeks 1-35), 464 SARI cases have been admitted to the SARI hospital site.
  - The median age of SARI cases admitted during weeks 32-35 2023 was 74 years (IQR: 66-83 years), the median age of all cases admitted to date in 2023 was 74 years (IQR: 63-82 years)
  - Among SARI cases admitted during weeks 32-35 2023 (n=42), 97.6% (n=41) of cases were reported as having underlying medical conditions, similar to 95.7% (n=444) of those admitted to date in 2023
  - Among SARS-CoV-2 positive SARI cases admitted during the 2023 summer period (weeks 21-39 2023), for whom whole genome sequencing (WGS) data are available, 43.5% (10/23) identified as XBB.1.16 and sub-lineages, 21.7% (5/23) identified as EG.5.1, and 17.4% (4/23) identified as XBB.1.5
  - Of influenza positive SARI cases admitted during the 2023 summer period (weeks 21-39 2023), 3 cases have been identified to date, two A (H3) and one A (H1)pdm09
  - Among SARI cases for whom admission to ICU is known, admitted during 2023 (weeks 1-35 2023), 64% (252/394) were reported to have been admitted to ICU and/or ventilated, compared to 61.4% (446/726) during 2022 (weeks 1-52)
  - Among SARS-CoV-2 positive SARI cases admitted in the previous 12 months with known vaccination status, 46.9% (61/130) had received at least one vaccine dose within the six months prior to their hospitalisation
  - Of those discharged, with known outcome, admitted during 2023, 21 deaths (5.5%) have been reported compared to 11.7% (n=85) during 2022

Table of Contents

Background

Severe acute respiratory infection (SARI) is of major relevance to public health worldwide. Surveillance of SARI is essential to monitor the (co-) circulation of respiratory pathogens and to assess disease severity. Data collected as part of SARI surveillance can provide important early warning information in the context of respiratory disease outbreaks and pandemics. SARI data can also be used as a platform to measure vaccine and antiviral effectiveness and impact.

The objectives of SARI surveillance are:

- To describe the number and incidence of SARI cases by aetiology, time, place and person
- To describe and monitor trends, intensity of activity and severity of SARI infections
- To identify groups at risk of severe disease
- To detect unusual and unexpected events
- To assess the SARI burden of disease in the participating hospital
- To assess and monitor vaccine and antiviral effectiveness

Methods

SARI surveillance was implemented in one tertiary care adult hospital; St. Vincent's University Hospital, Dublin (SVUH). Surveillance commenced on the 5th of July 2021. SARI cases are identified from new admissions through the Emergency Department (ED).The SARI surveillance system includes people who are aged 15 years or older.

Case definition

SARI cases are identified from new admissions through the Emergency Department, based on clinical symptoms. Patients that develop SARI during their admission, or are admitted through alternate routes, are not included in the surveillance system.

Clinical SARI case:

The European Centre for Disease Prevention and Control (ECDC) clinical SARI case definition is currently used for the SARI surveillance project in Ireland:

ECDC SARI definition: A hospitalised (defined as hospitalised for at least 24 hours) person with acute respiratory infection, with at least one of the following symptoms:

- cough,
- fever,
- shortness of breath,
- sudden onset of anosmia, ageusia or dysgeusia
- AND onset of symptoms within 14 days prior to hospital admission.

The ECDC clinical SARI case definition has been used for the SARI surveillance project since week 34 2021.

Denominator data

Denominator data for hospital catchment area are based on population projections for 2021. Population projections are provided by the Health Intelligence Unit (HIU) of the Health Service Executive (HSE) and were extracted from Health Atlas Ireland on 31/08/2021.

Denominator data on all-cause hospital admissions, via the Emergency Department, were provided by the SVUH statistics department.

Data collection and reporting

Clinical data were collected and managed using REDCap electronic data capture tools hosted at University College Dublin. Laboratory data are extracted from APEX, the laboratory information management system (LIMS), using IBM Cognos software hosted at SVUH.

Case-based data are reported by SVUH to the HSE Health Protection Surveillance Centre (HPSC) on a weekly basis. Data are also reported by HPSC to ECDC via The European Surveillance System (TESSy) on weekly basis as part of European level SARI surveillance.

COVID-19 vaccination data were collected from the National COVID-19 Vaccination Management System (COVAX), and linked to SARI cases by the HSE-Integrated Information service, where data were available.

Reference dates

05/07/2021 (Week 27 2021) – Commencement of SARI surveillance project

27/09/2021 (Week 39 2021) – Rollout of the first COVID-19 booster vaccination

22/04/2022 (Week 16 2022) – Rollout of the second COVID-19 booster vaccination

03/10/2022 (Week 40 2022) – Rollout of the third COVID-19 booster vaccination

28/04/2023 (Week 17 2023) – Rollout of the fourth COVID-19 booster vaccination

Week number refers to the week of hospital admission. Weeks run from Monday to Sunday, as per the international ISO week[1].

[1] Monday to Sunday (ISO week) used as per ECDC/WHO/international reporting protocol

Results

SARI cases and incidence rates

In total, 464 SARI cases were admitted to St. Vincent's University Hospital (SVUH) during 2023 (weeks 1-35), 728 cases were admitted during 2022 (weeks 1-52).

In week 35 2023:

- 3 SARI cases were reported, a decrease compared to 11 SARI cases reported during week 34 2023 (see Figure 1).
- The SARI incidence rate was 1.0 per 100,000 hospital catchment population aged ≥15 years, a decrease compared to the incidence rate of 3.6 reported in week 34 2023.
- The SARI incidence rate per emergency hospitalisations was 10.0 per 1,000, a decrease compared to the rate of 37.5 per 1,000 in week 34 2023.

