

COVID-19 cases hospitalised

Recent trends

- Overall, the **proportion of cases** hospitalised, admitted to ICU or having died from COVID-19 has been lower during the current wave than the Delta wave (from 16 June 2021 to 14 December 2021).
 - This is likely due to a combination of the biological characteristics of the Omicron variant and increased rates of vaccination among the Australian population.
- However, the significant community transmission since mid-December has resulted in a large increase in case numbers and a corresponding increase in hospitalisations
 - Even with a small proportion of cases being admitted to hospital, the higher case numbers have resulted in a similar population rate of hospitalisation during the current wave than throughout the Delta wave.

Hospitalised only cases (not including ICU)

- There have been 13,462 cases recorded in NINDSS as being hospitalised only from 15 December 2021 (Table 1).
- Of these hospitalised cases, 27% were people aged 70 and over. This is higher than during the Delta wave, where 17% of the hospitalised cases were in people aged 70 and over (Table 2).
- The **proportion of cases** that are hospitalised appears lower during the Omicron wave, with 1.4% of confirmed cases hospitalised, compared to 7.2% of confirmed cases during the Delta wave.
- The **population hospitalisation rate** has increased in recent weeks and in older age groups, is higher than the rate seen throughout the Delta wave. This is not unexpected given the significantly higher number of cases seen in the Omicron outbreak compared to the Delta outbreak.
 - The highest COVID-19 hospitalisation rate is in people aged 90 and over, at 224 per 100,000 population.
 - This rate is twice that of the hospitalisation rate among people aged 90 and over during the Delta wave (111 per 100,000 population).

Cases in ICU

- There have been 642 cases recorded in NINDSS as having been admitted to ICU (but not having died) from 15 December 2021. Of these 35% were people aged 70 and over. During the Delta wave, 13% were people over the age of 70.
- The **proportion of cases** admitted to ICU appears lower during the Omicron wave; 0.1% of confirmed cases during the Omicron wave were admitted to ICU, compared to 1.0% of confirmed cases during the Delta wave.
- The **population rate of ICU admission** has increased in recent weeks, but currently overall remains lower than during the entirety of the Delta wave, at 2.5 per 100,000 population compared with 8.5 per 100,000 population in the Delta wave.
 - This rate will increase, however, as more cases in the current wave are admitted to ICU.
 - The population rate of ICU admission during the current outbreak has exceeded that of the Delta wave in people aged 80 and over.

Aboriginal and Torres Strait Islander population

- Since 15 December 2021, there have been 16 Aboriginal and Torres Strait Islander people reported to have been admitted to ICU and an additional 600 that are reported to have been hospitalised.

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- The age distribution of severe cases in Aboriginal and Torres Strait Islander people is consistent with the non-Indigenous population, with a higher proportion of cases in older age groups experiencing severe illness when compared to younger age groups (Table 4).
- The proportion of confirmed Aboriginal and Torres Strait Islander confirmed cases admitted to hospital and admitted to ICU during the Omicron wave is lower than during the Delta wave (hospital: 2.9% and 9.5%, respectively; ICU: 0.1% and 0.2%, respectively).
 - The proportion of Aboriginal and Torres Strait Islander cases that are admitted to hospital needs to be interpreted with caution, as the completeness of the Indigenous status field may be linked to hospitalisation, resulting in an overestimation of the population of Aboriginal and Torres Strait Islander cases that were hospitalised.
- The population rate of hospitalisation and ICU admission during the Omicron wave are also lower than during the Delta wave, but have been increasing in recent weeks.

Comorbidity

- Of the cases admitted to ICU (as reported by SPRINT SARI)¹, during the Omicron wave (from 15 December 2021 to 16 January 2022) aged 50 years and over 76% of cases had at least one comorbidity (Table 5).
 - This compares to the Delta wave (1 July to 14 December 2022) where 69% of the cases admitted to ICU over the age of 50 years had at least one comorbidity.
- For those aged less than 50 years, the majority of cases in ICU during both the Delta and Omicron waves had at least one comorbidity, with 54% and 57% of cases, respectively.
 - Listed comorbidities include cardiac disease, chronic respiratory condition, diabetes, obesity, chronic renal disease, chronic neurological condition, malignancy, chronic liver disease and immunosuppression.

