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Viral Respiratory Diseases Epidemiology and Surveillance Section

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COVID-19 Australia: Epidemiology Report 82 Reporting period ending 17 December 2023

Viral Respiratory Diseases Epidemiology and Surveillance Section

Summary

Four-week reporting period (20 November – 17 December 2023)

Case definitions for confirmed and probable cases are in accordance with the coronavirus disease 2019 (COVID-19) CDNA National Guidelines for Public Health Units.

Trends – Nationally, case notifications have slowly increased from early October 2023, and appeared to have stabilised in recent weeks. In the four-week period 20 November – 17 December 2023, there were 29,591 confirmed and 10,742 probable cases, a total of 40,333 COVID-19 cases reported in Australia to the National Notifiable Diseases Surveillance System (NNDSS). In the most recent reporting fortnight, a total of 20,809 confirmed and probable cases were notified (an average of 1,486 cases per day), compared to 19,524 in the previous fortnight (an average of 1,395 cases per day), representing a 6.5% increase.

Age group – Overall, notification rates among most age groups have stabilised following the start of the sixth Omicron wave in mid-August 2023. In the current reporting period, 20 November – 17 December 2023, the highest notification rate was observed among adults aged 90 years and over, whilst the lowest rate was among young people aged 10–19 years.

Aboriginal and Torres Strait Islander people – In the reporting period 20 November – 17 December 2023, there were 1,230 new cases notified in Aboriginal and Torres Strait Islander people, accounting for 3.0% of all notified cases (1,230/40,333) during this time. In the Omicron wave to date (15 December 2021 – 17 December 2023), there have been 424,757 cases notified among Aboriginal and Torres Strait Islander people, representing 3.7% of all cases (424,757/11,484,263) during this period.

Severity – Since the emergence of the Omicron variant, there has been a consistent decrease in the incidence of severe illness, with a smaller peak observed with each subsequent Omicron wave. Decreasing incidence may be due to high COVID-19 vaccination coverage, hybrid immunity and access to oral antiviral treatments. Since the start of the sixth Omicron wave, the weekly number of cases with severe illness reached an apparent peak in mid-November 2023. The crude case fatality rate from the start of the Omicron wave to date was 0.19%, which was lower than the crude rate during the Delta wave (0.71%).

Virology – For samples collected in the four-week period 20 November – 17 December 2023, all sequences uploaded to AusTrakka were assigned as Omicron strains or as recombinants consisting of Omicron lineages. There were 1,150 sequences uploaded to AusTrakka during 20 November – 17 December 2023, a 3.7% increase in the number of uploaded sequences compared to the previous reporting period. In this reporting period, most of the sequences analysed (75.2%) were recombinant or recombinant sublineages; 24.7% were BA.2 sub-sub lineages.

Acute respiratory illness – Based on self-reported FluTracking data, there was an overall decrease in the incidence of respiratory illness, 'fever and cough' and 'runny nose and sore throat' symptoms since the peaks in both symptom sets in late May/early June 2023. Over the current four-week period, the weekly average proportions of both 'fever and cough' (1.5%) and 'runny nose and sore throat' symptoms (1.0%) were either below or similar to proportions observed during the same period in 2022.

International situation – According to the World Health Organization (WHO), as of 22 October 2023, over 772 million COVID-19 cases and nearly seven million deaths have been reported globally since the start of the pandemic, with a global case fatality rate (CFR) of approximately 0.90%.

Keywords: SARS-CoV-2; novel coronavirus; coronavirus disease 2019; COVID-19; acute respiratory disease; epidemiology; Australia

This reporting period covers the four-week period 20 November – 17 December 2023. Within this period, data for each week is compared. The previous reporting period was the preceding four weeks (23 October – 19 November 2023).[1] The focus of this report is on the epidemiological situation in Australia since the beginning of the Omicron wave. For the purposes of this report, 15 December 2021 is used as a proxy for the beginning of this wave. This date was chosen as from this date onward, most sequenced strains from cases were Omicron. Readers are encouraged to consult prior reports in this series for information on the epidemiology of coronavirus disease 2019 (COVID-19) in Australia.

Methods of data analysis in these reports have changed over the course of this reporting series to date. Please refer to the Technical Supplement for details of such changes, and for definitions of terminology.[2]

From Report #72 onward, and unless specified otherwise, all data from the National Notifiable Diseases Surveillance System (NNDSS) have been extracted using 'diagnosis date' rather than 'notification received date' (see the Technical Supplement for definitions). Due to COVID-19 reporting changes in several states and territories, the use of 'diagnosis date' now provides a more consistent and accurate method for describing transmission trends in Australia.

The case data provided includes both confirmed cases and probable cases reported to the NNDSS, as defined in accordance with the COVID-19 Communicable Diseases Network Australia (CDNA) National Guidelines for Public Health Units.[3] For the purposes of this report, only probable cases from 5 January 2022 were included. Five jurisdictions have ceased collecting and reporting data on probable COVID-19 cases: Victoria ceased collection on 1 July 2023, Queensland on 1 September 2023, New South Wales on 1 October 2023, Western Australia on 9 October 2023, and the Northern Territory on 21 October 2023.

From Report #71 onward, population data for Aboriginal and Torres Strait Islander people was updated (from 2016) and is now based on Australian Bureau of Statistics (ABS) Estimated Resident Population (ERP) as at 2021. There has been an increase of 185,600 Aboriginal and Torres Strait Islander people (23.2%) since the previous ERP (June 2016). Therefore, notification rate comparisons with reports prior to #71 should be undertaken with caution.

Due to the dynamic nature of data in the NNDSS, numbers may be subject to revision and may vary from numbers previously reported and from case notifications released by states and territories.

Background and data sources

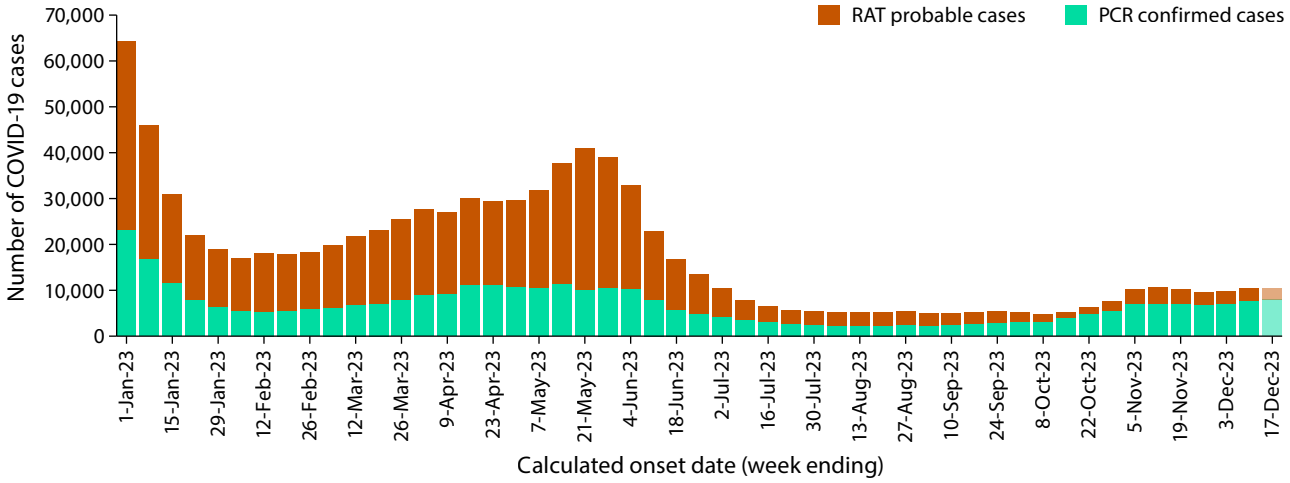
See the Technical Supplement for general information on COVID-19 including modes of transmission, common symptoms, and severity.[2]

Activity

COVID-19 trends *(NNDSS)*

Since the beginning of the pandemic to 17 December 2023, jurisdictions in Australia reported 11,727,701 COVID-19 cases to the NNDSS. Nationally, case notifications increased slowly from early October 2023, and appear to have stabilised in recent weeks (Figure 1).

Figure 1: Confirmed and probable weekly COVID-19 notified cases by date of onset, Australia, 26 December 2022 – 17 December 2023[a,b]



a Source: NNDSS, extracted on 20 December 2023 for cases with an illness onset from 26 December 2022 to 17 December 2023.

b Since 1 July 2023, several jurisdictions have progressively ceased collecting and reporting data on probable COVID-19 cases.