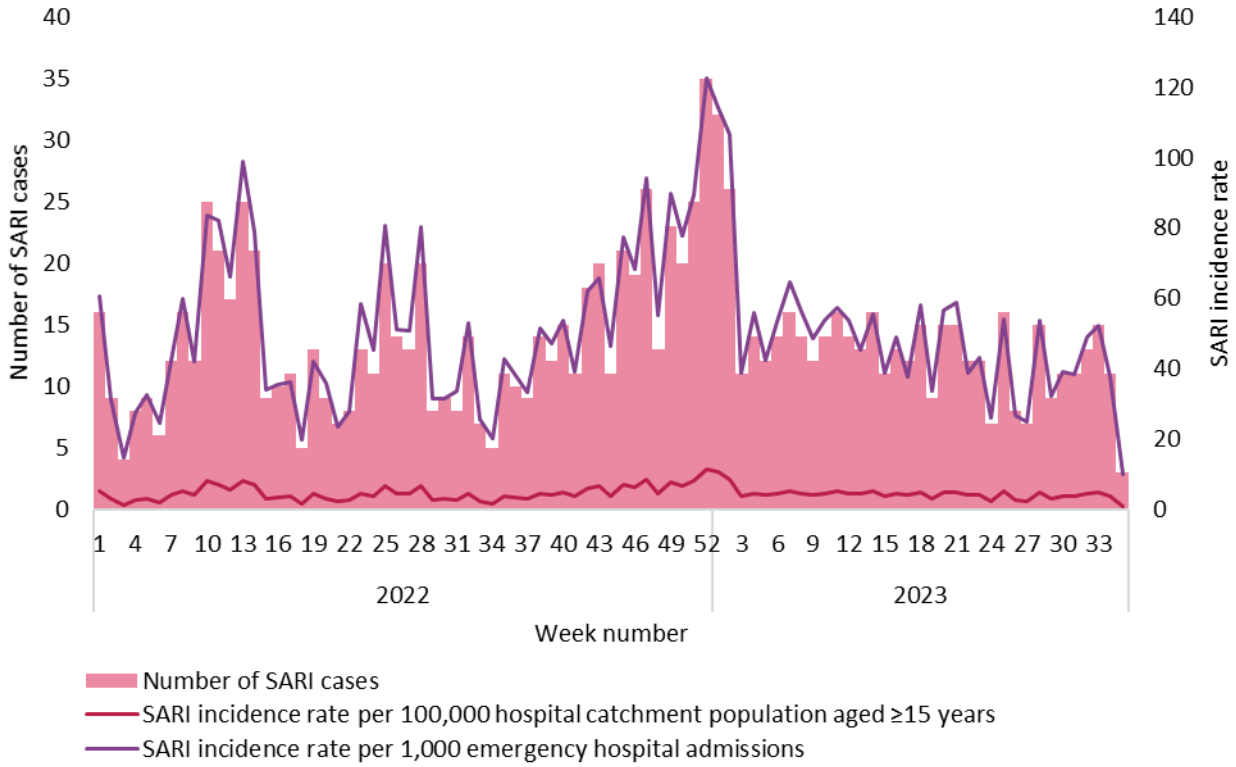


Figure 1 Number and incidence of SARI hospitalised cases (emergency admission) by week of hospital admission, from week 1 2022 to week 35 2023 (n=1192)

NOTE: Data were extracted from the SARI surveillance database at HPSC on 06/09/2023, and are subject to ongoing review, validation and update. As a result, figures in this report may differ from previously published figures.

Demographics

In week 35 2023, of the 3 SARI cases reported:

- The proportion of female cases was slightly higher than male cases (n=2; 66.7%), see Table 1
- The median age of SARI cases admitted was 86 years (interquartile range: 84-89 years)
- The incidence rate amongst those aged 65 years and older was 5.0 per 100,000, a decrease compared to the rate of 13.3 per 100,000 in week 34 2023.

Table 1 Number and proportion of SARI cases by sex and age, for the current week, weeks 32-35 2023, weeks 1-35 2023 and weeks 1-52 2022

		Week 35 2023		Weeks 32-35 2023		Weeks 1 - 35 2023		Weeks 1-52 2022	
		n	%	n	%	n	%	n	%
Total number of SARI cases		3		42		464		728	
Sex	Male	1	33.3	19	45.2	212	45.7	368	50.5
	Female	2	66.7	23	54.8	252	54.3	360	49.5
Age (years)	Mean	86		71		71		72	
	Median	86		74		74		75	
	IQR	84-89		66 - 83		63 - 82		63 - 83	
	Range	81-92		18 - 95		16 - 99		16 - 101	
Age group (years)	15-24	0	0.0	1	2.4	6	1.3	16	2.2
	25-34	0	0.0	1	2.4	11	2.4	17	2.3
	35-44	0	0.0	3	7.1	25	5.4	23	3.2
	45-54	0	0.0	2	4.8	32	6.9	42	5.8
	55-64	0	0.0	2	4.8	58	12.5	92	12.6
	65-74	0	0.0	13	31.0	102	22.0	162	22.3
	75-84	1	33.3	10	23.8	136	29.3	230	31.6
	85+	2	66.7	10	23.8	94	20.3	146	20.1

*Surveillance excludes children under 15 years of age

The incidence rate per 100,000 hospital catchment population by age group is shown in Figure 2.