Vaccination Status

- Of cases admitted to ICU (as reported by SPRINT SARI) during the Delta wave, 76% of those aged less than 50 were unvaccinated. During the Omicron wave the percentage of cases aged less than 50 years old admitted to ICU who had not received an effective vaccine dose reduced to 53% (Table 6).
 - Given the staged vaccination rollout in 2021, with older age groups being eligible for vaccination first, it is expected that a larger proportion of cases during the Delta wave, particularly in those aged under 50, are unvaccinated. Therefore, comparisons of vaccine effectiveness between the two waves should be undertaken with caution. For instance while there is a larger proportion of cases in ICU who are fully vaccinated in the Omicron wave compared to the Delta wave (46% vs. 5%), this is likely due to having a more vaccinated underlying population during the current wave rather than a difference in the effect of the vaccine on the two variants.
- Using data from NINDSS, the proportion of confirmed cases admitted to ICU or admitted to hospital during the current Omicron wave is much higher among unvaccinated cases than fully vaccinated cases, emphasising the continued importance of vaccination on preventing severe illness (Table 9).
 - Among cases aged under 50 years, the proportion of cases admitted to ICU during the Omicron wave is over 7 times as high in unvaccinated cases (0.14%) compared to fully vaccinated cases (0.16%).

¹ SPRINT-SARI is a sentinel system that collects detailed data on the characteristics and outcomes of interventions for patients admitted to ICUs or High Dependency Units with COVID-19 at participating sites across Australia.

- Among cases aged 50 years and over, the proportion of cases admitted to ICU during the Omicron wave is over 2.5 times as high in unvaccinated cases (0.7%) compared to fully vaccinated cases (0.2%).
 - The proportion of cases admitted to ICU but not having died is lower among people aged 50 and over partially as, tragically, a greater proportion of cases aged 50 and over die.

Data considerations

Comparing the Delta and current Omicron wave

- Making direct comparisons of the hospitalisation of COVID-19 cases during the Delta and current Omicron waves are difficult due to
 - A large difference in case incidence rate (824 per 100,000 population in the Delta wave, compared to 3,860 per 100,000 in the Omicron wave).
 - An increasing use of RAT for diagnosis (and corresponding decrease in case ascertainment)
 - Increasing rates of vaccination among the general population
 - The shorter time period in the Omicron wave to date compared to the Delta wave.
- The following aspects affect the accuracy and representativeness of the data reported:
 - The case data provided includes confirmed cases only. Cases that are positive on RAT and do not seek a confirmatory PCR test are not captured in the NINDSS currently.
 - Note hospitalisation is not always reflective of severe illness as cases may be hospitalised for reasons other than clinical COVID-19 related care
 - Hospitalisation and ICU status in NINDSS are likely incomplete, as in some jurisdictions they rely on manual data entry and timeliness can reduce in times of high case loads
 - Data from the NT are not available in NINDSS for cases notified since 10 January 2022. Due to system issues in the NT, they have been unable to send COVID-19 notifications to the NINDSS and are currently working on implementation of an electronic notification system to handle the increased numbers.
 - Data are incomplete from WA for cases notified since 10 January 2022.
 - The proportion of cases with an unknown Indigenous status has increased as case numbers have increased.
 - Indigenous status is more likely to be known for more severe cases, as hospital records can be used as a source of data on Indigenous status.
- Severity is reported with a 2 week delay to allow for the progression of disease.

Table 1: COVID-19 confirmed cases and rate per 100,000 population by age and highest level of illness severity, Australia, 16 June 2021 to 14 December 2021 (“Delta wave”)

Data source: National Interoperable Notifiable Disease Surveillance System (NINDSS) extracted 28 January 2022