Table 1: Confirmed and probable COVID-19 cases by jurisdiction and date of illness onset, Australia, 15 December 2021 – 17 December 2023[a,b,c]

Jurisdiction	Reporting period						Omicron wave to date		
	20 November – 3 December 2023			4–17 December 2023			15 December 2021 – 17 December 2023		
	Confirmed	Probable	Total	Confirmed	Probable	Total	Confirmed	Probable	Total
ACT	204 (24.1%)	643 (75.9%)	847	207 (25.3%)	612 (74.7%)	819	133,908 (53.8%)	115,135 (46.2%)	249,043
NSW[d]	5,097 (92.9%)	387 (7.1%)	5,484	5,947 (92.3%)	496 (7.7%)	6,443	2,179,437 (56.4%)	1,684,481 (43.6%)	3,863,918
NT[d]	212 (100.0%)	0 (0.0%)	212	166 (100.0%)	0 (0.0%)	166	25,900 (23.5%)	84,178 (76.5%)	110,078
Qld[d]	3,604 (92.6%)	288 (7.4%)	3,892	4,088 (94.0%)	260 (6.0%)	4,348	712,708 (40.7%)	1,040,525 (59.3%)	1,753,233
SA	1,072 (29.9%)	2,519 (70.1%)	3,591	1,058 (31.6%)	2,286 (68.4%)	3,344	536,337 (56.0%)	421,540 (44.0%)	957,877
Tas.	257 (13.3%)	1,671 (86.7%)	1,928	276 (15.1%)	1,550 (84.9%)	1,826	68,246 (21.8%)	245,366 (78.2%)	313,612
Vic.[d]	2,612 (99.5%)	14 (0.5%)	2,626	2,866 (99.4%)	16 (0.6%)	2,882	1,116,174 (39.1%)	1,737,724 (60.9%)	2,853,898
WA[d]	944 (100.0%)	0 (0.0%)	944	981 (100.0%)	0 (0.0%)	981	507,765 (36.7%)	874,839 (63.3%)	1,382,604
Australia	**14,002 (71.7%)**	**5,522 (28.3%)**	**19,524**	**15,589 (74.9%)**	**5,220 (25.1%)**	**20,809**	**5,280,475 (46.0%)**	**6,203,788 (54.0%)**	**11,484,263**

a Source: NNDSS, extracted on 20 December 2023 for cases with an illness onset from 15 December 2021 to 17 December 2023.

b ACT: Australian Capital Territory; NSW: New South Wales; NT: Northern Territory; Qld: Queensland; SA: South Australia; Tas.: Tasmania; Vic.: Victoria; WA: Western Australia.

c Since 1 July 2023, cases are classified based on jurisdiction of residence. This does not necessarily reflect the place where the disease was acquired or where the case presented. Please note prior to this, cases were classified based on the jurisdiction in which they tested positive.

d Five jurisdictions have ceased collecting and reporting data on probable COVID-19 cases: Victoria ceased collection on 1 July 2023, Queensland on 1 September 2023, New South Wales on 1 October 2023, Western Australia on 9 October 2023, and the Northern Territory on 21 October 2023. Rapid antigen tests (probable COVID-19 cases) administered in healthcare or aged care settings continue to be reported to the NNDSS by some of these jurisdictions.

In the four-week period 20 November – 17 December 2023, there were 29,591 confirmed and 10,742 probable cases of COVID-19 reported in Australia to the NNDSS (Table 1). In the most recent reporting fortnight, a total of 20,809 confirmed and probable cases were notified (an average of 1,486 cases per day), compared to 19,524 in the previous fortnight (an average of 1,395 cases per day), representing a 6.5% fortnight-on-fortnight increase.

As the pandemic has progressed, the proportion of cases reported through traditional surveillance has decreased and there are many different sub-lineages of virus circulating simultaneously. Additionally, increases in other measures of disease activity, such as the numbers of people admitted to hospital, to intensive care units (ICU), or having died, often lag weeks behind increases in infections in the community. This has made defining the start of a new wave more complex, with the determination often now only possible several weeks after the wave has commenced.

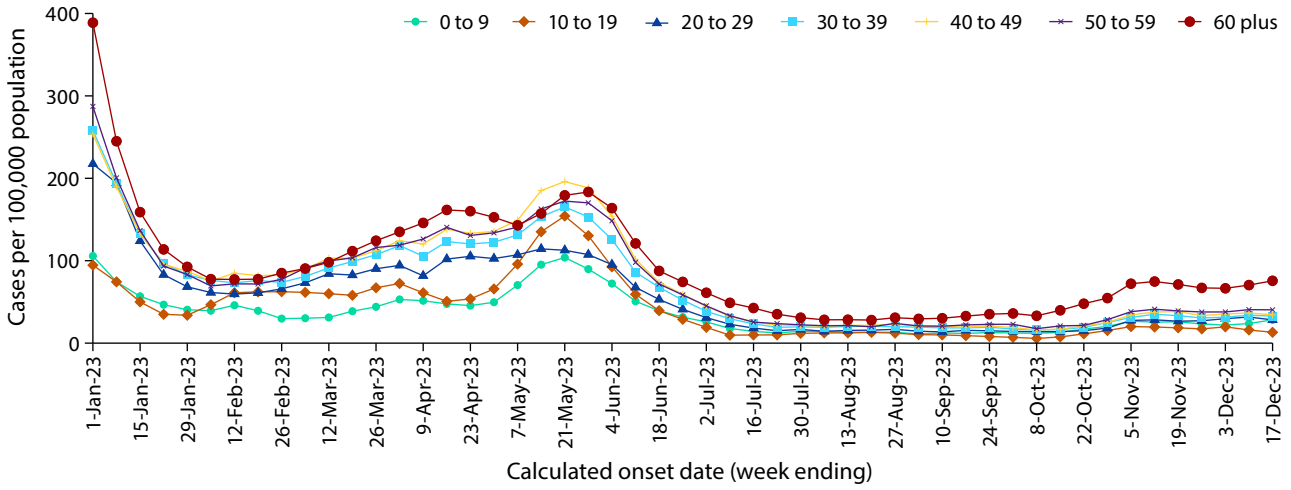
Since the emergence of the Omicron variant in Australia, there have been six distinct waves of transmission, defined by the predominant Omicron subvariant circulating. The first wave, of the BA.1 subvariant, occurred from mid-December 2021 to February 2022, with a peak in cases observed in early January 2022. From March 2022, the BA.2 subvariant was the predominant strain; in this second Omicron wave, there was a primary peak in early April and a secondary peak in late May 2022. In early July 2022, BA.5 (including sub-lineages) became the predominant subvariant detected in Australia, driving a third wave of transmission which peaked in the week ending 24 July 2022. A fourth wave of transmission commenced in late October 2022, driven by a combination of existing and newly emerging Omicron subvariants. This wave peaked during the week ending 11 December 2022. A fifth Omicron wave of transmission, similarly driven by a combination of existing and newly emerging recombinant Omicron subvariants, commenced in early March 2023 and led to a peak in notifications in the week ending 21 May 2023 (Figure 1). The most recent sixth wave of transmission, initially also driven by a combination of existing and newly emerging recombinant Omicron subvariants (XBB*), commenced in late August 2023, signalled by an increasing trend in several surveillance indicators (Figures 1, 3 and 5).

Due to a reduction in case ascertainment in all jurisdictions, including changes in testing and reporting requirements, reported case numbers underestimate disease incidence in the community.

Demographic features *(NNDSS)*

Following the start of the sixth Omicron wave in mid-August 2023, notification rates among most age groups have remained low and stable, except among adults aged 60 years and over where rates have slowly increased and remain the highest rates among all age groups (Figure 2). In the current reporting period, 20 November – 17 December 2023, the highest notification rate was observed among adults aged 90 years and over, whilst the lowest rate was among young people aged 10–19 years (Appendix A, Table A.1).

Figure 2: Confirmed and probable COVID-19 notification weekly rates for ten-year age groups by date of onset, Australia, 26 December 2022 – 17 December 2023[a,b]



a Source: NNDSS, extracted on 20 December 2023 for cases with an illness onset from 26 December 2022 to 17 December 2023.

b Population data based on Australian Bureau of Statistics (ABS) Estimated Resident Population (ERP) as at June 2022.

Aboriginal and Torres Strait Islander persons *(NNDSS)*

Overall, since the start of the pandemic, Aboriginal and Torres Strait Islander status is unknown for approximately 13.3% of COVID-19 notifications in NNDSS. Therefore, the number of cases classified as Aboriginal and Torres Strait Islander people is likely an under-representation. During the reporting period, there were 1,230 new cases notified among Aboriginal and Torres Strait Islander people (Table 2). In the Omicron wave to date (15 December 2021 – 17 December 2023), notifications among Aboriginal and Torres Strait Islander people have comprised 3.7% of all cases (424,757/11,484,263).

Of the COVID-19 cases notified among Aboriginal and Torres Strait Islander people from 15 December 2021 to date, and where location of residence was known, 55.0% (231,840/421,874) lived in a regional or remote area (Table 3).

Nationally, there have been 438 COVID-19 associated deaths reported in Aboriginal and Torres Strait Islander people from the start of the pandemic to 17 December 2023. This comprises 143 (32.7%) from New South Wales; 129 (29.5%) from Queensland; 61 (13.9%) from Western Australia; 58 (13.2%) from the Northern Territory; 25 (5.7%) from South Australia; 18 (4.1%) from Victoria; and two (0.5%) each from the Australian Capital Territory and Tasmania. Additionally, 771 Aboriginal and Torres Strait Islander cases have been admitted to ICUs nationally. In the Omicron wave to date, the population rate of severe illness increased with age, with the highest rate observed among those aged 60 years and over (Table 4). It should be noted that ICU status in NNDSS is likely incomplete.

