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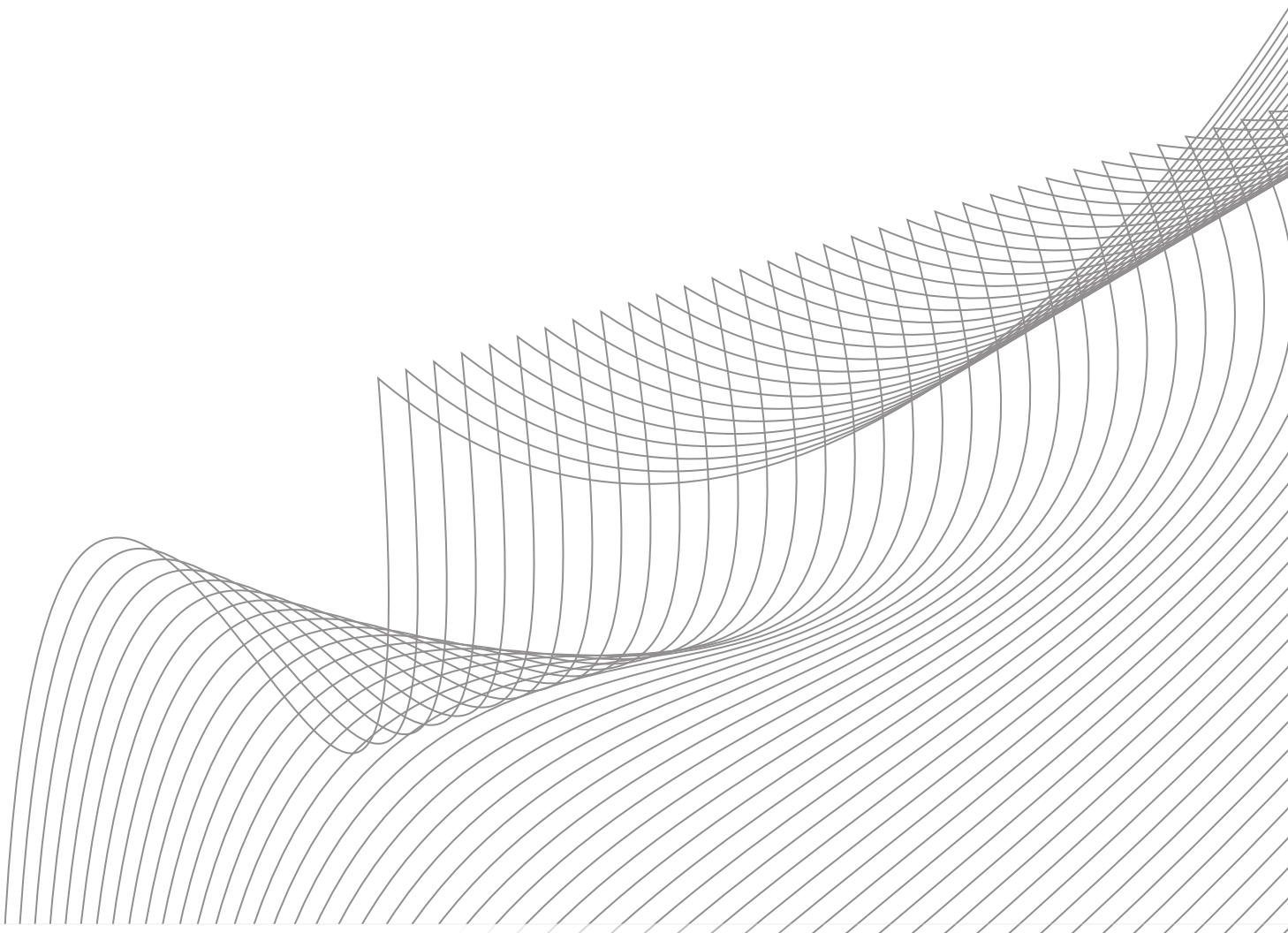
COVID-19 Australia: Epidemiology Report 75

Reporting period ending 4 June 2023

COVID-19 Epidemiology and Surveillance Team



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Surveillance summary

COVID-19 Australia: Epidemiology Report 75

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Summary

Four-week reporting period (8 May – 4 June 2023)

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

Trends – Nationally, there has been a gradual increase in case notifications since early March 2023, reflecting the start of a fifth wave of Omicron transmission. In the four-week period 8 May – 4 June 2023, there were 42,489 confirmed and 107,526 probable cases of COVID-19 reported in Australia to the National Notifiable Diseases Surveillance System (NNDSS). In the most recent reporting fortnight, a total of 71,374 confirmed and probable cases were notified (an average of 5,098 cases per day), compared to 78,641 in the previous fortnight (an average of 5,617 cases per day).

Age group – Since the start of the fifth Omicron wave in early March 2023, there has been an overall increase in notification rates across all age groups. However, in the most recent fortnight (ending 4 June 2023) notification rates have started to stabilise across all age groups. In the current reporting period 8 May – 4 June 2023, the highest notification rate was observed among adults aged 90 years and over, whilst the lowest rates were among children aged nine years or less. For the entire Omicron wave to date (15 December 2021 – 4 June 2023), the highest notification rate has been in adults aged 20 to 29 years.

Aboriginal and Torres Strait Islander people – In the reporting period 8 May – 4 June 2023, there were 4,292 new cases notified in Aboriginal and Torres Strait Islander people. In the Omicron wave to date (15 December 2021 – 4 June 2023), there have been 416,207 cases notified among Aboriginal and Torres Strait Islander people, representing 3.7% (416,207/11,230,206) of all cases during this period.

Severity – Since the start of the fifth Omicron wave, there has been a slight increase in the number of cases with severe illness (defined as those admitted to ICU or died), however notifications of severe cases have remained considerably lower than in previous Omicron waves. The overall crude case fatality rate since the start of the fifth Omicron wave is 0.40%, which is higher than the fourth (0.34%) and third (0.21%) Omicron waves. The current case fatality rate is likely overestimated due to changes in case ascertainment and underreporting of non-severe cases. Since the start of the pandemic to 4 June 2023, there have been 177 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 two new cases reported in the last four weeks and a total of 11 cases reported since the start of 2023.

Virology – For samples collected in the four-week period 8 May – 4 June 2023, all 2,522 samples were assigned against Omicron or recombinants consisting of Omicron lineages. There is currently significant diversity in the range of sub- and sub-sub-lineages circulating within Australia. During the reporting period, more than 200 unique lineages have been identified. Recombinant lineages represented the majority (89.8%) of sequences collected during 8 May – 4 June 2023 and available for analysis in AusTrakka. In the same period, BA.2 (now predominantly represented by the BA.2.75 sub-lineage) and BA.5 account for 10.0% and 0.2%, respectively, of sequences identified in the same period.

Acute respiratory illness – Based on self-reported FluTracking data, there has been an overall increase in the prevalence of both 'fever and cough' and 'runny nose and sore throat' symptoms in the community since late January 2023. Over the current period, the rate of 'fever and cough' has sharply increased but remains slightly lower than the rates observed during the same period in 2022. The rate of 'runny nose and sore throat' symptoms increased to 1.8% of participants with respiratory illness, exceeding the rate observed in 2022 for the same period.

International situation – According to the World Health Organization (WHO), cumulative global COVID-19 cases stood at over 767 million COVID-19 cases and over 6.9 million deaths as of 4 June 2023. For the South-East Asia and Western Pacific regions combined, there were 986,933 new cases and 2,065 deaths in the four-week period to 4 June 2023. A proportional decrease in new cases and deaths was observed in the South-East Asia (cases: -77%; deaths: -35%) and Western Pacific regions (cases: -5%; deaths: -19%) compared with the previous four weeks. In total, since the start of the pandemic, approximately 265 million cases and over 1.2 million deaths have been reported in the two regions.

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

This reporting period covers the four-week period of 8 May – 4 June 2023. Within this period, data for each week is compared. The previous reporting period was the preceding four weeks (10 April – 7 May 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 onwards, 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 periodically 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

series of national guidelines (SoNG).[3] For the purposes of this report, only probable cases from 5 January 2022 are included.

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.

Several jurisdictions have stopped reporting SARS-CoV-2 polymerase chain reaction (PCR) denominator testing data; therefore, testing rates and percent positivity calculations are no longer included in this report.