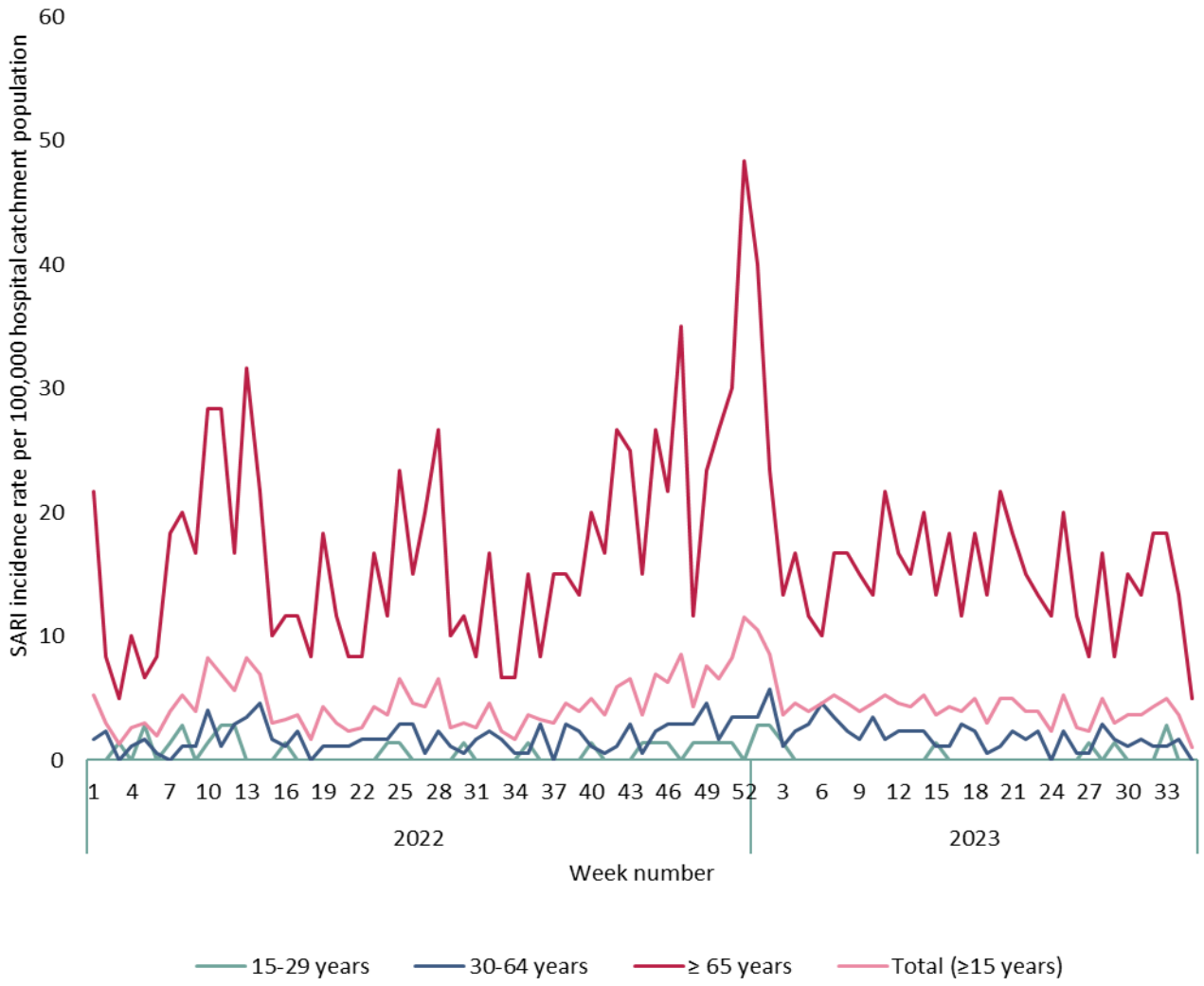


Figure 2 SARI incidence rate per 100,000 hospital catchment population by age group and week of hospital admission, from week 1 2022 to week 35 2023 (n=1192)

Underlying medical conditions and risk factors

The number and proportion of individual underlying medical conditions, where known, among those that reported having underlying medical conditions are displayed in table 2.

Weekly proportions can be based on small numbers and can vary from week to week; caution is therefore advised interpreting changes in weekly proportions.

Table 2 Number and proportion of SARI cases with pre-existing conditions, reported on hospital admission, for current week, weeks 32-35 2023, weeks 1-35 2023 and weeks 1-52 2022

Underlying medical condition*	Week 35 2023 (n=3)		Weeks 32-35 2023 (n=41)		Weeks 1 - 35 2023 (n=444)		Weeks 1-52 2022 (n=692)	
	n	%	n	%	n	%	n	%
Heart disease	2	**66.7**	19	**46.3**	178	**40.1**	289	**41.8**
Lung disease	1	**33.3**	14	**34.1**	172	**38.7**	242	**35.0**
Hypertension	0	0.0	11	26.8	173	39.0	273	39.5
Cancer	0	0.0	9	22.0	65	14.6	138	19.9
Neurological disease	0	0.0	11	26.8	128	28.8	121	17.5
Asthma	1	33.3	8	19.5	83	18.7	106	15.3
Diabetes	1	33.3	7	17.1	76	17.1	115	16.6
Kidney disease	0	0.0	2	4.9	28	6.3	52	7.5
Intellectual disability	0	0.0	0	0.0	12	2.7	32	4.6
Immunocompromised	0	0.0	0	0.0	5	1.1	17	2.5
Obesity	0	0.0	1	2.4	10	2.3	18	2.6
Cystic fibrosis	0	0.0	0	0.0	0	0.0	2	0.3
Other chronic conditions**	3	100.0	19	46.3	214	48.2	337	48.7

*SARI cases could be reported with one or more underlying medical condition

**Data reported on other chronic conditions may include some of the chronic conditions listed above; these data are under review and may change over time.

Among female SARI cases aged 15-49 years admitted during 2023, one (3.2%) case was reported as being pregnant at the time of admission. In total during 2022, 14.3% (n=6) of the female SARI cases aged 15-49 years were reported as being pregnant at the time of admission.

Among those admitted during 2023 for whom healthcare worker status is known, five (1.1%) cases were reported as being healthcare workers at the time of admission. In total during 2022, 2.1% (n=15) of SARI cases were reported as being healthcare workers.

Symptoms

Information on clinical symptoms, either at or prior to hospital admission, was reported for all SARI cases. The most common symptoms reported were cough and shortness of breath (Table 3).