Table 2: Confirmed and probable cases of COVID-19 among Aboriginal and Torres Strait Islander peoples by jurisdiction and date of onset, Australia, 1 January 2020 – 17 December 2023[a,b,c]

Jurisdiction[b,c]	Reporting period 20 November – 17 December 2023	Omicron wave to date 15 December 2021 – 17 December 2023	Delta wave 16 June – 14 December 2021	Pandemic to date 1 January 2020 – 17 December 2023
ACT	10	4,316	240	4,560
NSW	251	139,739	7,715	147,525
NT	162	27,027	94	27,122
Qld	455	113,608	19	113,650
SA	81	24,248	3	24,256
Tas.	159	17,686	1	17,699
Vic.	35	36,457	1,939	38,492
WA	77	61,676	0	61,678
Australia	**1,230**	**424,757**	**10,011**	**434,982**

a Source: NNDSS, extracted on 20 December 2023 for cases with an illness onset from 1 January 2020 to 17 December 2023.

b ACT: Australian Capital Territory; NSW: New South Wales; NT: Northern Territory; Qld: Queensland; SA: South Australia; Tas: Tasmania; Vic: Victoria; WA: Western Australia.

c Since 1 July 2023, cases are classified based on jurisdiction of residence. This does not necessarily reflect the place where the disease was acquired or where the case presented. Please note that, prior to this, cases were classified based on the jurisdiction in which they tested positive.

Table 3: COVID-19 cases among Aboriginal and Torres Strait Islander people by area of remoteness, Australia, 15 December 2021 – 17 December 2023[a]

Jurisdiction[b,c]	Major city	Inner regional	Outer regional	Remote[d]
ACT	4,267	35	12	1
NSW	74,970	45,199	15,608	3,170
NT	74	21	8,476	17,530
Qld	44,320	26,140	31,436	11,554
SA	13,166	2,605	5,058	3,264
Tas.	206	10,838	6,187	306
Vic.	20,782	11,748	3,868	19
WA	32,249	4,461	7,712	16,592
Australia	**190,034**	**101,047**	**78,357**	**52,436**

a Source: NNDSS, extracted on 20 December 2023 for cases with an illness onset from 15 December 2021 to 17 December 2023. Excludes cases with an overseas place of residence, and where place of residence is unknown.

b ACT: Australian Capital Territory; NSW: New South Wales; NT: Northern Territory; Qld: Queensland; SA: South Australia; Tas.: Tasmania; Vic.: Victoria; WA: Western Australia.

c Since 1 July 2023, cases are classified based on jurisdiction of residence. This does not necessarily reflect the place where the disease was acquired or where the case presented. Please note that, prior to this, cases were classified based on the jurisdiction in which they tested positive.

d 'Remote' here also includes areas classified as 'very remote'.

Table 4: Age-specific rates of COVID-19 cases by highest level of illness severity (admitted to ICU and/or died) in Aboriginal and Torres Strait Islander people, Australia, 1 January 2020 to 17 December 2023[a]

Age group (years)	Sixth Omicron wave to date 14 August – 17 December 2023	Fifth Omicron wave 1 March – 13 August 2023	Fourth Omicron wave 24 October 2022 – 28 February 2023	Omicron wave to date 15 December 2021 – 17 December 2023	Pandemic to date 1 January 2020 – 17 December 2023
0–9	0.5	0.9	5.1	22.3	23.3
10–19	0.5	3.4	1.9	21.3	26.1
20–29	1.2	3.0	3.0	44.8	53.8
30–39	0.0	3.2	11.3	53.2	68.5
40–49	5.0	7.1	10.1	106.9	129.1
50–59	10.3	29.6	30.8	215.3	250.6
60 +	17.5	81.6	87.4	547.8	592.1
All	**3.4**	**12.3**	**14.8**	**101.3**	**115.2**

a Rate per 100,000 population for the given time period. Aboriginal and Torres Strait Islander population data is based on the Australian Bureau of Statistics (ABS) Estimated Resident Population (ERP) as at 2021.

Severity
(NNDSS, FluCAN, SPRINT-SARI)

To provide a more accurate assessment of severity (defined as those admitted to ICU and/or died), cases with an illness onset in the last two weeks of the reporting period have been excluded from the analyses given the delay between illness onset and development of severe illness.

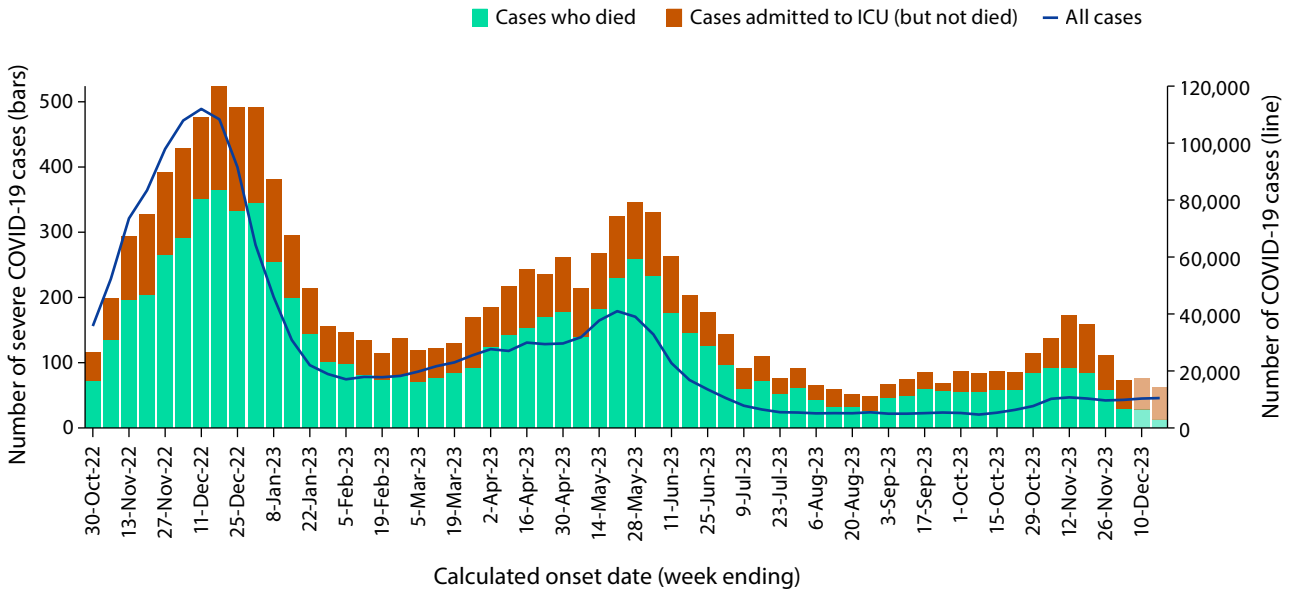
Since the emergence of the Omicron variant, the number of cases with severe illness peaked in mid-January 2022, at over 1,250 severe cases per week (data not shown). Since this time there has been a consistent decrease in the number of cases developing severe illness, with a smaller peak observed with each subsequent Omicron wave. Please note, this is likely due to a combination of factors such as high COVID-19 vaccination coverage, hybrid immunity and access to oral antiviral treatments that have led to a reduction in the overall societal impact of the pandemic, marked by fewer severe cases over time. Since the start of the sixth Omicron wave, the weekly number of cases with severe illness gradually increased and reached an apparent peak at approximately 180 in the week ending 12 November 2023 at (Figure 3).

Similar to previous transmission waves, rates of severe illness during the Omicron waves remain highest in older age groups, particularly those aged 60 years and older (Figure 4). The rate of severe illness in this age group has increased gradually since the start of the sixth Omicron wave and subsequently reached an apparent peak in mid-November 2023 at just above 2.0 cases per 100,000 population. In comparison, rates of severe illness in younger age groups have remained relatively low and stable throughout earlier Omicron waves, not surpassing 1.2 cases per 100,000 population per week since the start of the fourth Omicron wave (Figure 4).

Hospitalisation and ICU admissions
Influenza Complications Alert Network—FluCAN

Between 13 December 2021 and 17 December 2023, there were 18,866 hospital admissions with confirmed COVID-19 reported at Influenza Complications Alert Network (FluCAN) sentinel sites, including 5.8% (1,088/18,866) admitted directly to ICU (Figure 5). During the latest four-week reporting period (20 November – 17 December 2023), there were 258 hospital admissions with COVID-19 reported at FluCAN sentinel sites, with 9.3% (24/258) admitted directly to ICU. The proportion of COVID-19 ICU admissions in the year to date (1 January to 17 December 2023) was 6.2% (317/5,079), slightly higher than the proportion for the same period in 2022 (5.6%).