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]

Table 1: Confirmed and probable COVID-19 cases by jurisdiction and date of illness onset, Australia, 15 December 2021 – 4 June 2023[a,b,c]

Jurisdiction	Reporting period						Current Omicron wave		
	8–21 May 2023			22 May – 4 June 2023			15 December 2021 – 4 June 2023		
	Confirmed	Probable	Total	Confirmed	Probable	Total	Confirmed	Probable	Total
ACT	388 (19.9%)	1,558 (80.1%)	1,946	371 (19.0%)	1,584 (81.0%)	1,955	131,909 (54.8%)	108,690 (45.2%)	240,599
NSW	11,649 (39.7%)	17,677 (60.3%)	29,326	9,530 (36.3%)	16,754 (63.7%)	26,284	2,133,278 (56.3%)	1,654,911 (43.7%)	3,788,189
NT	155 (37.3%)	260 (62.7%)	415	122 (32.4%)	255 (67.6%)	377	24,410 (22.6%)	83,419 (77.4%)	107,829
Qld	2,937 (29.1%)	7,140 (70.9%)	10,077	3,750 (34.9%)	7,003 (65.1%)	10,753	685,225 (40.0%)	1,026,787 (60.0%)	1,712,012
SA	2,000 (29.1%)	4,874 (70.9%)	6,874	2,189 (30.5%)	4,991 (69.5%)	7,180	524,113 (56.7%)	399,692 (43.3%)	923,805
Tas.	206 (8.3%)	2,264 (91.7%)	2,470	288 (11.8%)	2,143 (88.2%)	2,431	66,054 (22.0%)	233,567 (78.0%)	299,621
Vic.	3,352 (17.5%)	15,805 (82.5%)	19,157	3,473 (22.7%)	11,806 (77.3%)	15,279	1,090,964 (38.7%)	1,729,056 (61.3%)	2,820,020
WA	1,023 (12.2%)	7,353 (87.8%)	8,376	1,056 (14.8%)	6,059 (85.2%)	7,115	499,394 (37.3%)	838,737 (62.7%)	1,338,131
Australia	**21,710 (27.6%)**	**56,931 (72.4%)**	**78,641**	**20,779 (29.1%)**	**50,595 (70.9%)**	**71,374**	**5,155,347 (45.9%)**	**6,074,859 (54.1%)**	**11,230,206**

a Source: NNDSS extract from 14 June 2023 for cases with an illness onset from 15 December 2021 to 4 June 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 Cases are classified based on jurisdiction of notification not jurisdiction of residence. Some cases are notified to a different jurisdiction than their location of residence.

Activity

COVID-19 trends
(NNDSS)

Cumulatively, from the beginning of the pandemic to 4 June 2023, jurisdictions within Australia have reported 11,473,684 COVID-19 cases to the NNDSS. Nationally, there has been a gradual increase in case notifications since early March 2023, reflecting the start of a fifth wave of Omicron transmission. In the most recent fortnight, case numbers have started to stabilise.

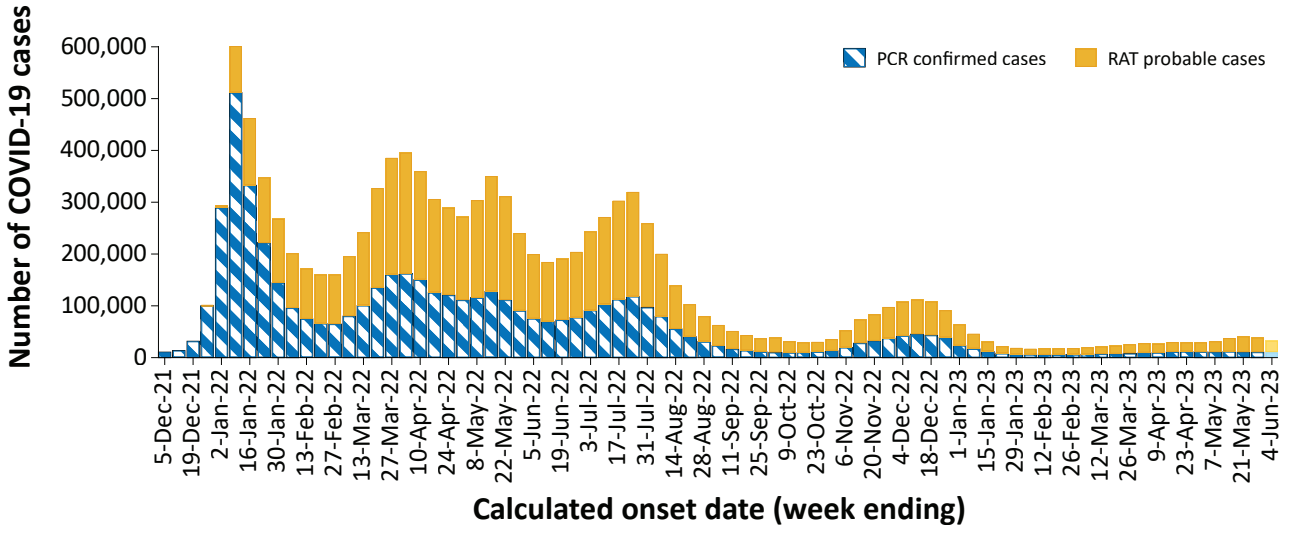
In the four-week period 8 May – 4 June 2023, there were 42,489 confirmed and 107,526 probable cases of COVID-19 reported in Australia to NNDSS (Table 1). In the most recent reporting fortnight, a total of 71,374 confirmed and probable cases were notified (an average of 5,098 cases per day), compared to 78,641 in the previous fortnight (an average of 5,617 cases per day).

Since the emergence of the Omicron variant in Australia, there have been five distinct waves of transmission, defined by the predominant Omicron subvariant circulating (Figure 1). The first wave, driven by 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 (Figure 1). 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 (Figure 1).

As the pandemic has progressed, the proportion of cases reported through surveillance mechanisms 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, ICU or having died often lag weeks behind increases in infections in the community. This has made assessing the start of a new wave more complex, with the determination often now only possible several weeks after the wave has commenced.

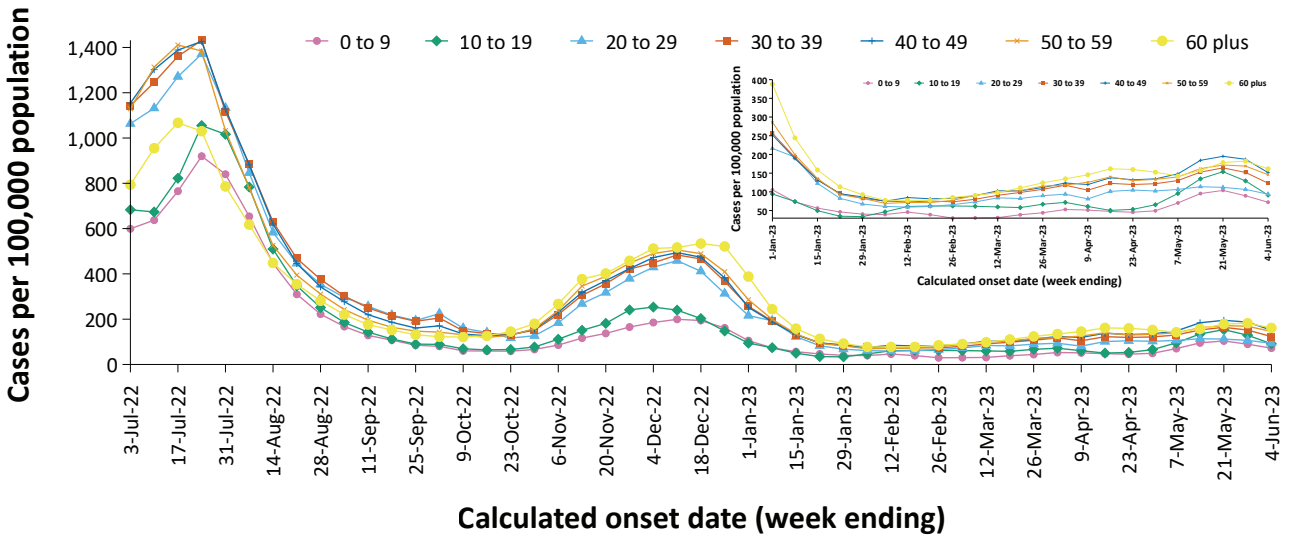
While the patterns of case notifications have changed compared to previous waves, nationally, there has been an increasing trend in

Figure 1: Confirmed and probable weekly COVID-19 notified cases by date of onset, Australia, 29 November 2021 – 4 June 2023[a]



a Source: NNDSS extract from 14 June 2023 for cases with an illness onset from 29 November 2021 to 4 June 2023.

Figure 2: Confirmed and probable COVID-19 notification rates for ten-year age groups by date of onset, Australia, 27 June 2022 – 4 June 2023[a,b]



a Source: NNDSS extract from 14 June 2023 for for cases with an illness onset from 27 June 2022 to 4 June 2023.

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

hospitalisation from mid-March 2023, reflecting the start of a fifth Omicron wave of COVID-19 transmission. Similarly, since early March 2023, there has been a gradual increasing trend in case notifications (Figure 1). As with the fourth Omicron wave, this fifth wave is being driven by a combination of existing and newly emerging recombinant Omicron subvariants.

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

Demographic features

(NNDSS)

Since the start of the fifth Omicron wave in early March 2023, there has been an overall increase in notification rates across all age groups. However, in the most recent fortnight (ending 4 June 2023) notification rates have started to stabilise across all age groups (Figure 2). The highest notification rates continue to be among adults aged 40 years and over (Figure 2). In the current reporting period, 8 May – 4 June 2023, the highest notification rate was observed among adults aged 90 years and over, whilst the lowest rates were among children aged nine years or less (Appendix A, Table A.1). For the entire Omicron wave to date (15 December 2021 – 4 June 2023), the highest notification rate has been in adults aged 20 to 29 years (Appendix A, Table A.1). For this age group, the weekly notification rate peaked in the week ending 9 January 2022 at approximately 5,800 cases per 100,000 population (not depicted).

Aboriginal and Torres Strait Islander persons

(NNDSS)

Overall, since the start of the pandemic, Indigenous status is unknown for approximately 13.0% of COVID-19 cases 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 4,292 new cases notified among Aboriginal and Torres Strait Islander people (Table 2). In the Omicron wave (15 December 2021 – 4 June 2023) there have been 416,207 cases notified among Aboriginal and Torres Strait Islander people, representing 3.7% of all cases (416,207/11,230,206) in the Omicron wave to date.