Age group	Count					% of total cases by age group			Rate per 100,000 population			
	Not severe	Hospitalised only (not ICU or died)	ICU (but not died)	Died	Total cases	Hospitalised only (not ICU or died)	ICU (but not died)	Died	Hospitalised only (not ICU or died)	ICU (but not died)	Died	Total cases
0-4	13,393	497	9	0	13,899	3.6%	0.1%	0.0%	31.9	0.6	0.0	892.9
5-11	29,212	387	14	1	29,614	1.3%	<0.05%	<0.05%	17.0	0.6	0.0	1,300.9
12-15	11,850	307	15	1	12,173	2.5%	0.1%	<0.05%	24.7	1.2	0.1	978.6
16-17	5,513	175	15	0	5,703	3.1%	0.3%	0.0%	30.0	2.6	0.0	977.1
18-29	45,781	2,484	201	8	48,474	5.1%	0.4%	<0.05%	58.7	4.8	0.2	1,146.1
30-39	32,139	2,557	321	21	35,038	7.3%	0.9%	0.1%	68.0	8.5	0.6	932.3
40-49	22,929	2,336	380	45	25,690	9.1%	1.5%	0.2%	70.9	11.5	1.4	779.3
50-59	15,974	2,087	518	117	18,696	11.2%	2.8%	0.6%	66.9	16.6	3.7	599.1
60-69	8,874	1,744	431	203	11,252	15.5%	3.8%	1.8%	64.7	16.0	7.5	417.2
70-79	4,062	1,371	227	345	6,005	22.8%	3.8%	5.7%	72.9	12.1	18.4	319.5
80-89	1,564	982	51	407	3,004	32.7%	1.7%	13.5%	116.2	6.0	48.2	355.6
90+	383	235	2	203	823	28.6%	0.2%	24.7%	111.2	0.9	96.1	389.4
Unknown	1,343	0	0	0	1,343	0.0%	0.0%	0.0%	N/A	N/A	N/A	N/A
Total	193,017	15,162	2,184	1,351	211,714	7.2%	1.0%	0.6%	59.0	8.5	5.3	823.9

Note, given the different lengths of each outbreak, changes in the availability of vaccinations and the population vaccination rate and changes in case ascertainment between the outbreaks (particularly with lower case ascertainment during the current outbreak), the proportion of cases with severe disease and population rates of severe disease are not directly comparable between each wave.

Table 2: COVID-19 confirmed cases and rate per 100,000 population by age and highest level of illness severity, Australia, 15 December 2021 to 13 January 2022 (“Current Omicron wave”)

Data source: NINDSS extracted 28 January 2022

Age group	Count					% of total cases by age group			Rate per 100,000 population			
	Not severe	Hospitalised only (not ICU or died)	ICU (but not died)	Died	Total cases	Hospitalised only (not ICU or died)	ICU (but not died)	Died	Hospitalised only (not ICU or died)	ICU (but not died)	Died	Total cases
0-4	29,398	723	11	2	30,134	2.4%	<0.05%	<0.05%	46.4	0.7	0.1	1,935.9
5-11	54,497	358	5	0	54,860	0.7%	<0.05%	0.0%	15.7	0.2	0.0	2,409.9
12-15	31,774	174	1	0	31,949	0.5%	<0.05%	0.0%	14.0	0.1	0.0	2,568.5
16-17	24,692	173	4	0	24,869	0.7%	<0.05%	0.0%	29.6	0.7	0.0	4,260.9
18-29	348,859	2,678	41	4	351,582	0.8%	<0.05%	<0.05%	63.3	1.0	0.1	8,312.5
30-39	179,696	1,763	56	9	181,524	1.0%	<0.05%	<0.05%	46.9	1.5	0.2	4,830.1
40-49	116,353	1,245	59	10	117,667	1.1%	0.1%	<0.05%	37.8	1.8	0.3	3,569.5
50-59	95,129	1,332	85	28	96,574	1.4%	0.1%	<0.05%	42.7	2.7	0.9	3,094.5
60-69	54,025	1,419	155	57	55,656	2.5%	0.3%	0.1%	52.6	5.7	2.1	2,063.7
70-79	23,626	1,606	154	172	25,558	6.3%	0.6%	0.7%	85.4	8.2	9.2	1,359.8
80-89	8,626	1,517	64	312	10,519	14.4%	0.6%	3.0%	179.6	7.6	36.9	1,245.2
90+	2,429	474	7	193	3,103	15.3%	0.2%	6.2%	224.3	3.3	91.3	1,468.2
Unknown	7,862	0	0	0	7,862	0.0%	0.0%	0.0%	N/A	N/A	N/A	N/A
Total	976,966	13,462	642	787	991,857	1.4%	0.1%	0.1%	52.4	2.5	3.1	3,859.7

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.