Table 3 Number and proportion of SARI cases with clinical symptoms, either at or prior to hospital admission, for current week, weeks 32-35 2023, weeks 1-35 2023 and weeks 1-52 2022

Clinical symptom*	Week 35 2023 (n=3)		Weeks 32 - 35 2023 (n=42)		Weeks 1 - 35 2023 (n=464)		Weeks 1-52 2022 (n=728)	
	n	%	n	%	n	%	n	%
Cough	2	**66.7**	30	**71.4**	352	**75.9**	569	**78.2**
Shortness of breath	2	**66.7**	33	**78.6**	347	**74.8**	536	**73.6**
Fever	1	33.3	19	45.2	234	50.4	342	47.0
General deterioration	1	33.3	13	31.0	190	40.9	313	43.0
Malaise	0	0.0	0	0.0	32	6.9	94	12.9
Headache	0	0.0	3	7.1	22	4.7	40	5.5
Muscular pain	0	0.0	2	4.8	30	6.5	42	5.8
Sore throat	0	0.0	4	9.5	28	6.0	50	6.9
Ageusia	0	0.0	0	0.0	0	0.0	4	0.5
Anosmia	0	0.0	0	0.0	1	0.2	4	0.5
Dysgeusia	0	0.0	0	0.0	0	0.0	3	0.4

*SARI cases could be reported with one or more clinical symptom

Severe clinical course during hospitalisation

Information on the clinical course during hospitalisation is only available after discharge and there may be a delay between discharge and data collection, due to the manual data collection methods required.

Among those for whom discharge information is available in 2022 (weeks 1-52) and 2023 (weeks 1-35), the most common complication reported was pneumonia, see table 4 for further information.

Table 4 Number and proportion of discharged SARI cases by complication, for weeks 32-35 2023, weeks 1-35 2023 and weeks 1-52 2022

Complications*	Weeks 32-35 2023 (n=6)		Weeks 1-35 2023 (n=383)		Weeks 1-52 2022 (n=728)	
	n	%	n	%	n	%
Pneumonia	2	33.3	62	16.2	64	8.8
ARDS	1	16.7	19	5.0	50	6.9
Sepsis	0	0.0	8	2.1	19	2.6
Multiorgan failure	0	0.0	5	1.3	3	0.4
Myocarditis	0	0.0	0	0.0	1	0.1
Encephalitis	0	0.0	0	0.0	1	0.1
Long COVID	0	0.0	0	0.0	1	0.1
Other complications**	0	0.0	89	23.2	205	28.2
No complications	3	50.0	226	59.0	429	58.9
Unknown	0	0.0	1	0.3	2	0.3

*SARI cases could be reported with one or more complication

**Data reported on “other complications” may include some of the complications listed above; these data are under review and may change over time.

Information on ICU admission and respiratory support may be available prior to discharge, see table 5. However, length of stay in ICU data are only available after discharge, therefore, data on ICU length of stay for weeks 32-35 2023 are not included, due to the small numbers involved.

Table 5 Number and proportion of SARI cases by respiratory support and ICU admission, for weeks 32-35 2023, weeks 1-35 2023 and weeks 1-52 2022

		Weeks 32-35 2023 (n=6)		Weeks 1-35 2023 (n=383)		Weeks 1-52 2022 (n=727)	
		n	%			n	%
Respiratory support	High-flow oxygen therapy*	5	83.3	244	63.7	417	57.4
	Invasive ventilation	0	0.0	6	1.6	29	4.0
	No respiratory support given	1	16.7	133	34.7	281	38.7
		(n=12)		(n=394)		(n=726)	
		n	%			n	%
Admitted to ICU	Yes	1	8.3	22	5.6	40	5.5
	No	11	91.7	372	94.4	686	94.5
	ICU/ventilated**	6	50.0	252	64.0	446	61.4
ICU length of stay (days)	Mean	-		6		19	
	Median	-		4		10	
	Interquartile range	-		3-8		3-30	
	Range	-		<1-20		<1-85	

*Non-invasive ventilation

**SARI cases which required invasive and/or non-invasive ventilation and/or ICU admission

Data collection is ongoing for those not yet discharged from hospital.

Laboratory testing for SARS-CoV-2, influenza and RSV

PCR testing:

SARI cases are tested by PCR for SARS-CoV-2, influenza and RSV on admission. For a small proportion of cases, there is a lag time with testing for influenza and RSV[2].

In week 35 2023:

- SARS-CoV-2 PCR testing was carried out on all SARI cases, one (33.3%) of whom tested positive for COVID-19, compared to 9.1% (n=1) positivity in week 34 2023
- Influenza PCR testing was carried out on all SARI cases, none of whom tested positive for influenza, the last positive influenza case was in week 31 2023
- RSV PCR testing was carried out on all SARI cases, none of whom tested positive for RSV, the last positive RSV case was in week 15 2023

[2] Due to reagent supply issues, samples are occasionally sent to external laboratories for influenza and RSV testing.