Table 2: Confirmed and probable cases of COVID-19 among Aboriginal and Torres Strait Islander peoples by jurisdiction and date of onset, Australia, 15 December 2021 – 4 June 2023[a,b,c]

Jurisdiction	8–14 May 2023	15–21 May 2023	22– 28 May 2023	29 May–4 June 2023	15 December 2021 – 4 June 2023 (Omicron wave to date)
ACT	11	18	18	12	4,250
NSW	475	539	517	380	137,361
NT	25	28	39	24	26,394
Qld	221	255	244	255	111,200
SA	63	67	60	49	23,789
Tas.	48	67	48	60	17,092
Vic.	107	124	118	68	36,175
WA	85	79	88	100	59,946
Australia	**1,035**	**1,177**	**1,132**	**948**	**416,207**

a Source: NNDSS extract from 14 June 2023 for cases with an illness onset from 15 December 2021 to 4 June 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 Cases are classified based on jurisdiction of notification not jurisdiction of residence. Some cases are notified to a different jurisdiction than their location of residence.

Table 3: COVID-19 cases among Aboriginal and Torres Strait Islander people by area of remoteness, Australia, 15 December 2021 – 4 June 2023[a]

Jurisdiction[b,c]	Major city	Inner regional	Outer regional	Remote[d]
ACT	4,201	35	12	1
NSW	73,747	44,476	15,271	3,116
NT	74	20	8,235	17,034
Qld	43,268	25,567	30,910	11,305
SA	12,888	2,565	4,965	3,222
Tas.	206	10,439	6,008	295
Vic.	20,620	11,661	3,837	19
WA	31,277	4,324	7,492	16,224
Australia	**186,281**	**99,087**	**76,730**	**51,216**

a Source: NNDSS extract from 14 June 2023 for cases with an illness onset from 15 December 2021 to 4 June 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 Cases are classified based on jurisdiction of notification not jurisdiction of residence. Some cases are notified to a different jurisdiction than their location of residence.

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

Table 4: Confirmed and probable COVID-19 cases in Aboriginal and Torres Strait Islander people by age and highest level of illness severity, Australia, 1 January 2020 to 4 June 2023[a,b]

Age group (years)	Fifth Omicron wave 1 March – 4 June 2023				Fourth Omicron wave 24 October 2022 – 28 February 2023				Third Omicron wave 15 June – 23 October 2022				Omicron wave to date 15 December 2021 – 4 June 2023				Pandemic to date 1 January 2020 – 4 June 2023			
	ICU[a]	Died[a]	ICU or died[a]	Rate ICU or died[b]	ICU[a]	Died[a]	ICU or died[a]	Rate ICU or died[b]	ICU[a]	Died[a]	ICU or died[a]	Rate ICU or died[b]	ICU[a]	Died[a]	ICU or died[a]	Rate ICU or died[b]	ICU[a]	Died[a]	ICU or died[a]	Rate ICU or died[b]
0 to 9	1	0	1	0.5	7	0	7	3.3	10	1	11	5.1	38	2	39	18.2	40	2	41	19.1
10 to 19	1	0	1	0.5	3	0	3	1.4	6	0	6	2.9	35	0	35	16.9	45	0	45	21.7
20 to 29	3	0	3	1.8	5	0	5	3.0	7	0	7	4.2	63	0	63	38.1	78	0	78	47.2
30 to 39	1	0	1	0.8	8	2	8	6.4	9	4	13	10.5	43	13	54	43.5	62	13	73	58.8
40 to 49	5	0	5	5.0	8	0	8	8.1	9	5	12	12.1	68	27	88	88.7	90	32	111	111.9
50 to 59	14	2	15	17.1	18	7	25	28.5	30	20	45	51.3	110	59	160	182.3	138	65	191	217.6
60 plus	22	23	43	50.1	26	47	70	81.6	37	69	100	116.6	181	265	413	481.4	212	280	451	525.7
All	**47**	**25**	**69**	**7.0**	**75**	**56**	**126**	**12.8**	**108**	**99**	**194**	**19.7**	**538**	**366**	**852**	**86.6**	**665**	**392**	**990**	**100.6**

a 'ICU' and 'died' are not mutually exclusive categories; 'died' can include cases who died with or without prior admission to ICU. Therefore, the number of cases admitted to ICU or having died will not equal the sum of cases in ICU or died.

b 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.

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, 54.9% (227,033/413,314) lived in a regional or remote area (Table 3). Most cases reported in outer regional and remote areas since the start of the Omicron wave were diagnosed using RATs, at 71.5% (54,835/76,730) and 72.6% (37,196/51,216), respectively. It should be noted that the reliance on RATs for diagnosing COVID-19 is greater in regional and remote areas than in major cities, resulting in a larger under-representation of cases in regional and remote areas than in major cities, due to the changes in reporting requirements of positive RATs.

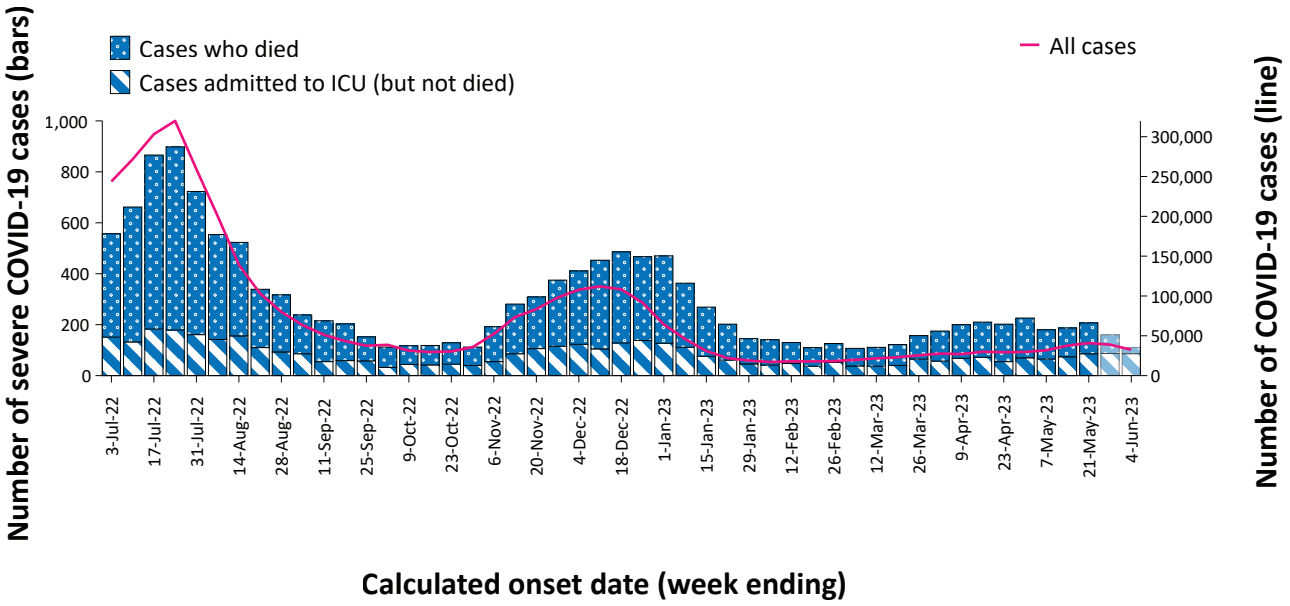
Nationally, there have been 392 COVID-19 associated deaths reported in Aboriginal and Torres Strait Islander people from the start of the pandemic to 4 June 2023 (Table 4). This comprises 125 from New South Wales; 124 from Queensland; 53 from the Northern Territory; 48 from Western Australia; 23 from South Australia; 15 from Victoria; and two each from the Australian Capital Territory and Tasmania. Additionally, 665 Aboriginal and Torres Strait Islander cases have been admitted to intensive care units (ICU) nationally. Since the start of the fifth Omicron wave, the notification rate, to NNDSS, of severe cases (measured as those who were admitted to ICU or died) in Aboriginal and Torres Strait Islander people is 7.0 per 100,000 population, compared to 12.8 per 100,000 population during the fourth wave and 19.7 per 100,000 population during the third wave (Table 4). It should be noted that ICU status in NNDSS is likely incomplete.

Severity

(NNDSS, FluCAN, SPRINT-SARI)

Given the delay between illness onset and severe illness, and to provide a more accurate

Figure 3: COVID-19 cases, deaths and ICU admissions, Australia, by date of onset, Australia, 27 June 2022 to 4 June 2023[a,b]



a Source: NNDSS extract from 14 June 2023 for cases with an illness onset from 27 June 2022 to 4 June 2023.