Note, given the different lengths of each outbreak, changes in the availability of vaccinations and the population vaccination rate and changes in case ascertainment between the outbreaks (particularly with lower case ascertainment during the current outbreak), the proportion of cases with severe disease and population rates of severe disease are not directly comparable between each wave.

Table 3: COVID-19 confirmed cases in Aboriginal and Torres Strait Islander people and rate per 100,000 population by age and highest level of illness severity, Australia, 16 June 2021 to 14 December 2021 (“Delta wave”)

Data source: NINDSS extracted 28 January 2022

Age group	Count					% of total cases by age group			Rate per 100,000 population			
	Not severe	Hospitalised only (not ICU or died)	ICU (but not died)	Died	Total cases	Hospitalised only (not ICU or died)	ICU (but not died)	Died	Hospitalised only (not ICU or died)	ICU (but not died)	Died	Total cases
0-4	1,043	61	0	0	1,104	5.5%	0.0%	0.0%	65.0	0.0	0.0	1,176.6
5-11	1,787	47	2	0	1,836	2.6%	0.1%	0.0%	36.3	1.5	0.0	1,419.8
12-15	827	40	2	0	869	4.6%	0.2%	0.0%	58.5	2.9	0.0	1,270.1
16-17	356	27	3	0	386	7.0%	0.8%	0.0%	81.6	9.1	0.0	1,166.4
18-29	1,966	234	16	0	2,216	10.6%	0.7%	0.0%	139.7	9.6	0.0	1,323.1
30-39	1,120	170	19	0	1,309	13.0%	1.5%	0.0%	180.7	20.2	0.0	1,391.5
40-49	699	139	19	3	860	16.2%	2.2%	0.3%	157.7	21.6	3.4	975.7
50-59	420	83	22	6	531	15.6%	4.1%	1.1%	122.8	32.6	8.9	785.8
60 plus	215	102	19	14	350	29.1%	5.4%	4.0%	180.7	33.7	24.8	620.2
Unknown	30	0	0	0	30	0.0%	0.0%	0.0%	N/A	N/A	N/A	N/A
Total	8,463	903	102	23	9,491	9.5%	1.1%	0.2%	113.1	12.8	2.9	1,188.8

Note, given the different lengths of each outbreak, changes in the availability of vaccinations and the population vaccination rate and changes in case ascertainment between the outbreaks (particularly with lower case ascertainment during the current outbreak), the proportion of cases with severe disease and population rates of severe disease are not directly comparable between each wave.

Table 4: COVID-19 confirmed cases in Aboriginal and Torres Strait Islander people and rate per 100,000 population by age and highest level of illness severity, Australia, 15 December 2021 to 13 January 2022 (“Current Omicron wave”)

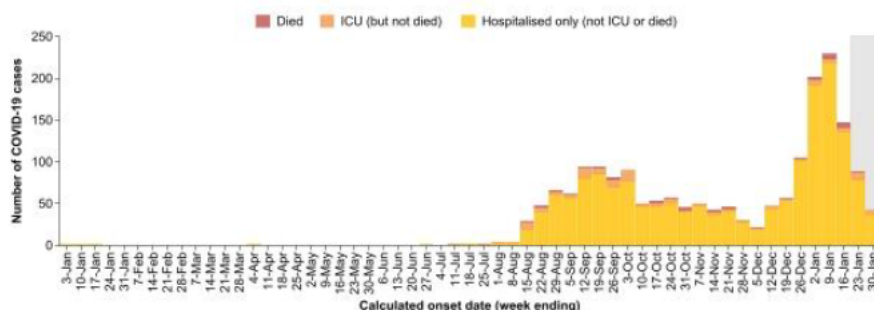
Data source: NINDSS extracted 28 January 2022