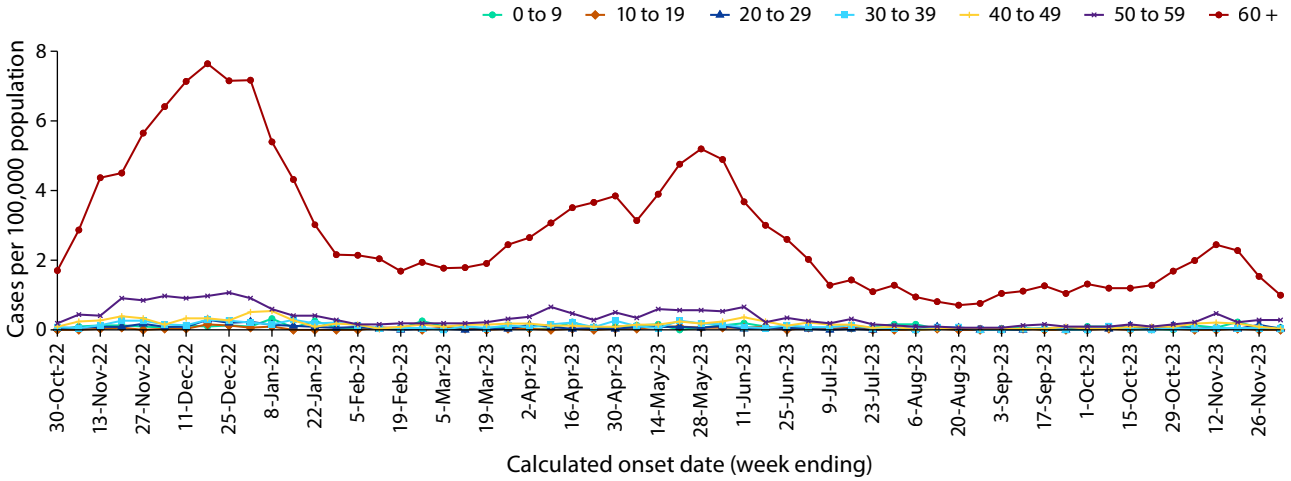
Figure 3: COVID-19 cases, deaths and ICU admissions, Australia, by date of onset, Australia, 24 October 2022 – 17 December 2023[a,b]



a Source: NNDSS, extracted on 20 December 2023 for cases with an illness onset from 24 October 2022 to 17 December 2023.

b Shaded bars at the right represent the most recent two reporting weeks and should be interpreted with caution, as cases with an illness onset in these weeks may not have yet developed severe disease.

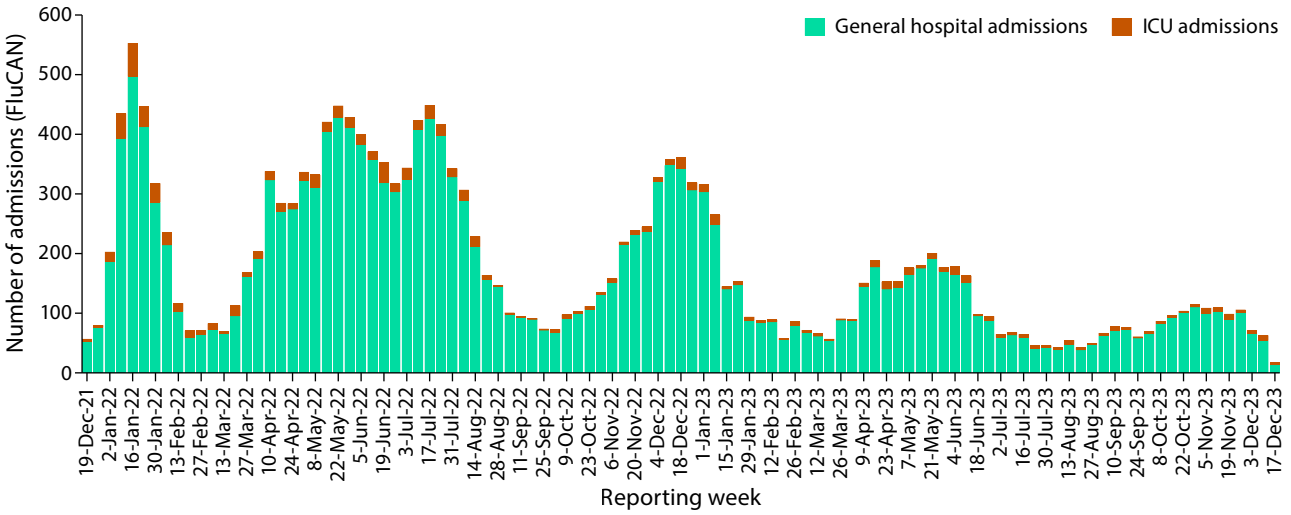
Figure 4: Age-specific weekly rates of COVID-19 cases admitted to ICU or died, by date of onset, Australia, 24 October 2022 to 3 December 2023[a,b]



a Source: NNDSS, extracted on 20 December 2023 for cases with an illness onset from 24 October 2022 to 3 December 2023; cases with an illness onset in the last two weeks (6–17 December 2023) were excluded to account for the delay between onset and development of severe illness.

b Population data based on Australian Bureau of Statistics (ABS) Estimated Resident Population (ERP) as at June 2022.

Figure 5: Weekly trends for patients admitted with confirmed COVID-19 to FluCAN sentinel hospitals, Australia, 13 December 2021 – 17 December 2023[a]



a Source: FluCAN.[4]

Short Period Incidence Study of Severe Acute Respiratory Infection—SPRINT-SARI

Between 15 December 2021 and 17 December 2023, there were 6,592 COVID-19 cases admitted to ICUs participating in the sentinel surveillance system, Short Period Incidence Study of Severe Acute Respiratory Infection (SPRINT-SARI)[5] (Table 5). Most patients (62.3%; 4,105/6,592) were discharged home; 12.7% (840/6,592) died in ICU and 5.2% (341/6,592) died within the general hospital ward, with an overall in-hospital mortality rate of 17.9% (1,181/6,592).

In the four-week reporting period (20 November – 17 December 2023), there were 70 adult patients with COVID-19 (45 males, 25 females; median age: 67 years; interquartile range [IQR]: 53.5–77.0 years) admitted to ICU reported at SPRINT-SARI sentinel sites (Table 5).

Since the start of the Omicron wave (15 December 2021) to 17 December 2023, for patients admitted to SPRINT-SARI sentinel sites with COVID-19 (n = 6,592), the median length of stay in ICU was 3.4 days (IQR: 1.7–7.2 days); the median length of stay in hospital was 11.0 days (IQR: 6.0–20.0 days); and the

Table 5: Patient outcomes for adult COVID-19 cases (aged greater than or equal to 18 years), Australia, 15 December 2021 – 17 December 2023[a]

Outcomes	Reporting period 20 November – 17 December 2023 (n = 70)	Omicron wave to date 15 December 2021 – 17 December 2023 (n = 6,592)
Patient status		
Ongoing care in ICU	17 (24.3%)	38 (0.6%)
Ongoing care in hospital ward[b]	18 (25.7%)	68 (1.0%)
Transfer to other hospital/facility	0 (0%)	471 (7.1%)
Transfer to rehabilitation	0 (0%)	627 (9.5%)
Discharged home	31 (44.3%)	4,105 (62.3%)
Mortality – ICU	3 (4.3%)	840 (12.7%)
Mortality – hospital ward	1 (1.4%)	341 (5.2%)
Unknown	0 (0%)	75 (1.1%)
Missing[c]	0 (0%)	27 (0.4%)

a Source: SPRINT-SARI.[5]

b Patients who were admitted in ICU/hospital wards with no discharge information for less than 90 days were assumed to have ongoing care in the hospital.

c Patients who were admitted to ICU/hospital wards for more than 90 days with no discharge information were treated as 'missing data'.

median duration of mechanical ventilation was 4.1 days (IQR: 1.6–9.2 days).

During the four-week reporting period (20 November – 17 December 2023), for adult patients admitted to SPRINT-SARI sentinel sites with COVID-19 (n = 70), the median length of stay in ICU was 2.8 days (IQR: 1.3–5.0 days); the median length of stay in hospital was 7.0 days (IQR: 4.3–11.0 days); and the median duration of mechanical ventilation was 2.1 days (IQR: 1.1–3.8 days).

Risk factors for severe disease

Comorbidity data extracted from SPRINT-SARI reflect the sickest patients with COVID-19 who are managed in ICU; data are therefore not generalisable to all cases. Figure 6 shows the most prevalent comorbidities among adult patients admitted to ICU with COVID-19 during the four-week period 20 November – 17 December 2023, where comorbidity information was available. Of those adult patients admitted to ICU during the four-week reporting period, for whom comorbidity data was known, 54.3% of adult ICU patients (38/70) had three or more comorbidities.