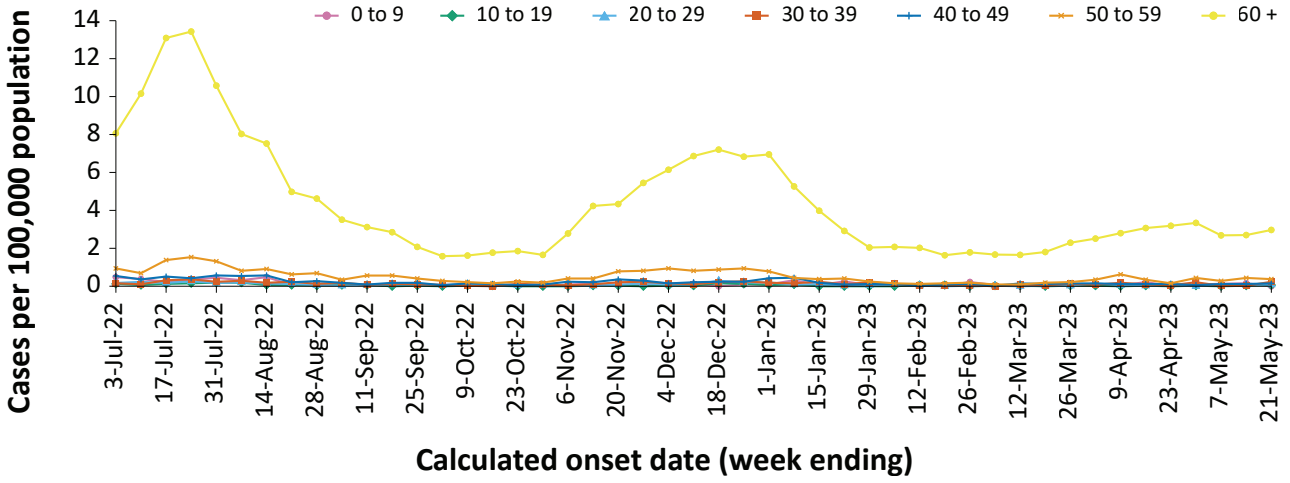
b The shaded bars at the right represent the most recent two reporting weeks and should be interpreted with caution, as cases with an illness onset in these weeks may not have yet developed severe disease.

assessment of severity, cases with an onset in the last two weeks have been excluded from analyses on the weekly rate of cases with severe illness (defined as cases admitted to ICU or died) and on the proportion of cases admitted to ICU or died.

Following the emergence of the Omicron variant, the number of cases with severe illness peaked in mid-January 2022, at approximately 1,200 severe cases per week (not depicted). Since this time there have been subsequent smaller peaks in severe illness, in the week ending 24 July 2022 at 898 severe cases per week and week ending 18 December 2022 at 486 severe cases per week. Since the start of the fifth Omicron wave, the number of cases with severe illness increased to over 220 severe cases per week in the week ending 30 April 2023 (Figure 3).

Rates of severe illness continue to be greater in older age groups, with the highest rates among those aged 60 years and older (Figure 4). Among this age group, there have been three notable peaks in severe illness since the emergence of Omicron: in the week ending 16 January 2022 (17.2 cases per 100,000 population; not depicted), in the week ending 24 July 2022 (13.3 cases per 100,000 population) and in the week ending 18 December 2022 (7.0 cases per 100,000 population). From the start of the fifth Omicron wave to the week ending 4 June 2023, the highest rates of severe illness among those aged 60 years and older was observed in the week ending 30 April 2023 at 3.3 cases per 100,000 population. In comparison, rates of severe illness in younger age groups have remained relatively low and stable throughout the Omicron waves, not surpassing three cases per 100,000 population per week over that period (Figure 4).

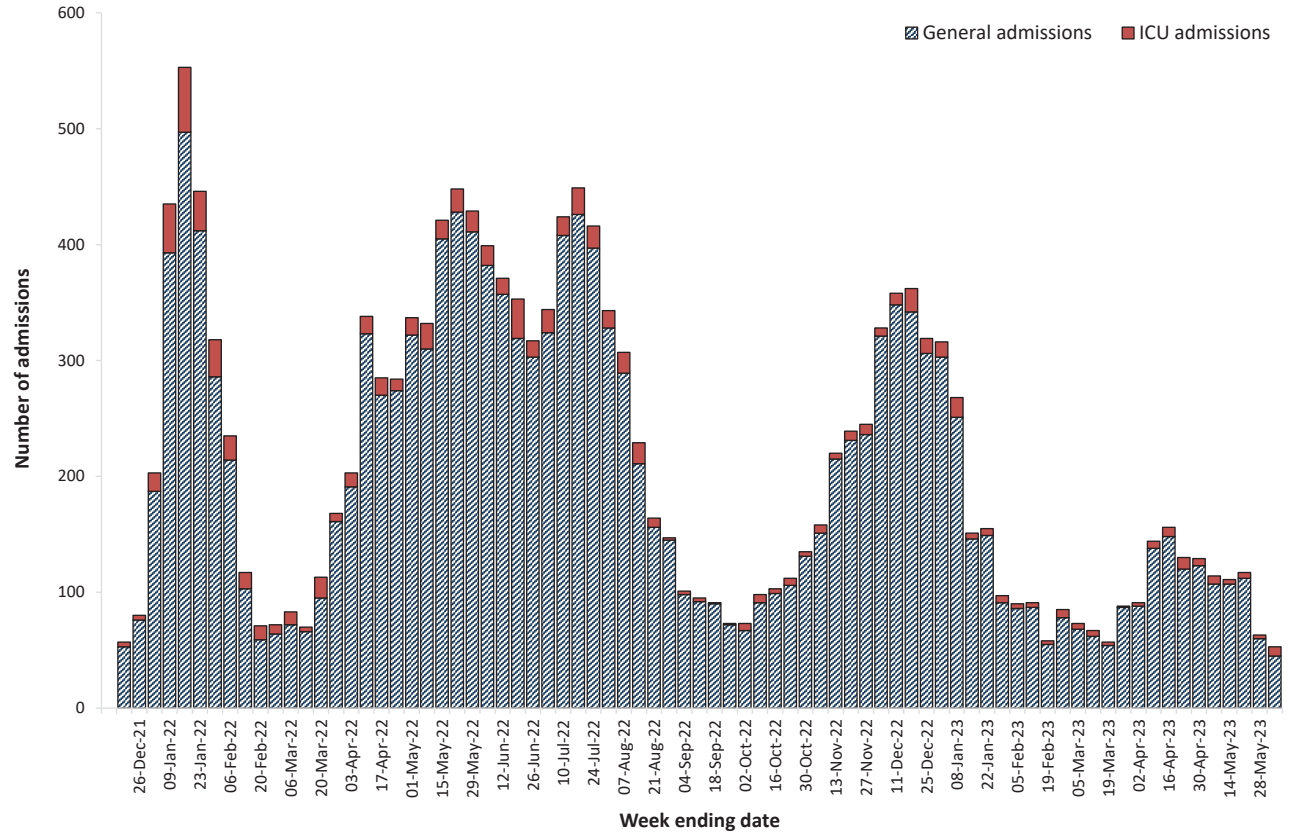
Figure 4: Age-specific rates of COVID-19 cases admitted to ICU or died, by date of onset, Australia, 27 June 2022 to 21 May 2023[a,b]



a Source: NNDSS extract from 14 June 2023 for cases with an illness onset from 27 June 2022 to 21 May 2023; cases with an illness onset in the last two weeks (27 March–4 June 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 – 4 June 2023[a]



a Source: FluCAN.[4]

Hospitalisation and ICU admissions

Influenza Complications Alert Network—FluCAN

Between 15 December 2021 and 4 June 2023, there were 16,175 hospital admissions with confirmed COVID-19 reported at Influenza Complications Alert Network (FluCAN) sentinel sites, including 5.5% (897/16,175) admitted directly to ICU (Figure 5). During the four-week reporting period (8 May – 4 June 2023) there were 344 admissions with COVID-19 reported at FluCAN sentinel sites, with 5.8% (20/344) admitted directly to ICU.

Since the start of the fifth Omicron wave (1 March 2023), there have been 1,378 patients with confirmed COVID-19 admitted to FluCAN sentinel sites, with weekly admissions peaking in the week ending 16 April 2023 (n = 156) (Figure 5). Of the patients admitted during the fifth Omicron wave, 43.5% (600/1,378) were children (< 16 years).

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

Between 15 December 2021 and 4 June 2023, there were 5,500 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). During this time, 61.1% (3,363/5,500) of patients were discharged home, 13.3 % (729/5,500) died in ICU and 5.3% (290/5,500) died within the general hospital ward. In the four-week reporting period (8 May – 4 June 2023), there were 134 adult patients (77 males, 57 females; median age: 66 years; interquartile range: 52.25–76 years) with COVID-19 admitted to ICU reported at SPRINT-SARI sentinel sites (Table 5).

Since the start of the Omicron wave (15 December 2021) to 4 June 2023, for patients admitted to SPRINT-SARI sentinel sites with COVID-19 (n = 5,500), the median length of stay in ICU was 3.3 days (range: 0–90.0 days);

Table 5: Patient outcomes for adult COVID-19 cases (aged greater than or equal to 18 years), Australia, 15 December 2021 – 4 June 2023[a]

Outcomes	Current reporting period 8 May – 4 June 2023 (n = 134)	Omicron wave to date 15 December 2021 – 4 June 2023 (n = 5,500)
Patient status		
Ongoing care in ICU[b]	44 (32.8%)	59 (1.1%)
Ongoing care in hospital ward	31 (23.1%)	90 (1.6%)
Transfer to other hospital/facility	0 (0%)	348 (6.3%)
Transfer to rehabilitation	0 (0%)	527 (9.6%)
Discharged home	44 (32.8%)	3,363 (61.1%)
Mortality - ICU	14 (10.4%)	729 (13.3%)
Mortality - hospital ward	1 (0.7%)	290 (5.3%)
Unknown	0 (0%)	71 (1.3%)
Missing[c]	0 (0%)	23 (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.