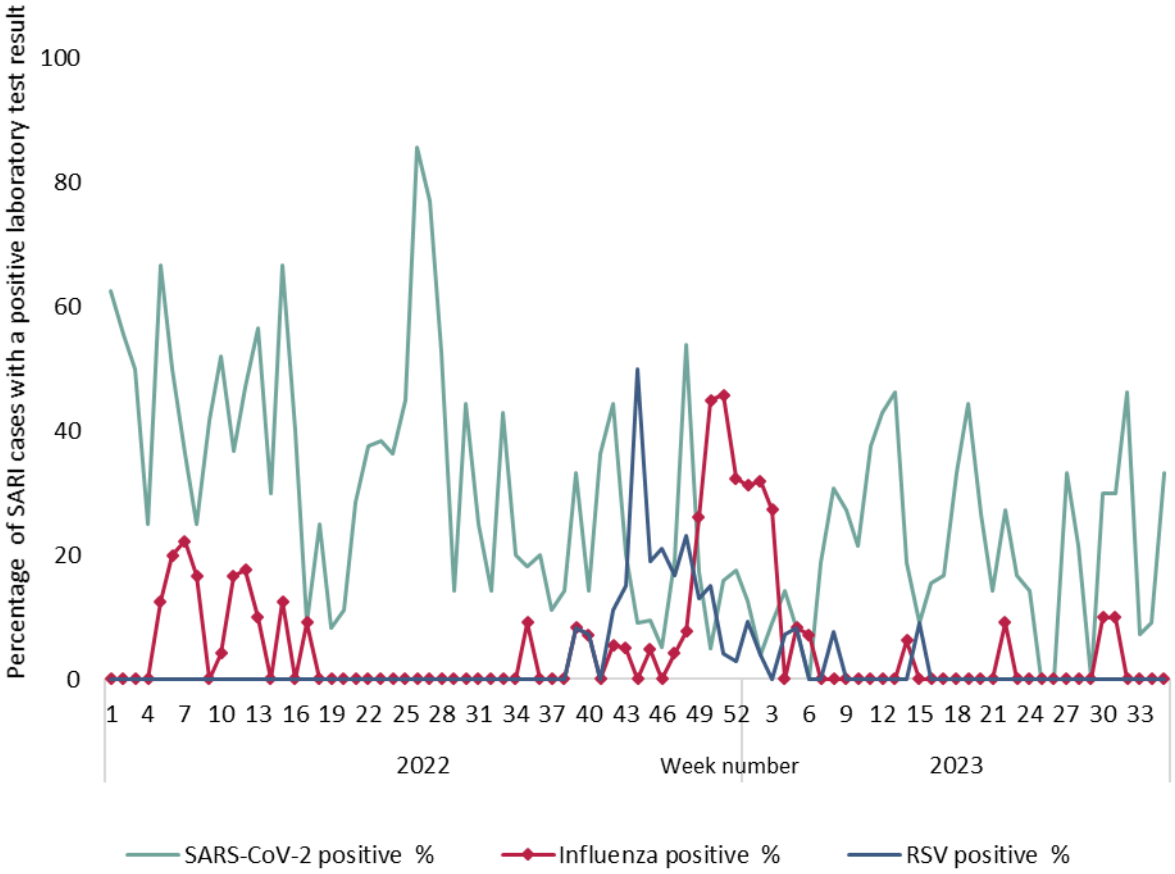


Figure 3 Percentage of SARI cases with a positive laboratory test result for SARS-CoV-2, influenza and RSV by week, from week 1 2022 to week 35 2023

SARS CoV-2:

SARS-CoV-2 PCR testing is carried out on admission, table 6 displays the number and proportion of SARI cases tested for SARS-CoV-2 by PCR test result.

Table 6 Number and proportion of SARI cases tested for SARS-CoV-2, for current week, weeks 32-35 2023, weeks 1-35 2023 and weeks 1-52 2022

Laboratory test	Laboratory test result	Week 35 2023 (n=3)		Weeks 32-35 2023 (n=41)		Weeks 1-35 2023 (n=447)		Weeks 1-52 2022 (n=716)	
		n	%	n	%	n	%	n	%
Tested for SARS-CoV-2	Positive	1	**33.3**	9	**22.0**	89	**19.9**	230	**32.1**
	Negative	2	66.7	32	78.0	351	78.5	454	63.4
	Indeterminate*	0	0.0	0	0.0	7	1.6	32	4.5

* Ct value (cycle threshold) >30

RSV and influenza:

The influenza surveillance season runs from week 40 (early October) to week 20 (end of May) each season. During this time, seasonal influenza viruses and RSV usually circulate at higher levels, compared to the summer period (week 21 to week 39). Samples that are PCR positive for influenza are sent to the NVRL for influenza typing/subtyping/genetic and antigenic characterisation.

Table 7 displays the influenza type/subtype for all influenza positive samples and RSV positive PCR test results during the current week, the 2023 summer period (week commencing 22/05/2023) and the 2022/2023 influenza season (weeks 40 2022 - 20 2023).

Table 7 Number of positive RSV and influenza SARI cases and influenza type/subtype for current week, 2023 summer period (from week 21 2023) and 2022/2023 season

Positive laboratory result	Week 35 2023 (n=3)		Summer 2023 (n=152)		2022/2023 season (n=547)	
	n	%	n	%	n	%
RSV	0	**0.0**	0	**0.0**	42	**7.7**
Influenza A (H1)pdm09	0	0.0	1	0.7	30	5.5
Influenza A (H3)	0	0.0	2	1.3	31	5.7
Influenza A (not subtyped)	0	0.0	0	0.0	4	0.7
Influenza B (Victoria lineage)	0	0.0	0	0.0	2	0.4
Influenza B (no lineage reported)	0	0.0	0	0.0	0	0.0
Total influenza	0	**0.0**	3	**2.0**	67	**12.2**

Genomic analysis:

SARS-CoV-2:

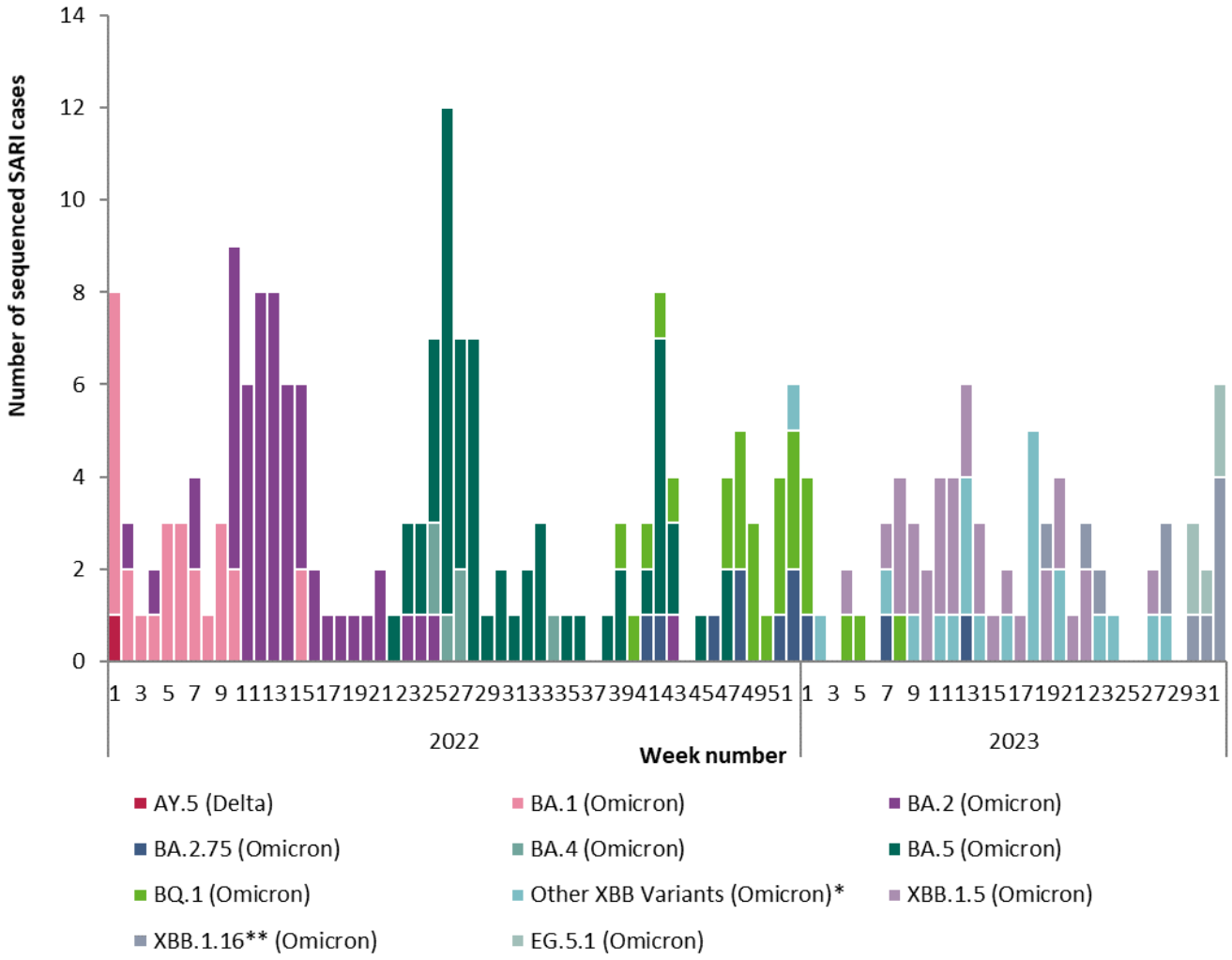
SARI samples that are positive for SARS-CoV-2 and that have a cycle threshold (Ct) value <25 are referred for whole genome sequencing (WGS). All WGS testing was performed in the National Virus Reference Laboratory (NVRL) up to week 44 2022. The molecular lab in SVUH has been identified as a spoke WGS testing site as part of the national SARS-CoV-2 WGS surveillance programme, and from week 45 2022, SARI WGS testing has been performed on-site at SVUH. Sequencing results have been received for 252 SARI cases admitted between week 1 2022 and week 32 2023, see figure 4 below.

Omicron has been the dominant variant identified in SARI cases admitted since week 1 2022, 99.6% (n=251) of samples sequenced were identified as Omicron, the last Delta variant was identified in week 1 2022. Omicron BA.2 and BA.5 sublineages with different mutation profiles emerged in 2022, with new sublineages being identified regularly.

Omicron XBB.1.5 sublineage is the dominant variant circulating among SARI cases admitted to hospital in 2023. Among SARS-CoV-2 positive SARI cases admitted during weeks 1–32 2023, for whom WGS data are available, 30 (39.5%) were identified as XBB.1.5. Moreover, among SARS-CoV-2 positive SARI cases admitted during the 2023 summer period (weeks 21-39 2023), for whom WGS data are available, 43.5% (10/23) identified as XBB.1.16 and sub-lineages, 21.7% (5/23) identified as EG.5.1, and 17.4% (4/23) identified as XBB.1.5. For further information on circulating variants in Ireland see the COVID-19 virus variants report on the HPSC website.[3]

[3] HPSC website, https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/surveillance/summaryofcovid-19virusvariantsinireland/

Figure 4 shows sequenced SARI cases by week of hospitalisation and Pango Lineage for cases admitted during 2022 (weeks 1-52) and 2023 (weeks 1-32), further information on Pango Lineage is available in the appendix (Table A1 and A2).



*XBB recombinants excluding XBB.1.5, XBB.1.16 and EG.5.1

** XBB.1.16 and sub-lineages

Figure 4 Number of SARI cases sequenced and reported, by week of hospitalisation, week 1 2022 to week 32 2023 (n=252)

COVID-19 Vaccination status

Vaccination data are available approximately one week after cases are notified, therefore the vaccination status for the current week's SARI cases is recorded as unknown.

Among SARI cases admitted in the previous 12 months who tested positive by PCR for SARS-CoV-2 with known vaccination status, 46.9% (61/130) had received at least one vaccine dose within the six months prior to their hospitalisation (Table 8).

Refer to the technical notes for the full list of definitions regarding epidemiological date and COVID-19 vaccination status[4].

NOTE: Data are provisional and subject to ongoing review, validation and update.