Paediatric Inflammatory Multisystem Syndrome – Temporally Associated with SARS-CoV-2

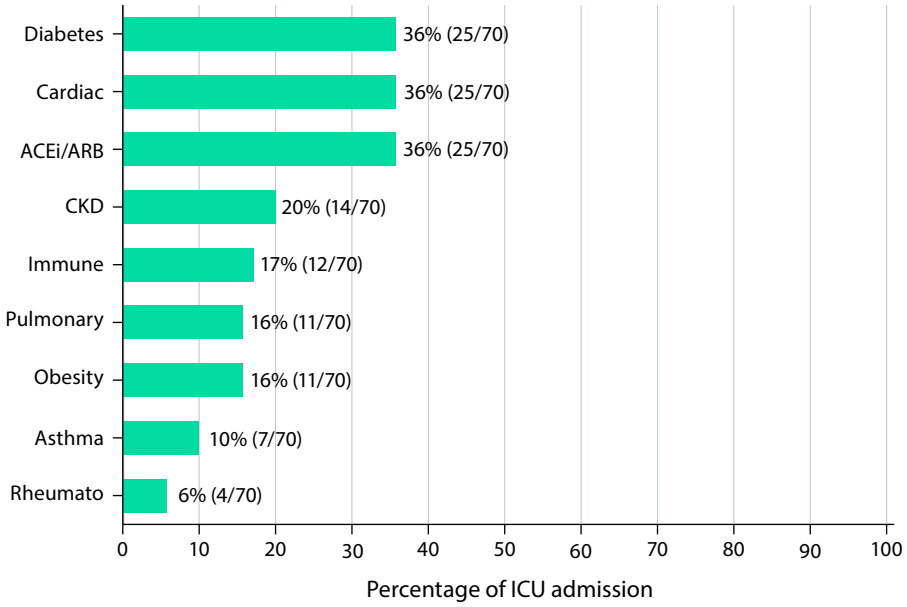
Paediatric Active Enhanced Disease Surveillance

Since the start of the pandemic to 17 December 2023, there have been 187 cases of paediatric inflammatory multisystem syndrome – temporally associated with SARS-CoV-2 (PIMS-TS) reported to the Paediatric Active Enhanced Disease Surveillance network (PAEDS), with no new cases reported in the last four weeks, and a total of 21 cases reported since the start of 2023 (Figure 7). The majority of PIMS-TS cases to date have occurred in those aged 5 to < 12 years (53%; 99/187), followed by those aged 6 months to < 5 years (27%; 51/187). To date, there have been no PIMS-TS associated deaths.

COVID-19 deaths

Since the beginning of the pandemic to 17 December 2023, there have been 24,093 COVID-19-associated deaths reported to the NNDSS, with 1,086 COVID-19-associated deaths notified in the sixth Omicron wave to date (Table 6). The crude case fatality rate from the start of the overall Omicron wave to date is 0.19%, which is lower than the crude case fatality rate for the Delta wave (0.71%) (Table 7).

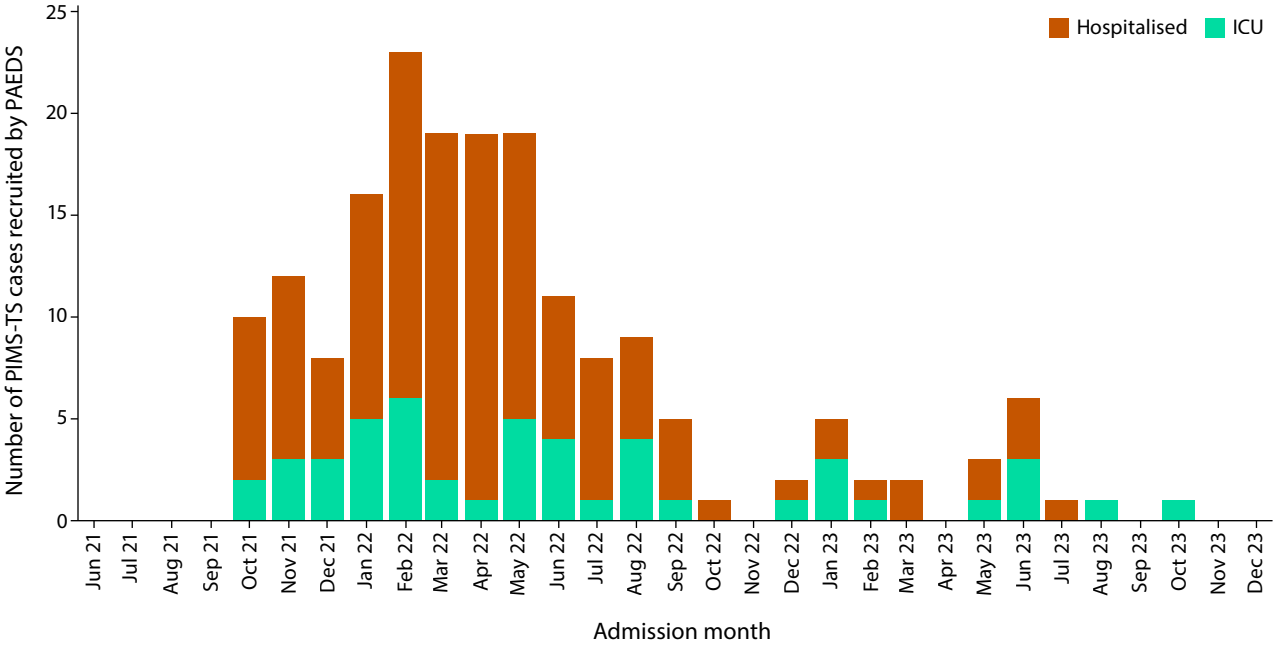
Figure 6: Prevalence of comorbidities for COVID-19 cases among admitted adult ICU patients (aged greater than or equal to 18 years), Australia, 20 November – 17 December 2023[a,b]



a Source: SPRINT-SARI. Only includes adult cases (≥ 18 years old) and excludes those with missing data on comorbidities or where comorbidity is unknown.

b Abbreviated comorbidities defined as: Cardiac: chronic cardiac disease; ACEi/ARB: past use of ACE inhibitor or A2 Blocker; CKD: chronic kidney disease; Immune: chronic immunosuppression; Pulmonary: chronic pulmonary disease (not including asthma); and Rheumato: rheumatologic disorder.

Figure 7: PIMS-TS cases reported to PAEDS, by sample month and level of care required, Australia, 1 June 2021 – 17 December 2023[a]



a Source: PAEDS.

Table 6: Deaths associated with COVID-19 by reporting period, Australia, 1 January 2020 – 17 December 2023[a,b,c]

Jurisdiction[c]	Sixth Omicron wave to date 14 August – 17 December 2023	Fifth Omicron wave 1 March – 13 August 2023	Fourth Omicron wave 24 October 2022 – 28 February 2023	Omicron wave to date 15 December 2021 – 17 December 2023	Pandemic to date 1 January 2020 – 7 December 2023
ACT	15 (1.4%)	46 (1.5%)	38 (1.0%)	275 (1.3%)	290 (1.2%)
NSW	277 (25.5%)	1,078 (34.1%)	1,065 (29.0%)	7,222 (33.1%)	7,922 (32.9%)
NT	7 (0.6%)	14 (0.4%)	18 (0.5%)	117 (0.5%)	118 (0.5%)
Qld	119 (11.0%)	520 (16.5%)	510 (13.9%)	3,459 (15.9%)	3,466 (14.4%)
SA	31 (2.9%)	247 (7.8%)	323 (8.8%)	1,709 (7.8%)	1,714 (7.1%)
Tas.	29 (2.7%)	54 (1.7%)	63 (1.7%)	320 (1.5%)	333 (1.4%)
Vic.	554 (51.0%)	973 (30.8%)	1,355 (36.9%)	7,391 (33.9%)	8,913 (37.0%)
WA	54 (5.0%)	225 (7.1%)	298 (8.1%)	1,328 (6.1%)	1,337 (5.5%)
Australia	**1,086 (100.0%)**	**3,157 (100.0%)**	**3,670 (100.0%)**	**21,821 (100.0%)**	**24,093 (100.0%)**

a Source: NNDSS, extracted on 20 December 2023 for deaths with an illness onset date to 17 December 2023.

b Deaths are categorised into time periods using date of death. Deaths with a missing date of death are classified using date of illness onset.

c ACT: Australian Capital Territory; NSW: New South Wales; NT: Northern Territory; Qld: Queensland; SA: South Australia; Tas.: Tasmania; Vic.: Victoria; WA: Western Australia.

Table 7: COVID-19 associated case fatality rates among cases notified to NNDSS, by age group and date of onset, 1 January 2020 to 3 December 2023[a,b,c,d]

Age group (years)	Omicron wave to date 15 December 2021 – 3 December 2023	Delta wave 16 June – 14 December 2021	Pandemic to date 1 January 2020 – 3 December 2023
0–9	< 0.05%	< 0.05%	< 0.05%
10–19	< 0.05%	< 0.05%	< 0.05%
20–29	< 0.05%	< 0.05%	< 0.05%
30–39	< 0.05%	0.06%	< 0.05%
40–49	< 0.05%	0.18%	< 0.05%
50–59	< 0.05%	0.65%	0.06%
60 +	1.11%	6.13%	1.21%
Unknown	0.00%	0.00%	0.00%
Australia	**0.19%**	**0.71%**	**0.21%**

a Source: NNDSS, extracted on 20 December 2023 for deaths with an illness onset date to 3 December 2023.

b To account for the lag between illness onset and the development of severe illness, cases with an onset date in the last two weeks have been excluded from calculations of the case fatality rate.

c A value of 0.00% indicates that no COVID-19 associated fatalities occurred during the indicated period for the specified age group.

d Crude case fatality rates which reflect number of deaths as a proportion of reported COVID-19 cases during specific periods. Note, the current crude case fatality rates are likely overestimated due to changes in case ascertainment and increased underreporting of non-severe cases.