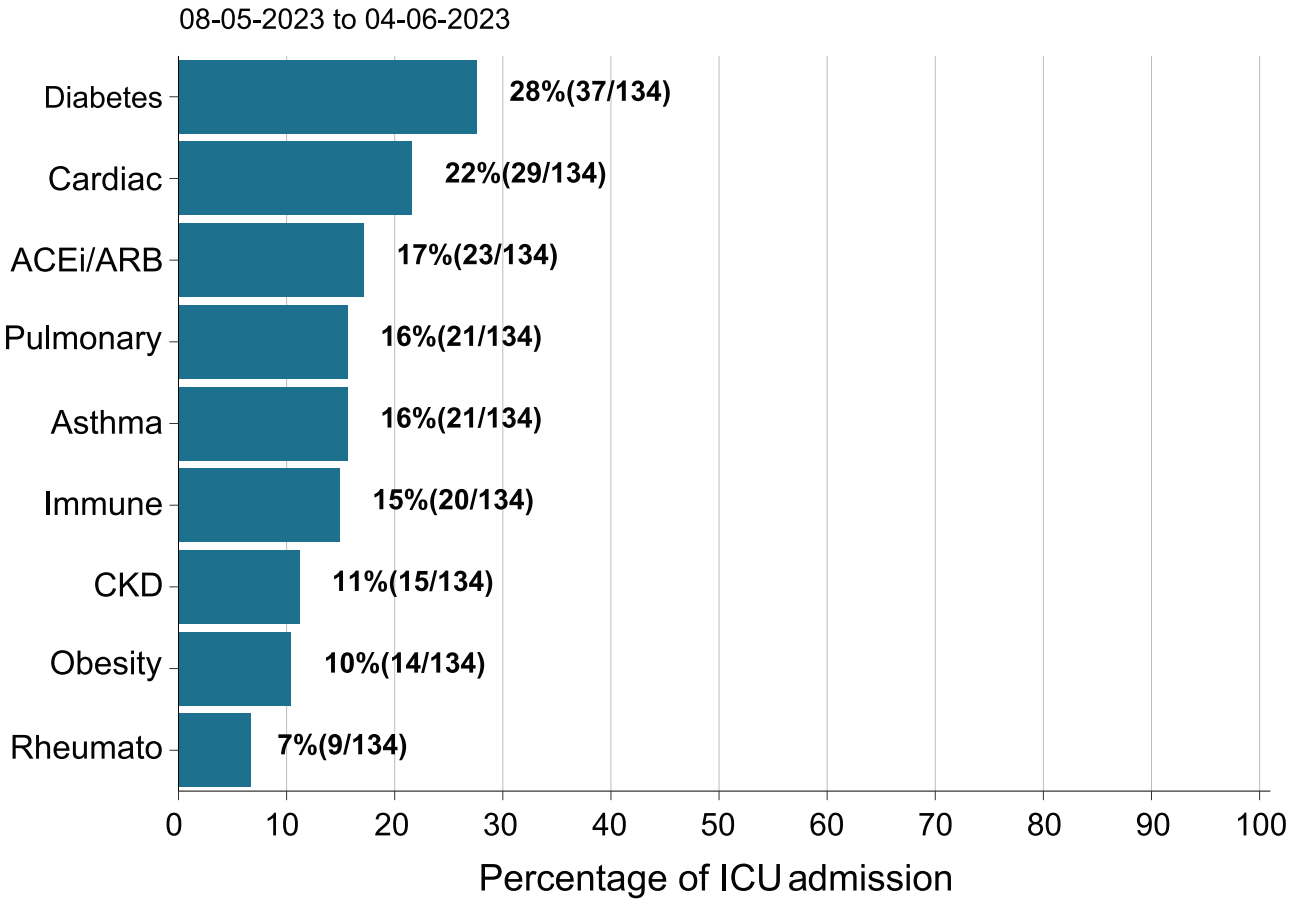
c Patients who were admitted to ICU/hospital wards for more than 90 days with no discharge information were treated as "missing data".

mean = 6.1 days (standard deviation, SD: 8.3), the median length of stay in hospital was 10.9 days (range: 0.1–89.2 days); mean = 15.5 days [SD: 14.4]) and the median duration of mechanical ventilation was 4.1 days (range: < 0.01–82.0 days); mean = 7.6 days [SD: 10.1]). During the four-week reporting period (8 May – 4 June 2023), for patients admitted to SPRINT-SARI sentinel sites with COVID-19 (n = 134), the median length of stay in ICU was 2.7 days (range: 0–17.2 days); mean = 3.7 days [SD: 3.4]), the median length of stay in hospital was 6.7 days (range: 0.9–37.1 days); mean = 7.9 days [SD: 6.1]) and the median duration of mechanical ventilation was 1.4 days (range: 0.3–11.7 days); mean = 3.0 days [SD: 3.0]).

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. In adult patients admitted to ICU with COVID-19 between 8 May and 4 June 2023, where comorbidity information was available, the most prevalent comorbidities were diabetes (27.6%) followed by chronic cardiac disease (21.6%) and past use of an angiotensin-converting enzyme (ACE) inhibitor or alpha-2 (A2) blocker (17.2%) (Figure 6). Of those adult patients admitted to ICU during the four-week reporting period, for whom comorbidity data was known, 33.6% (45/134) of adult ICU patients had three or more comorbidities.

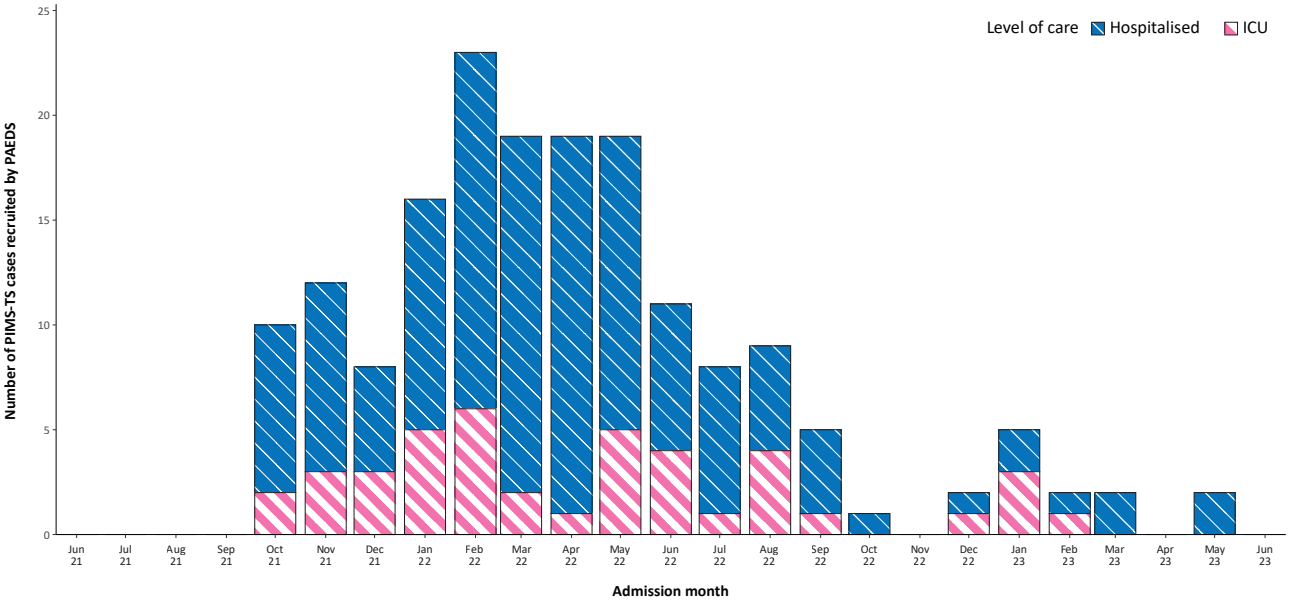
Figure 6: Prevalence of comorbidities for COVID-19 cases among admitted adult ICU patients (aged greater than or equal to 18 years), Australia, 8 May – 4 June 2023[a,b]



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; Pulmonary: chronic pulmonary disease (not including asthma); Immune: chronic immunosuppression; and Rheumato: rheumatologic disorder.

Figure 7: PIMS-TS cases reported to PAEDS, by sample month and level of care required, Australia, 1 June 2021 – 4 June 2023[a]



a Source: PAEDS.

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

Paediatric Active Enhanced Disease Surveillance

Since the start of the pandemic to 4 June 2023, there have been 177 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 two new cases reported in the last four weeks and a total of 11 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%; 93/177), followed by those aged 6 months to < 5 years (28%; 49/175). To date, there have been no PIMS-TS associated deaths.

COVID-19 deaths

From the start of the fifth Omicron wave (1 March 2023) to the week ending 4 June 2023, there have been 1,628 COVID-19-associated deaths notified. In total, there have been 21,391 COVID-19-associated deaths reported in NNDSS since the start of the pandemic (Table 6). The overall crude case fatality rate from the start of the fifth Omicron wave is 0.40%, which is higher than the fourth (0.34%) and third (0.21%) Omicron waves (Table 7). It should be noted that the current case fatality rate is likely to be overestimated due to changes in case ascertainment and underreporting of non-severe cases.