Table 8 Number and proportion of SARS-CoV-2 positive SARI cases with known vaccination status by COVID-19 vaccination status, time since vaccination and date of hospitalisation

Vaccine status	Days since vaccination	Admitted last 12 months*		Admitted 2023		Admitted 2022	
		n	%	n	%	n	%
Not vaccinated		5	3.8	1	1.2	21	10.8
Partial Primary series		0	0.0	0	0.0	1	0.5
Primary series completed	<180 days	0	0.0	0	0.0	12	6.2
	≥ 180 days	8	6.2	5	6.2	15	7.7
First booster only	<180 days	3	2.3	1	1.2	71	36.4
	≥ 180 days	22	16.9	11	13.6	37	19.0
Second booster only	<180 days	22	16.9	6	7.4	25	12.8
	> 180 days	21	16.2	16	19.8	5	2.6
Third booster only	<180 days	33	25.4	25	30.9	8	4.1
	≥ 180 days	13	10.0	13	16.0	0	0.0
Fourth booster only	<180 days	3	2.3	3	3.7	0	0.0
	≥ 180 days	0	0.0	0	0.0	0	0.0
Totals		**130**		**81**		**195**	

*From week 35 2022 to week 34 2023

Table 9 displays the clinical course and outcome of those admitted in the last 12 months with known vaccination status, by vaccination status and time since vaccination.
Data collection for clinical course and outcome is on-going for those still admitted.

Table 9 Number and proportion of SARS-CoV-2 positive SARI cases with known vaccination status, admitted in the previous 12 months by COVID-19 vaccination status, time since vaccination, the clinical course and outcome

Vaccine status	Days since vaccination	Admitted last 12 months*	Required respiratory support		ICU admission		Died in hospital	
		n	n	%	n	%	n	%
Not vaccinated		5	0	0.0	0	0.0	0	0.0
Primary series completed	<180 days	0	0	0.0	0	0.0	0	0.0
	≥ 180 days	8	4	50.0	0	0.0	2	25.0
First booster only	<180 days	3	2	66.7	1	33.3	0	0.0
	≥ 180 days	22	11	50.0	0	0.0	1	4.5
Second booster only	<180 days	22	9	40.9	0	0.0	1	4.5
	> 180 days	21	14	66.7	1	4.8	3	14.3
Third booster only	<180 days	33	18	54.5	3	9.1	5	15.2
	≥ 180 days	13	4	30.8	1	7.7	1	7.7
Fourth booster only	<180 days	3	2	66.7	0	0.0	0	0.0
	≥ 180 days	0	0	0.0	0	0.0	0	0.0

*From week 35 2022 to week 34 2023

[4] Refer to www.hse.ie for further information on the COVID-19 vaccination rollout

Outcome

Of the 464 SARI cases admitted to St Vincent's University Hospital in 2023 (weeks 1-35), 82.5% (n=383) have been discharged, of those admitted during 2022 (weeks 1-52), all cases (n=728) have been reported as discharged (Table 10).

Collection of discharge data is a manual process, therefore there is a significant lag time between discharge and data collection.

Among SARI cases admitted in 2023 (weeks 1-35) and discharged with known outcome, 21 (5.5%) deaths have been reported, 11 (52.4%) were male and 10 (47.6%) were female. The median age was 87 years (interquartile range 76-89 years).

Of the 85 (11.7%) cases admitted during 2022, who died in hospital, 53 (62.4%) were male and 32 (37.6%) were female. The median age was 79 years (interquartile range 74-86 years).

Table 10 Number and proportion of discharged SARI cases by outcome and hospital length of stay, for weeks 32-35 2023, weeks 1-35 2023 and weeks 1-52 2022

		Weeks 32-35 2023 (n=6)		Weeks 1-35 2023 (n=383)		Weeks 1-52 2022 (n=728)	
		n	%	n	%	n	%
Outcome	Discharged alive	6	100.0	355	92.7	632	86.8
	Transferred to another hospital	0	0.0	7	1.8	11	1.5
	Died in hospital	0	0.0	21	5.5	85	11.7
Hospital length of stay (days)	Mean	2		9		14	
	Median	2		5		7	
	Interquartile range	1 - 2		2 - 10		3 - 14	
	Range	1 - 5		1 - 140		1 - 210	

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Technical notes

1. SARI case

A SARI case refers to an individual patient episode of care.

2. Epidemiological date

Epidemiological date is used to determine timing of Severe Acute Respiratory Infections. Epidemiological date is based on the earliest date available on the case, taken from date of onset of symptoms, laboratory specimen collection date, and date of hospitalisation.

3. Vaccination status

For the purposes of SARI surveillance, vaccination status of cases is as follows:

- **Primary vaccination series – Partial completion**, if:
  - Received one dose of a recommended two-dose vaccine schedule and the epidemiological date is ≥14 days after receipt of dose one.
  - Date of receipt of dose two of a recommended two-dose vaccine schedule is <14 days before the epidemiological date.
  - No identifiable linked record on the National COVID-19 Immunisation system, of receiving dose two of a recommended two-dose COVID-19 vaccine schedule.

- **Primary vaccination series - Complete**, if:
  - Received one dose of a recommended one-dose vaccine schedule, and the epidemiological date is ≥14 days after receipt of the dose.
  - Received two doses of a recommended two-dose vaccine schedule, and the epidemiological date is ≥14 days after receipt of the second dose.
  - Received three doses of a recommended three-dose vaccine schedule, and the epidemiological date is >7 days after receipt of the third dose. The recommended primary series for immunocompromised individuals is three doses of a recommended vaccine.
  - Date of receipt of first booster dose is ≤7 days before the epidemiological date.
  - There is no identifiable linked record on the National COVID-19 Immunisation system of receiving a booster dose of a recommended COVID-19 vaccine schedule.