Genomic surveillance and virology

(Communicable Disease Genomics Network, AusTrakka and jurisdictional sequencing laboratories)

Variants of concern (VOC)

AusTrakka[6] is actively monitoring and reporting on one lineage and its associated sub- and sub-sub-lineages, currently designated as a variant of concern (VOC) by international organisations, including the World Health Organization (WHO): Omicron (B.1.1.529). The Omicron variant displays a characteristic set of mutations which differentiate the lineage from previously circulating VOCs. Further information on variants and their mutations is available in the Technical Supplement.[2]

There have been five major sub-lineages defined under B.1.1.529: BA.1, BA.2, BA.3, BA.4 and BA.5, and a large number of sub-lineages, including recombinants, under these; all are designated Omicron. Unlike previous periods in Australia's COVID-19 waves, where one or two dominant lineages were the main driver of disease, there is currently significant diversity in the range of sub-sub-lineages circulating within Australia. During this reporting period, more than 200 unique lineages have been identified, and it is likely that there are more that are not being characterised through whole genome sequencing. This diversity of circulating lineages has sometimes been referred to as a 'variant soup'. Many of these circulating lineages will die out without causing a significant disease burden, but others appear to have stronger growth potential.

Variants of interest and variants under monitoring

The Communicable Diseases Genomics Network (CDGN) VOC working group tracks notable SARS-CoV-2 variants, including:

- variants of interest (VOI): XBB.1.5, XBB.1.16, EG.5, BA.2.86, JN.1; and
- the following variants under monitoring (VUM) and their descendent lineages: BA.2.75 and BA.2.75.2 (including CH*), and recombinants XBB* (in particular XBB.1.9.1* and XBB.1.9.2*), and XBF*.

This report uses the VOI classification for lineages with possible evidence for epidemiological, pathological or immunological features of concern. This is consistent with CDGN usage and with the WHO use of the term.[7,8] VUMs are other lineages with early observations of potential significance, but little to no evidence of current concern. In this report, details are included of Omicron subvariants under monitoring as designated by the WHO.

AusTrakka SARS-CoV-2 genomic epidemiology

From 20 November to 17 December 2023, there were 1,150 sequences uploaded to AusTrakka. This represents a 3.7% increase in the number of sequences compared to the previous reporting period. Almost all sequences uploaded during this reporting period have been assigned to sub-lineages within B.1.1.529 (Omicron) or to recombinants consisting of one or more Omicron sub-lineages.

Of the 1,150 sequences uploaded to AusTrakka between 20 November and 17 December 2023:

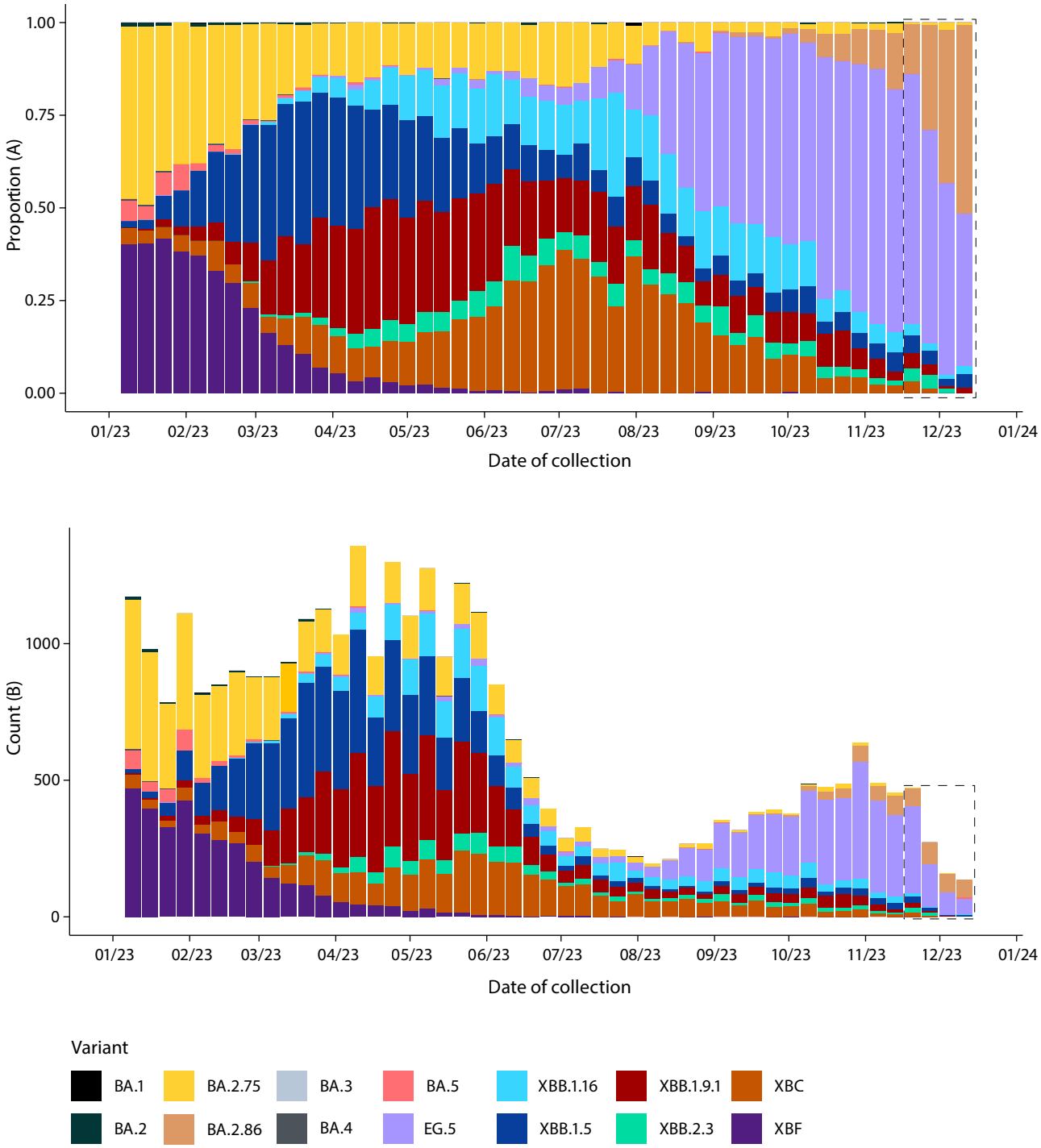
- 75.2% (865/1,150) were recombinant or recombinant sub-lineages; and
- 24.7% (284/1,150) were BA.2 sub-sub-lineages; and
- One sequence was only able to be typed to the Omicron base lineage (B.1.1.529).

No BA.1, BA.3, BA.4 or BA.5 Omicron sub-lineages were identified.

From 1 July 2023, jurisdictional sequencing strategies for SARS-CoV-2 have changed. Some jurisdictions have ceased SARS-CoV-2 sequencing, while other jurisdictions have reduced the number of SARS-CoV-2 cases being sequenced. For jurisdictions which are continuing SARS-CoV-2 genomic surveillance, SARS-CoV-2 cases which are likely to be prioritised for sequencing include ICU or hospitalised cases, high-risk cases, or cases of clinical significance. As a result, these changes are likely to affect the representativeness of the distribution of SARS-CoV-2 sub-lineages across Australia.

Case numbers and sequencing proportion are primarily based on polymerase chain reaction (PCR) results only, as RATs do not allow for sequencing. Since late 2022, the rates of PCR for testing and subsequent referrals of positive PCR samples to sequencing laboratories have decreased significantly, resulting in changes to sequencing strategies across the country.

Figure 8: Omicron sub-lineage in Australia since 1 January 2023 by sample collection date, showing (A) proportions and (B) count per week[a,b,c]



a Sequences in AusTrakka aggregated by epidemiological week.

b The dashed box indicates the distribution of sequences collected within the reporting period.

c Proportions in Figure 8A may not be representative when sequence numbers are small; refer to Figure 8B. Data for earlier epidemiological weeks may change between reporting periods as sequences with older collection dates are uploaded. These numbers are not equivalent to number of cases, as there are many cases which may not be sequenced. Non-VOI and non-VUM Omicron sub-lineages have been collapsed into parent lineages BA.1, BA.2, BA.3, BA.4 and BA.5.