Table 6: Deaths associated with COVID-19 by reporting period, Australia, 1 January 2020 – 4 June 2023[a,b,c]

Jurisdiction[c]	Fifth Omicron wave 1 March – 4 June 2023	Fourth Omicron wave 24 October 2022 – 28 February 2023	Third Omicron wave 15 June – 23 October 2022	Omicron wave to date 15 December 2021 – 4 June 2023	Pandemic to date 1 January 2020 – 4 June 2023
ACT	15 (0.9%)	38 (1.0%)	86 (1.4%)	230 (1.2%)	245 (1.1%)
NSW	550 (33.8%)	1,064 (29.2%)	1,972 (32.3%)	6,413 (33.6%)	7,114 (33.3%)
NT	8 (0.5%)	14 (0.4%)	22 (0.4%)	100 (0.5%)	101 (0.5%)
Qld	287 (17.6%)	508 (13.9%)	1,079 (17.7%)	3,103 (16.2%)	3,111 (14.5%)
SA	127 (7.8%)	321 (8.8%)	491 (8.0%)	1,511 (7.9%)	1,521 (7.1%)
Tas.	39 (2.4%)	63 (1.7%)	101 (1.7%)	276 (1.4%)	291 (1.4%)
Vic.	501 (30.8%)	1,352 (37.1%)	1,999 (32.7%)	6,362 (33.3%)	7,884 (36.9%)
WA	101 (6.2%)	284 (7.8%)	362 (5.9%)	1,115 (5.8%)	1,124 (5.3%)
Australia	**1,628 (100.0%)**	**3,644 (100.0%)**	**6,112 (100.0%)**	**19,110 (100.0%)**	**21,391 (100.0%)**

a Source: NNDSS, extract from 14 June 2023 for deaths with an illness onset date to 4 June 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 21 May 2023[a,b,c,d]

Age group (years)	Fifth Omicron wave 1 March – 4 June 2023	Fourth Omicron wave 24 October 2022 – 28 February 2023	Third Omicron wave 15 June – 23 October 2022	Omicron to date 15 December 2021 – 21 May 2023	Delta 16 June – 14 December 2021	Pandemic to date 1 January 2020 – 21 May 2023
0–9	0.00%	0.00%	< 0.05%	< 0.05%	< 0.05%	< 0.05%
10–19	< 0.05%	< 0.05%	< 0.05%	< 0.05%	< 0.05%	< 0.05%
20–29	< 0.05%	< 0.05%	< 0.05%	< 0.05%	< 0.05%	< 0.05%
30–39	< 0.05%	< 0.05%	< 0.05%	< 0.05%	0.06%	< 0.05%
40–49	< 0.05%	< 0.05%	< 0.05%	< 0.05%	0.18%	< 0.05%
50–59	0.06%	0.06%	< 0.05%	< 0.05%	0.65%	0.05%
60 +	1.34%	1.13%	1.04%	1.03%	6.13%	1.14%
Unknown	0.00%	< 0.05%	0.00%	< 0.05%	0.00%	< 0.05%
Australia	**0.40%**	**0.34%**	**0.21%**	**0.17%**	**0.71%**	**0.19%**

a Source: NNDSS, extract from 14 June 2023 for deaths with an illness onset date to 21 May 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, noting these rates are likely overestimated due to underreporting of cases.

Genomic surveillance and virology

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

Nationally, 3.1% of COVID-19 cases have been sequenced since the start of the pandemic in January 2020, based on jurisdictional reporting (Table 8). Case numbers and sequencing proportion are primarily based on polymerase chain reaction (PCR) results only, as rapid antigen tests (RAT) do not allow for sequencing. However, some jurisdictions currently include both PCR and RAT positive tests in case numbers. Where jurisdictions are unable to separate PCR confirmed and RAT only cases, proportions are an estimate only. Since late 2022, referrals of positive PCR samples to sequencing laboratories have decreased significantly, resulting in changes to sequencing strategies across the country. Changes in case numbers and availability of testing may cause these proportions to fluctuate over the coming months.

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 Variants of Concern (VOC) by international organisations, including the World Health Organisation: Omicron (B.1.1.529). The Omicron variant displays a characteristic set of mutations, including several variations in the genomic region encoding the spike protein thought to have the potential to increase transmissibility and/or immune evasion.[7,8] Further information on variants is available in the Technical Supplement.[2]

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. urrently CH.1.1 (BA.2.75 sub-lineages), XBB* sub-lineages (recombinant of BJ.1 [BA.2.10] and BM.1.1.1 [BA.2.75.3]), including XBB.1.5, XBB.1.16 and XBB.1.9.1 and XBB.1.9.2), and XBC (recombinant of Delta (B.1.617.2) and Omicron (B.1.1.529) have emerged with strong signals both within and across different jurisdictions. All sub-lineages and recombinants are being monitored by AusTrakka and the CDGN VOC Working Group due to their increasing prevalence.

AusTrakka sub-lineage breakdown

From 8 May to 4 June 2023, there were 2,522 sequences uploaded to AusTrakka, with the most recent collection date of 29 May 2023. 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 two Omicron sub-lineages. 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.

Of the 2,522 sequences uploaded to AusTrakka in the last four weeks, most (89.8%; 2,266/2,522) were recombinant or recombinant sub-lineages; 10.0% (252/2,522) were BA.2 sub-sub-lineages; and 0.2% (4/2,522) were BA.5 or BA.5 sub-lineages. No BA.1, BA.3 or BA.4 sequences were identified within this period. Only two BA.2 sub-lineages (excluding BA.2.75) and one BA.5 sequence were identified. The predominant recombinant lineages being sequenced in this period are XBB*, with other newly emergent recombinants currently only accounting for a small minority.

Table 8: Australian SARS-CoV-2 genome sequences and proportion of positive cases sequenced, 8 May – 4 June 2023 and cumulative to date[a,b,c,d]

Measure	Reporting period 8 May – 4 June 2023	Cumulative 23 January 2020 – 4 June 2023
SARS-CoV-2 cases sequenced[a]	4,917	198,618
Percentage of positive cases sequenced[b]	7.8%	3.1%

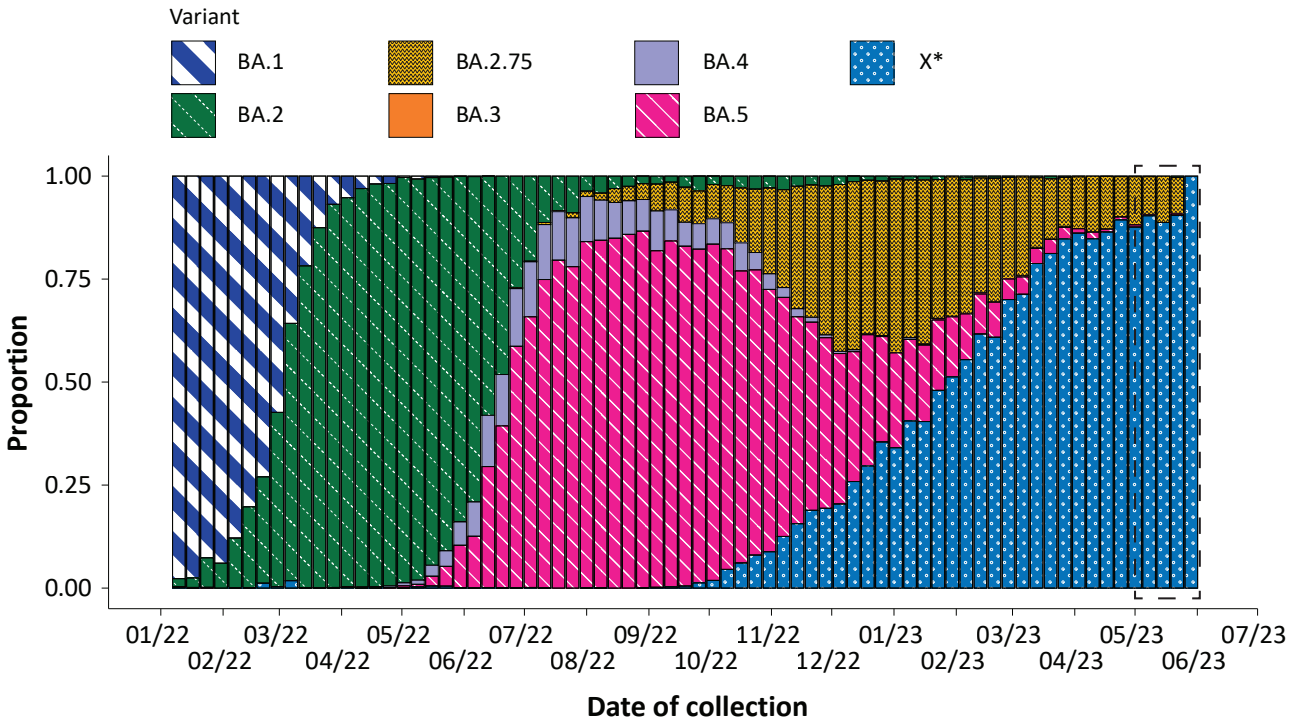
a Based on individual jurisdictional reports of sequences and case numbers. Calculations of the percentage of cases sequenced based on the number of sequences available in AusTrakka may not always be up to date, since this may include duplicate samples from cases and may not represent all available sequence data.

b Total SARS-CoV-2 case numbers as reported by jurisdictional laboratories based on PCR results only. Cases identified via rapid antigen testing are reported differently by each jurisdiction and cannot be followed up for sequencing. They are therefore not included in the sequencing proportions reported here. 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 Changes to reporting of case numbers in some jurisdictions have impacted the ability of laboratories to calculate proportion of sequenced case numbers for specified reporting periods.

d Data from the Australian Capital Territory was not available for this reporting period.