- **First booster dose**, if:
  - They had a first booster dose of a recommended vaccine schedule, and the epidemiological date is >7 days after receipt of the booster dose.
  - Date of receipt of second booster dose is ≤7 days before the epidemiological date.
  - There is no identifiable linked record on the National COVID-19 Immunisation system of receiving a second booster dose of a recommended COVID-19 vaccine schedule.

- **Second booster dose**, if:
  - They had a second booster dose of a recommended vaccine schedule, and the epidemiological date is >7 days after receipt of the booster dose.
  - Date of receipt of third booster dose is ≤7 days before the epidemiological date.
  - There is no identifiable linked record on the National COVID-19 Immunisation system of receiving a third booster dose of a recommended COVID-19 vaccine schedule.

- **Third booster dose**, if:
  - They had a third booster dose of a recommended vaccine schedule, and the epidemiological date is >7 days after receipt of the booster dose.
  - Date of receipt of fourth booster dose is ≤7 days before the epidemiological date.
  - There is no identifiable linked record on the National COVID-19 Immunisation system of receiving a fourth booster dose of a recommended COVID-19 vaccine schedule.

- **Fourth booster dose**, if:
  - They had a fourth booster dose of a recommended vaccine schedule, and the epidemiological date is >7 days after receipt of the booster dose.

- **Not vaccinated**, if the following applies:
  - Vaccination record on the National COVID-19 Immunisation system indicates the person was vaccinated after the epidemiological date.
  - The SARI patient was reported as not vaccinated on the SARI hospital clinical questionnaire, and there is no identifiable linked record of COVID-19 vaccination on the National COVID-19 Immunisation system.

- **Vaccine status unknown**, if:
  - The SARI patient is reported on the SARI hospital clinical questionnaire as vaccinated, however there is no identifiable linked record of COVID-19 vaccination on the National COVID-19 Immunisation system. Vaccination status is reported as unknown, until verified on the National COVID-19 Immunisation system.
  - The SARI patient is reported on the SARI hospital clinical questionnaire as vaccination status unknown, AND there is no identifiable linked record of COVID-19 vaccination on the National COVID-19 Immunisation system

Appendix

Table A1

Number and proportion of SARI cases sequenced and reported by Pango lineage, SARI cases week 1 2022 to week 32 2023 (n=252)

Virus variant	Number of cases	% sequenced cases
Total sequenced	**252**	
Delta and Delta sublineages:	**1**	**0.4**
AY.5	1	0.4
Omicron sublineages:	**251**	**99.6**
BA.1 lineages		
BA.1	16	6.3
BA.1.1	11	4.4
BA.2 lineages		
BA.2	41	16.3
BA.2.9	6	2.4
BA.2.3	5	2.0
BA.2.1	1	0.4
BA.2.18	1	0.4
BA.2.40.1	1	0.4
BA.2.75 lineages		
CH.1.1	4	1.6
CH.1.1.1	1	0.4
CV.1	1	0.4
BN.1.2	1	0.4
BN.1.5	1	0.4
BN.1.2.1	1	0.4
BN.1.9	1	0.4
BM.2	1	0.4
BA.4 lineages		
BA.4	3	1.2
BA.4.1	1	0.4
BA.4.4	1	0.4
BA.4.6	1	0.4
BA.5 lineages		
BA.5.1	19	7.5
BA.5.2	11	4.4
BA.5.2.1	8	3.2
BA.5.2.20	1	0.4
BA.5	5	2.0
BE.1	4	1.6
BF.7	3	1.2
BA.5.2.6	2	0.8
BA.5.3	1	0.4
BE.1.1	1	0.4
BF.11.1	1	0.4
BF.1	1	0.4
BE.1.1.2	1	0.4
BQ.1 lineages		
BQ.1.8	2	0.8
BQ.1	4	1.6
BQ.1.1.18	2	0.8
BQ.1.3	2	0.8

Virus variant	Number of cases	% sequenced cases
BQ.1.1.5	1	0.4
BQ.1.10	1	0.4
BQ.1.1.15	1	0.4
BQ.1.16	1	0.4
BQ.1.1	4	1.6
BQ.1.12	2	0.8
BQ.1.1.22	1	0.4
BQ.1.2	1	0.4
BQ.1.1.29	1	0.4
BQ.1.1.4	1	0.4
BQ.1.5	1	0.4
DR.1	1	0.4
XBB lineages		
XBB.1	2	0.8
XBB.1.9.1	9	3.6
XBB.1.9.2	4	1.6
XBB.1.16	5	2.0
XBB.1.16.6	2	0.8
XBB.1.16.11	3	1.2
EG.1	2	0.8
EG.5.1	4	1.6
EG.5.1.1	1	0.4
FE.1.1.1	1	0.4
FL.3	1	0.4
FU.1	1	0.4
XCF	1	0.4
XBB.2	1	0.4
XBB.2.3.2	1	0.4
XBB.1.5 lineages		
XBB.1.5	21	8.3
XBB.1.5.7	2	0.8
XBB.1.5.13	1	0.4
XBB.1.5.16	2	0.8
XBB.1.5.18	1	0.4
XBB.1.5.38	1	0.4
XBB.1.5.24	1	0.4
XBB.1.5.51	1	0.4

Table A2

Number of SARI cases sequenced and reported by Pango lineage and week of admission, SARI cases admitted in weeks 27-32 2023

Virus variant	Pango lineage	2023 W32	2023 W31	2023 W30	2023 W28	2023 W27	Total
Omicron, XBB	XBB.1.16.6			1	1		**2**
	XBB.1.16.11	2			1		**3**
	XBB.1.16	2	1				**3**
	EG.5.1*		1	2			**3**
	EG.5.1.1*	2					**2**
	XCF**				1		**1**
	XBB.2.3.2					1	**1**
Omicron, XBB.1.5	XBB.1.5.7					1	**1**
Total		**6**	**2**	**3**	**3**	**2**	**16**

*XBB.1.9.2 sublineage
** XBB, FE.1 recombinant