Table 8: Australian SARS-CoV-2 genome sequences in AusTrakka, identified as variants of concern, variants of interest or variants under monitoring and proportion of positive cases sequenced for the current and previous reporting periods, and since 23 January 2020[a,b,c]

Variant category	Measure	Reporting period 20 November – 17 December 2023	Previous reporting period 23 October – 19 November 2023	Total sequences to date 23 January 2020 – 17 December 2023
Variants of concern (VOC)	BA.1	0 (0%)	0 (0%)	26,272 (15.8%)
	BA.2 (excluding BA.2.75)	276 (24.0%)	78 (7.0%)	41,901 (25.2%)
	BA.2.75	8 (0.69%)	24 (2.2%)	14,496 (8.7%)
	BA.3	0 (0%)	0 (0%)	3 (<0.1%)
	BA.4	0 (0%)	0 (0%)	5,052 (3.0%)
	BA.5	0 (0%)	0 (0%)	43,203 (26.0%)
	Total recombinants	865 (75.2%)	1,007 (90.8%)	35,125 (21.2%)
	Total VOC	**1,150[d] (100%)**	**1,109 (100%)**	**166,052 (100%)**
Variants of interest (VOI)	XBB.1.5 + sub-lineages	54 (4.7%)	5 (0.45%)	5,748 (3.5%)
	XBB.1.16	36 (3.1%)	69 (6.2%)	4,549 (2.7%)
	EG.5 (XBB.1.9.2.5)	625 (54.3%)	648 (58.4%)	4,111 (2.5%)
	JN.1 (BA.2.86.1.1)	188 (16.3%)	—	279 (0.17%)
	BA.2.86 + sub-lineages	276 (24.0%)	78 (7.0%)	553 (0.33%)
Variants under monitoring (VUM)	XBB + all sub-lineages	807 (70.2%)	847 (76.4%)	23,547 (14.2%)
	XBB.1.9.1, XBB.1.9.2 + sub-lineages	674 (58.6%)	727 (65.5%)	9,480 (5.7%)
	XBB.2.3	29 (0.8%)	30 (2.7%)	1,392 (0.84%)
	XBF	0 (0%)	0 (0%)	6,437 (3.9%)
	XBC	39 (3.4%)	41 (3.7%)	4,514 (2.7%)
	DV.7 (CH.1.1.1)	8 (0.69%)	19 (1.7%)	115 (0.07%)
Omicron BA.2	BA.2.75 + sub-lineages	8 (0.69%)	24 (2.2%)	14,496 (8.7%)
	CH.1.1 + sub-lineages (BA.2.75.1.1)	8 (0.69%)	24 (2.2%)	4,461 (2.7%)

a All lineages have been designated as variants of concern (VOC), variants of interest (VUI) or variants under monitoring (VUM) in Australia, by the CDGN VOC working group.

b Sequencing of samples from cases identified in the reporting period may be in process at the time of reporting. Remaining unsequenced samples may be due to jurisdictional sequencing strategy, or where samples have been deemed unsuitable for sequencing (typically because viral loads were too low for sequencing to be successful).

c Proportional changes compared to the previous 28-day period are highlighted by the following colours: **green boxes indicate a decrease**; **orange boxes indicate an increase** and **blue boxes indicate no change/stable**.

d Includes one sample that was not able to be typed beyond base Omicron lineage B.1.1.529.

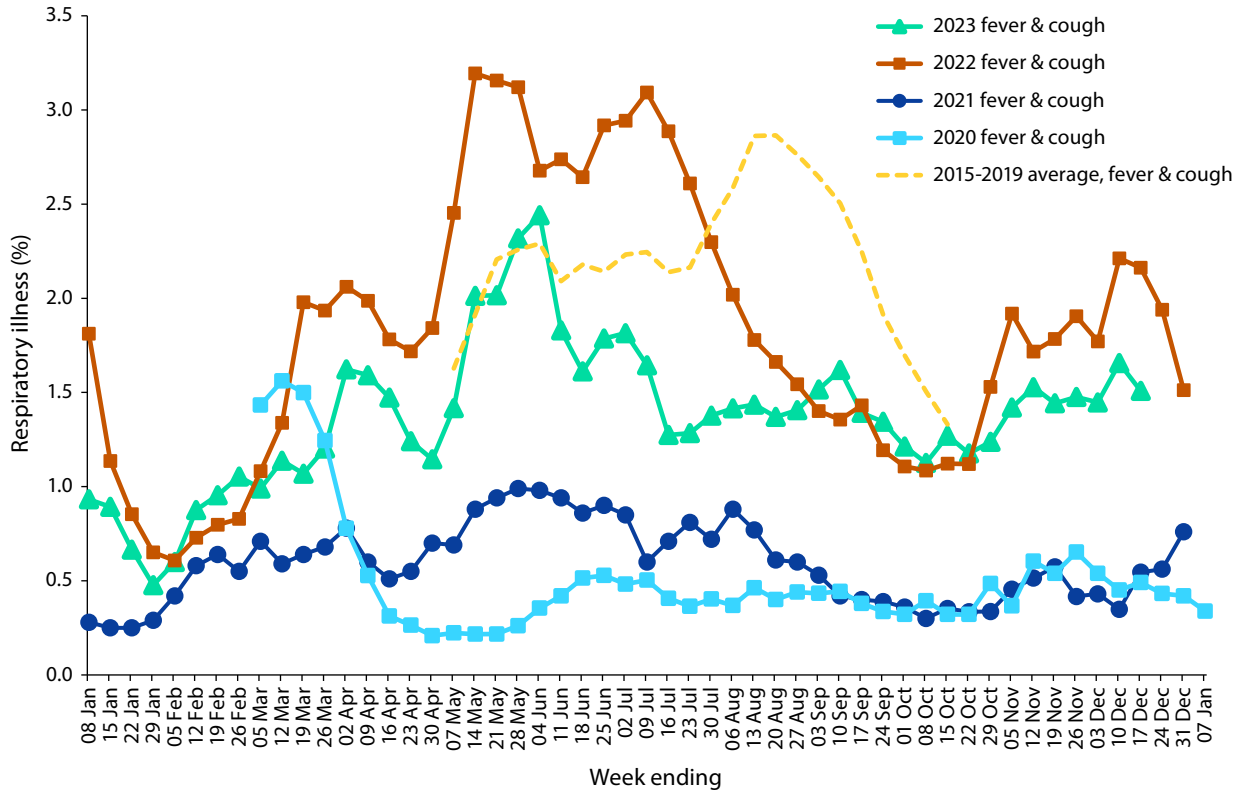
The Australian SARS-CoV-2 genome sequences in AusTrakka identified as VOC, VOI or VUM are highlighted in Table 8. The VOI and VUM where the proportion has increased compared to the previous reporting period are highlighted in orange, those that have remained stable are highlighted in blue, while those where proportions have decreased are highlighted in green.

In the reporting period to 17 December 2023, the VOI EG.5 (XBB.1.9.2.5) made up more than half of all sequences, with 54.3% of all samples uploaded. The increase in EG.5, a sub-lineage of XBB.1.9.2, is the main contributor to the increase in sequences grouped within XBB.1.9.1, XBB.1.9.2, and sub-lineages (Table 8). The other VOI XBB sublineages, XBB.1.16 and XBB.1.5, currently make up only a small proportion of sequences, both making up less than 5% of sequences during this reporting period (Table 8). In contrast, the proportion of BA.2.86 sequences has jumped to 24% of all uploaded sequences from this reporting period, compared to just 7% for the previous reporting period (23 October – 19 November 2023). This increase in BA.2.86 sequences has predominantly been driven by the sub-lineage, and newly designated WHO VOI, JN.1. There were 188 JN.1 sequences identified this month, which makes up 68% of all BA.2.86 (188/276) sequences and 16.3% of the total sequences in AusTrakka for this period. This is consistent with international reports which also report significant numbers of BA. 2.86* and descendent lineages. The recently designated WHO VUM, DV.7 was only identified in 8 sequences in AusTrakka this month and makes up just 0.07% of all sequences in AusTrakka.

Acute respiratory illness
(FluTracking, ASPREN)

Based on self-reported FluTracking data,[9] there has been an overall decrease in the incidence of 'fever and cough' symptoms since the peak in early June 2023 at 2.4%. While an increase in the incidence of 'fever and cough' symptoms was observed in late October 2023, the average proportion in the current four-week reporting period remains below the proportion observed during the same period in 2022, at 1.5% (Figure 9).

Figure 9: Weekly trends in fever and cough amongst FluTracking survey participants (age-standardised) compared to the average of the previous five years, Australia, 1 January 2020 – 17 December 2023[a]



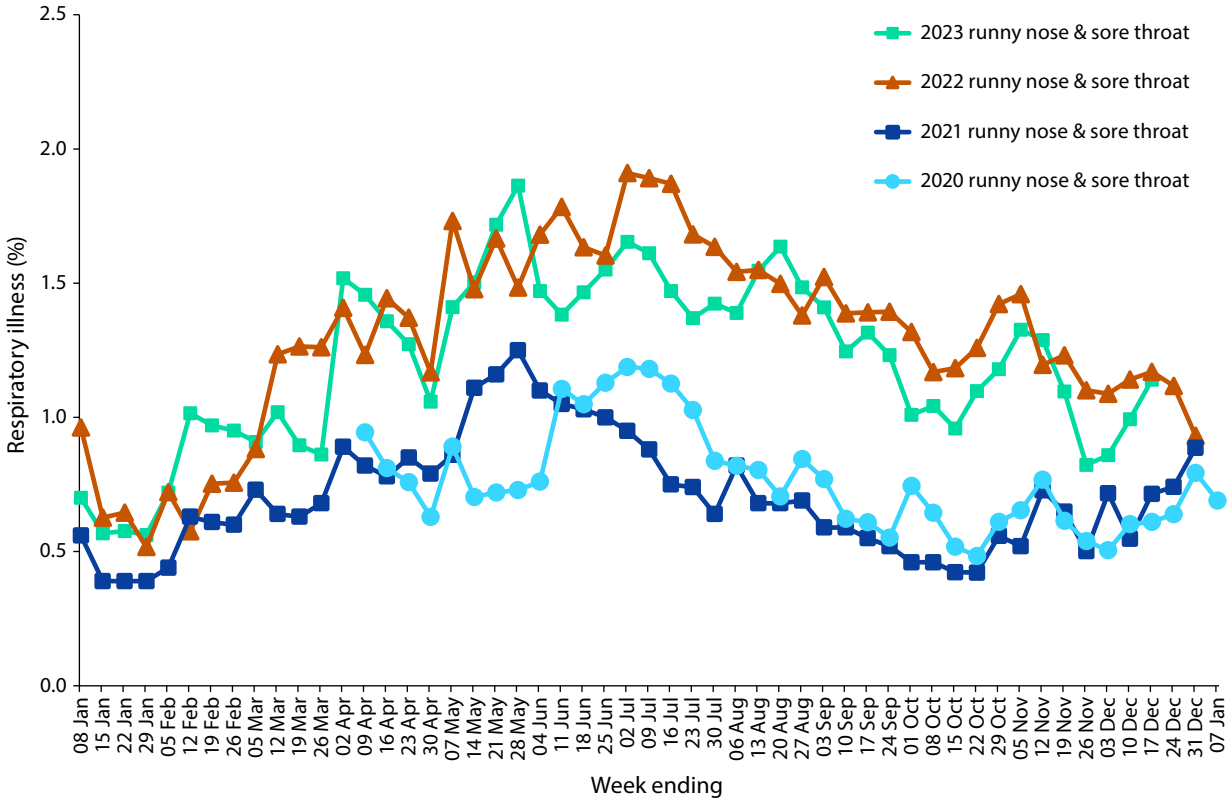
a In years prior to 2020, FluTracking was activated during the main Influenza season from May to October. A historical average beyond the week ending 11 October is therefore not available. In 2020, FluTracking commenced ten weeks early to capture data for COVID-19.