Figure 8: Omicron sub-lineage proportions in Australia since 1 January 2022 by sample collection date[a,b,c,d]

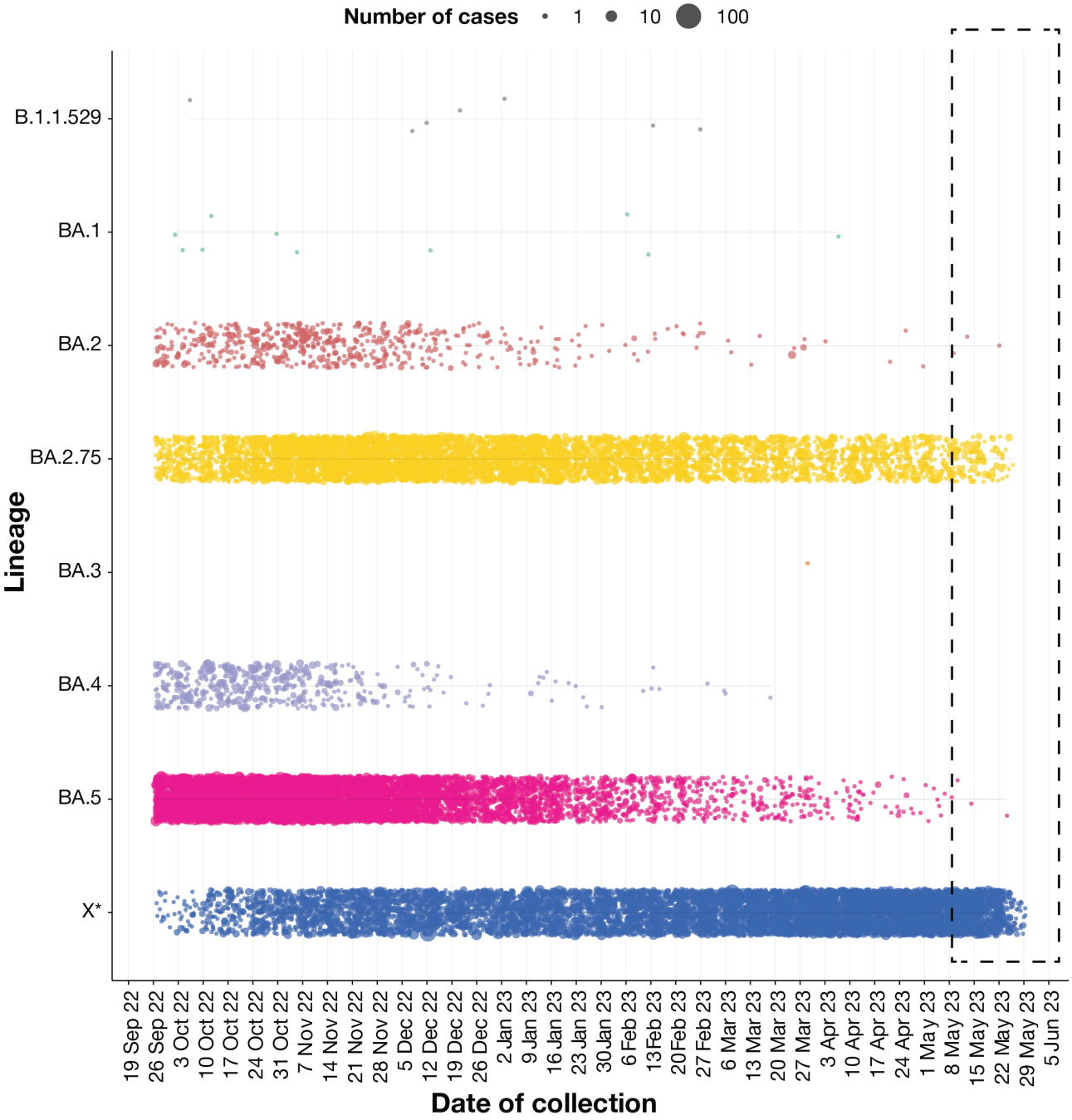


a Sequences in AusTrakka; aggregated by week.

b The current reporting period (8 May to 4 June 2023) is marked by the dashed lines.

c Proportions in the figure may not be representative when sequence numbers are small. Data may change week-to-week as sequences with older collection dates are uploaded. These numbers are not equivalent to number of cases, as there may be duplicates in the AusTrakka data. Newly designated Omicron sub-lineages have been collapsed into parent lineages BA.1, BA.2 (except BA.2.75, displayed separately), BA.3, BA.4 and BA.5; recombinants are designated by X*.

Figure 9: Samples in AusTrakka since 19 September 2022, by lineage and date of collection[a,b]



a The current reporting period (8 May to 4 June 2023) is marked by the dashed lines. The size of each dot is proportional to the number of sequences observed in each jurisdiction each day.

b Newly designated Omicron sub-lineages have been collapsed into parent lineages BA.1, BA.2 (except BA.2.75, displayed separately), BA.3, BA.4 and BA.5; recombinants are designated by X*.

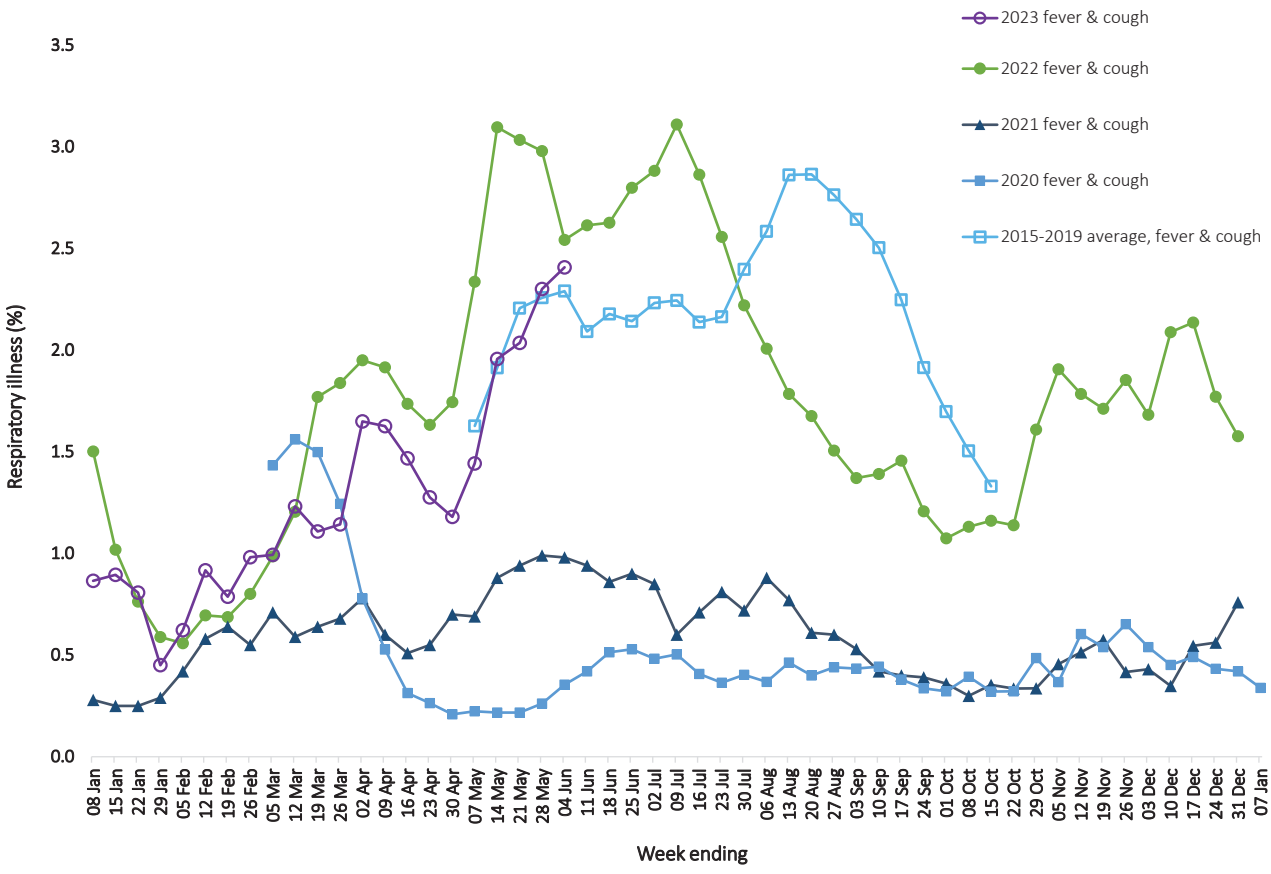
The sub-lineage breakdown of all Omicron sequences uploaded to AusTrakka since first identification in November 2021, to date: 17.6% (n = 26,250) are BA.1; 27.8% (n = 41,516) are BA.2 (excluding BA.2.75); 8.9% (n = 13,224) are BA.2.75; < 0.1% (n = 3) are BA.3; 3.4% (n = 5,046) are BA.4; 28.8% (n = 43,020) are BA.5; recombinants account for 13.7% (n=20,405) of all Omicron sequences to date. All sub-sub-lineages have been collapsed into respective major sub-lineages.

Acute respiratory illness
(FluTracking, ASPREN)

Based on self-reported FluTracking data,[9] there has been an overall increase in the prevalence of 'fever and cough' and 'runny nose and sore throat' symptoms in the community since late January 2023. Over the current period, the rate of 'fever and cough' has sharply increased but remains slightly lower than the rates observed during the same period in 2022 (Figure 10). Similarly, a large increase in the prevalence 'runny nose and sore throat' symptoms has been observed since late April 2023. In the current reporting period, the rate of 'runny nose and sore throat' symptoms has increased to 1.8% of participants with respiratory illness, exceeding the rate observed in 2022 for the same period. (Figure 11).

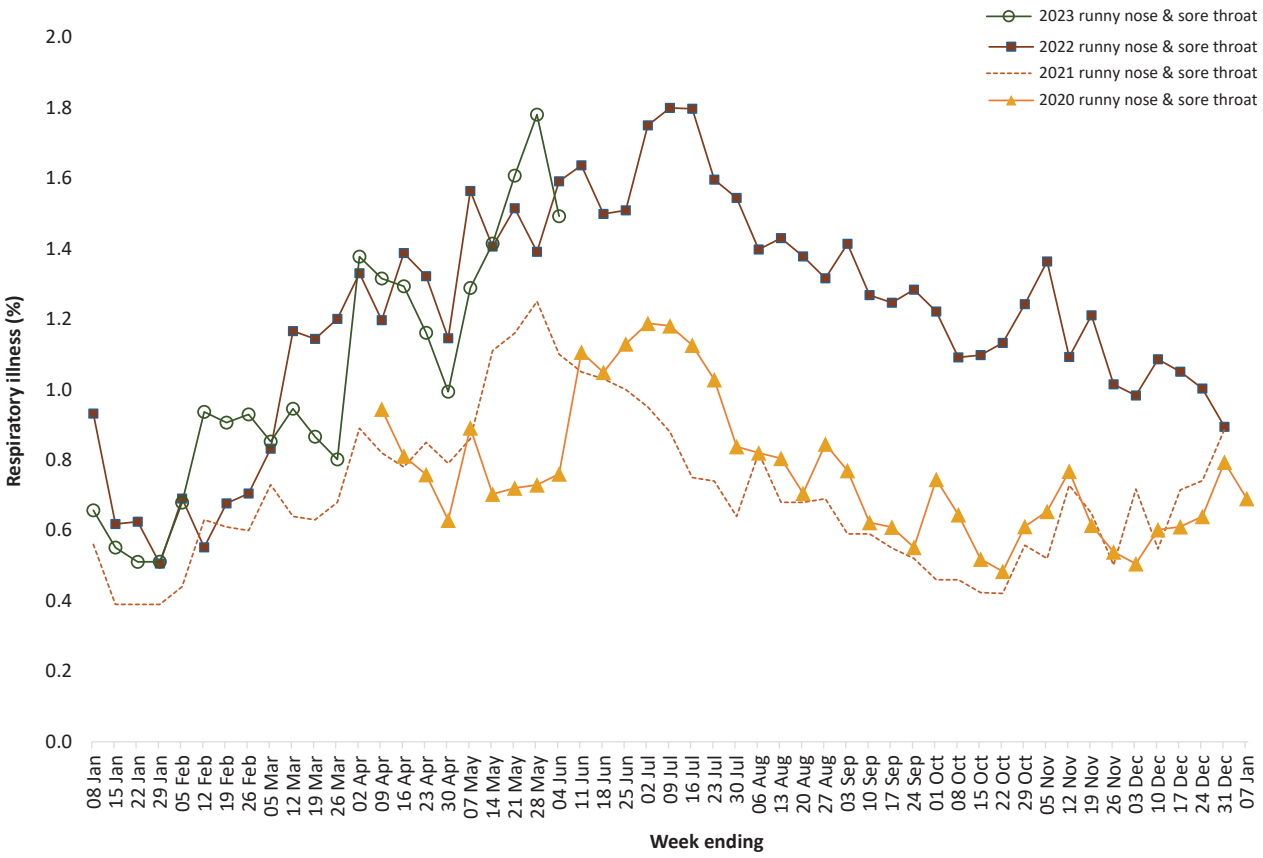
Over the reporting period, FluTracking data indicated that 9.5% of participants with 'fever and cough' were tested for SARS-CoV-2 with a PCR test and 81.6% were tested using a RAT (noting that in some instances RATs will be followed up by a PCR test for the same case). Of those with 'runny nose and sore throat', 2.7% were tested for SARS-CoV-2 using a PCR test and 56.9% were tested using a RAT. In the current reporting period, the percent positivity for 'fever and cough' symptoms decreased for PCR (24.8%) and for RAT (39.2%) compared to the previous reporting period. For 'runny nose and sore throat' symptoms, the percent positivity decreased for both PCR and RAT to 6.6% and 5.4%, respectively. 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

Figure 10: 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 – 4 June 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.

Figure 11: Weekly trends in runny nose and sore throat symptoms amongst FluTracking survey participants (age-standardised), Australia, 29 March 2020 – 4 June 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.

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 4 June 2023, of those presenting to sentinel ASPREN sites with influenza-like illness who were tested for respiratory viruses, 62.9% (224/356) tested positive, an increase of 7% compared with the previous four-week period. Among those positive, the most common viruses detected were rhinovirus (32.1%; 72/224), followed by SARS-CoV-2 (21.0%; 47/224) and influenza A (21.0%; 47/224).

Countries and territories in Australia's near region

According to WHO, countries and territories in the South-East Asia and Western Pacific regions reported 986,933 new cases and 2,065 deaths in the four-week period to 4 June 2023.[10] Compared with the previous four-week reporting period, new cases and deaths decreased in both the South-East Asia (change in cases: -77% & deaths: -35%) and the Western Pacific regions (change in cases: -5% & deaths: -19%).[10] In total, since the start of the pandemic, over 265 million cases and 1.2 million deaths have been reported in the two regions.[10]

In the four-week period 8 May to 4 June 2023, selected countries with the greatest changes in COVID-19 cases and deaths are highlighted in the South-East Asia and Western Pacific

Table 9: Cumulative cases and deaths, and new cases and deaths reported in the four-week period to 4 June 2023 for selected countries in Australia's near region according to WHO[a,b]

Country	Cumulative cases	New cases reported in the last 4 weeks	Change in new cases in the last 4 weeks[b]	Cumulative deaths	New deaths reported in the last 4 weeks	Change in new deaths in the last 4 weeks[b]
South-East Asia region						
India	44,991,582	21,952	-90%	531,880	200	-72%
Indonesia	6,808,537	21,183	-41%	161,789	330	-19%
Thailand	4,745,043	11,043	+119%	34,163	196	+626%
Myanmar	639,175	3,144	+63%	19,494	2	–
Bangladesh	2,039,639	1,301	+400%	29,448	2	–
Western Pacific region						
Republic of Korea	31,747,839	470,093	+29%	34,815	288	+37%
Singapore	2,474,308	82,538	-12%	1,722	0	–
Philippines	4,147,129	46,261	+166%	66,476	32	-41%
New Zealand	2,306,943	45,817	+4%	2,942	180	+140%
Australia	11,423,202	150,847	+30%	21,063	450	-15%

a Source: World Health Organization Coronavirus (COVID-19) Dashboard,[11] accessed 16 June 2023, for data until 4 June 2023.

b Percent change in the number of newly confirmed cases/deaths in the most recent four-week period compared to the four weeks prior.

regions (Table 9). In the previous four weeks, at the country level, the highest numbers of new cases were reported from the Republic of Korea (n = 470,093) and Australia (n = 150,847), with the highest proportional increase observed in Bangladesh (1,301 vs 260 new cases; +400%) (Table 9). During the four-week reporting period, the highest number of new deaths was reported from Australia (n = 450), followed by Indonesia (n = 330); the highest proportional increase in new deaths was observed in Thailand (+626%) (Table 9).

As of 4 June 2023, over 767 million COVID-19 cases and over 6.9 million deaths have been reported globally since the start of the pandemic, with a global case fatality rate (CFR) of approximately 0.90%. The two regions reporting the largest burden of disease over the past four weeks were the Western Pacific (54% of total cases) and Europe (24% of total cases).[10]

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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 – 4 June 2023[a,b,c,d]

Age group (years)	Four-week reporting period						Entire 'Omicron' wave to date					
	8 May – 4 June 2023						15 December 2021 – 4 June 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	5,622	5,235	11,272	350.3	345.3	361.2	513,543	487,693	1,120,803	31,994.4	32,169.0	35,910.1
10–19	7,634	7,824	16,148	467.7	508.4	509.2	649,486	689,916	1,474,606	39,793.4	44,827.9	46,500.2
20–29	4,663	9,023	14,694	264.7	534.7	426.1	788,452	961,103	1,873,863	44,765.4	56,956.6	54,334.9
30–39	7,040	14,239	22,491	374.2	742.5	592.0	809,386	1,007,336	1,961,921	43,018.0	52,527.6	51,640.0
40–49	7,648	14,990	23,862	465.5	891.7	717.9	671,035	847,715	1,638,803	40,846.8	50,428.8	49,304.7
50–59	7,119	12,423	20,666	454.1	767.3	648.5	543,543	671,887	1,302,092	34,670.3	41,498.9	40,859.0
60–69	6,463	9,048	16,155	477.7	627.6	578.1	392,787	453,698	899,363	29,031.8	31,470.4	32,181.9
70–79	5,426	5,863	11,686	559.2	559.6	579.1	249,233	254,213	528,134	25,683.9	24,263.1	26,169.6
80–89	3,611	4,533	8,482	897.3	910.0	941.9	111,322	125,893	246,742	27,661.4	25,274.3	27,398.9
90 +	1,253	2,488	3,940	1,652.2	1,791.1	1,834.7	28,513	52,997	84,266	37,598.2	38,152.6	39,240.2

a Source: NNDSS, extract from 14 June 2023 for notifications to 4 June 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.