The incidence of 'runny nose and sore throat' symptoms has slowly decreased since the peak in the week ending 28 May 2023 (1.9%) with two subsequent smaller increases observed in the week ending 2 July 2023 (1.7%) and 20 August 2023 (1.6%). In the current four-week reporting period, week-on-week increases were observed, with the average proportion of 'runny nose and sore throat' symptoms at 1.0% (Figure 10).

Over the reporting period, FluTracking data indicated that 10.9% of participants with 'fever and cough' were tested for SARS-CoV-2 with a PCR test and 83.8% were tested using a RAT (noting that in some instances RATs will be followed up by a PCR test for the same case). Of those with 'runny nose and sore throat', 3.7% were tested for SARS-CoV-2 using a PCR test and 62.2% were tested using a RAT. In the current reporting period, the percent positivity for 'fever and cough' symptoms increased for both PCR (30.6%) and RAT (53.5%) compared to the previous reporting period. For 'runny nose and sore throat' symptoms, the percent positivity decreased for PCR (6.8%) but slightly increased for RAT (10.8%). Note that participants with one set of symptoms are not excluded from having the other. It is important to acknowledge that there may be legitimate reasons why people did not get tested, including barriers to accessing testing. Symptoms reported to FluTracking are not specific to COVID-19 and may also be due to infections with other respiratory pathogens and to chronic diseases, such as asthma.

Since the start of 2023 to 17 December 2023, of those presenting to sentinel ASPREN sites with influenza-like illness who were tested for respiratory viruses, 62.4% (1,066/1,709) tested positive for a respiratory virus. Among those positive, the most common viruses detected were rhinovirus (33.6%; 358/1,709) followed by influenza A (19.2%; 205/1,709), influenza B (11.8%; 126/1,709), and SARS-CoV-2 (10.6%; 113/1,709).

Figure 10: Weekly trends in runny nose and sore throat symptoms amongst FluTracking survey participants (age-standardised), Australia, 29 March 2020 – 17 December 2023[a]



a Data on runny nose and sore throat were only collected systematically after 29 March 2020, therefore a historical average for this symptom profile is unavailable.

COVID-19 trends by WHO region

As of 17 December 2023, over 772 million COVID-19 cases and nearly seven million deaths have been reported globally since the start of the pandemic, with a global case fatality rate (CFR) of approximately 0.90%.[10] Current trends in reported COVID-19 cases are an underestimate of the true number of global infections due to the reduction in testing and reporting in many countries. For more information, please refer to the WHO monthly COVID-19 epidemiological update.[11]

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References

1. COVID-19 National Incident Room Surveillance Team. COVID-19 Australia: Epidemiology Report 81: Reporting period ending 19 November 2023. *Commun Dis Intell (2018)*. 2024;48. doi: https://doi.org/10.33321/cdi.2024.48.4.

2. COVID-19 National Incident Room Surveillance Team. Technical supplement. COVID-19 Australia: Epidemiology reporting. *Commun Dis Intell (2018)*. 2021;45. doi: https://doi.org/10.33321/cdi.2021.45.2.

3. Australian Government Department of Health and Aged Care. Coronavirus (COVID-19) – CDNA National Guidelines for Public Health Units. [Internet.] Canberra: Australian Government Department of Health and Aged Care; 14 October 2022. [Accessed on 9 November 2022.] Available from: https://www.health.gov.au/resources/publications/coronavirus-covid-19-cdna-national-guidelines-for-public-health-units.

4. FluCAN (The Influenza Complications Alert Network). FluCAN (Influenza surveillance). [Webpage.] Melbourne: Monash Health, FluCAN. [Accessed on 30 June 2023.] Available from: https://monashhealth.org/services/monash-infectious-diseases/research/influenza-research/flucan-influenza-surveillance-2/.

5. Australian and New Zealand Intensive Care Research Centre (ANZIC-RC). SPRINT-SARI: Short period incidence study of severe acute respiratory infection. [Internet.] Melbourne: Monash University, ANZIC-RC; 2020. Available from: https://www.monash.edu/medicine/sphpm/anzicrc/research/sprint-sari.

6. Communicable Diseases Genomics Network (CDGN). AusTrakka. [Website.] Melbourne: CDGN; 2020. Available from: https://www.cdgn.org.au/austrakka.

7. World Health Organization (WHO). Updated working definitions and primary actions for SARS-CoV-2 variants. Geneva: WHO; 15 March 2023. [Accessed on 11 October 2023.] Available from: https://www.who.int/publications/m/item/updated-working-definitions-and-primary-actions-for--sars-cov-2-variants.

8. WHO. Tracking SARS-CoV-2 variants. [Webpage.] Geneva: WHO; 17 August 2023. [Accessed on 23 August 2023.] Available from: https://www.who.int/activities/tracking-SARS-CoV-2-variants.

9. Dalton C, Durrheim D, Fejsa J, Francis L, Carlson S, d'Espaignet ET et al. Flutracking: a weekly Australian community online survey of influenza-like illness in 2006, 2007 and 2008. *Commun Dis Intell Q Rep. 2009*;33(3):316–22.

10. WHO. COVID-19 epidemiological update – 22 December 2023. [Internet.] Geneva: WHO; 22 December 2023. [Accessed on 9 January 2024.] Available from: https://www.who.int/publications/m/item/covid-19-epidemiological-update---22-december-2023.

11. WHO. Coronavirus disease (COVID-19) Weekly Epidemiological Updates and Monthly Operational Updates. [Webpage.] Geneva: WHO; 2024. Available from: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports.

Appendix A: Supplementary figures and tables

Table A.1: COVID-19 cases and rates per 100,000 population, by age group, sex, and date of onset, Australia, 15 December 2021 – 17 December 2023[a,b,c,d]

Age group (years)	Four-week reporting period 20 November – 17 December 2023						Omicron wave to date 15 December 2021 – 17 December 2023					
	Cases			Rate per 100,000 population			Cases			Rate per 100,000 population		
	Male	Female	People[d]	Male	Female	People[d]	Male	Female	People[d]	Male	Female	People[d]
0–9	1,614	1,418	3,035	100.6	93.5	97.2	528,481	501,641	1,150,862	32,925.1	33,089.0	36,873.2
10–19	986	1,106	2,096	60.4	71.9	66.1	662,762	704,091	1,503,354	40,606.8	45,749.0	47,406.8
20–29	1,442	2,571	4,027	81.9	152.4	116.8	802,924	984,484	1,913,107	45,587.1	58,342.2	55,472.8
30–39	1,782	3,098	4,894	94.7	161.5	128.8	828,800	1,038,134	2,013,923	44,049.8	54,133.6	53,008.7
40–49	1,742	2,901	4,646	106.0	172.6	139.8	688,199	875,115	1,684,939	41,891.6	52,058.8	50,692.8
50–59	1,967	3,021	4,996	125.5	186.6	156.8	559,549	696,877	1,344,365	35,691.3	43,042.4	42,185.5
60–69	2,094	2,658	4,757	154.8	184.4	170.2	407,790	473,492	934,911	30,140.7	32,843.4	33,453.9
70–79	2,558	2,689	5,256	263.6	256.6	260.4	263,775	269,366	557,991	27,182.5	25,709.3	27,649.0
80–89	2,194	2,458	4,656	545.2	493.5	517.0	122,018	138,641	270,177	30,319.1	27,833.6	30,001.2
90 +	652	1,256	1,910	859.7	904.2	889.4	32,240	59,936	94,906	42,512.8	43,148.0	44,194.9

a Source: NNDSS, extracted on 20 December 2023 for case notifications to 17 December 2023.

b Population data based on Australian Bureau of Statistics (ABS) Estimated Resident Population (ERP) as at June 2022.

c Excludes cases where age was unknown.

d Total cases includes those where sex was unknown and those classified as X, i.e., persons who reported their sex as another term, other than male or female.