Age group	Count					% of total cases by age group			Rate per 100,000 population			
	Not severe	Hospitalised only (not ICU or died)	ICU (but not died)	Died	Total cases	Hospitalised only (not ICU or died)	ICU (but not died)	Died	Hospitalised only (not ICU or died)	ICU (but not died)	Died	Total cases
0-4	1,148	60	0	0	1,208	5.0%	0.0%	0.0%	63.9	0.0	0.0	1,287.4
5-11	1,878	36	0	0	1,914	1.9%	0.0%	0.0%	27.8	0.0	0.0	1,480.2
12-15	1,092	18	0	0	1,110	1.6%	0.0%	0.0%	26.3	0.0	0.0	1,622.3
16-17	768	14	1	0	783	1.8%	0.1%	0.0%	42.3	3.0	0.0	2,366.0
18-29	7,650	172	2	0	7,824	2.2%	<0.05%	0.0%	102.7	1.2	0.0	4,671.3
30-39	2,990	87	1	0	3,078	2.8%	<0.05%	0.0%	92.5	1.1	0.0	3,272.0
40-49	1,941	64	1	1	2,007	3.2%	<0.05%	<0.05%	72.6	1.1	1.1	2,277.1
50-59	1,356	47	4	0	1,407	3.3%	0.3%	0.0%	69.6	5.9	0.0	2,082.1
60 plus	895	102	7	13	1,017	10.0%	0.7%	1.3%	180.7	12.4	23.0	1,802.0
Unknown	32	0	0	0	32	0.0%	0.0%	0.0%	N/A	N/A	N/A	N/A
Total	19,750	600	16	14	20,380	2.9%	0.1%	0.1%	75.2	2.0	1.8	2,552.7

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.

Note, given the different lengths of each outbreak, changes in the availability of vaccinations and the population vaccination rate and changes in case ascertainment between the outbreaks (particularly with lower case ascertainment during the current outbreak), the proportion of cases with severe disease and population rates of severe disease are not directly comparable between each wave.

Figure 1: COVID-19 cases admitted to hospital, ICU or died in Aboriginal and Torres Strait Islander people by illness severity and week of onset, Australia, 28 December 2020 to 30 January 2022



Figures are presented using date of illness onset. The number of severe cases with an onset date in the most recent two reporting weeks is likely to be an underestimation, as there can be a delay between symptom onset and the development of severe disease.

Table 5: Crude rate of COVID-19 cases admitted to ICU or died by Indigenous status and age group, Australia, 1 January 2021 to 16 January 2022^{^*}

Age group	Crude notification rate (per 100,000 population)	
	Indigenous	Not Indigenous
0-17	2.5	1.1
18-59	23.2	10.7
60+	99.2	41.7
All	20.2	15.1

[^]Excludes cases for whom Indigenous status was unknown

^{*}Excludes cases with a symptom onset within the last two weeks given the delay between onset and severe illness. Cases with no symptoms reported have been excluded if the date of swab collection was within the previous two weeks.

Table 6. Number of comorbidities in COVID-19 cases admitted to ICU at participating SPRINT SARI sentinel sites by age group, 1 July 2021 – 16 January 2022[^]

Number of comorbidities	<50 years		≥50 years	
	1 Jul to 14 Dec 2021	15 Dec 2021 to 16 Jan 2022	1 Jul to 14 Dec 2021	15 Dec 2021 to 16 Jan 2022
None	346	47	356	73
	46%	43%	31%	24%
One or more	409	62	807	232
	54%	57%	69%	76%
Two or more	145	30	403	133
	19%	28%	35%	44%
Three or more	37	10	159	57
	5%	9%	14%	19%

[^]Excludes cases for which comorbidity information was unavailable, including 140 cases in the Delta wave and 11 cases in the Omicron wave for those aged under 50 years; and 237 cases in the Delta wave and 15 cases in the Omicron wave for those aged 50 years and over.

Table 7. COVID-19 cases admitted to ICU at participating SPRINT SARI sentinel sites by vaccination status and age group, 1 July 2021 – 16 January 2022

Vaccination Status	1 Jul to 14 Dec 2021			15 Dec 2021 to 16 Jan 2022		
	<50 year	≥50 years	Total	<50 year	≥50 years	Total
Fully vaccinated	20	95	115	40	162	202
	2%	7%	5%	33%	51%	46%
Partially vaccinated	60	199	259	5	10	15
	7%	14%	11%	4%	3%	3%
No effective vaccine	676	892	1,568	64	130	194
	76%	64%	68%	53%	41%	44%
Unknown	139	214	353	11	18	29
	16%	15%	15%	9%	6%	7%
Total	895	1,400	2,295	120	320	440

Table 8: Confirmed cases aged 12 years and over by vaccination status and highest level of illness severity, ACT, NSW, SA and QLD, 16 June 2021 to 14 December 2021 ("Delta wave")^{^*}

Data source: NINDSS extracted 28 January 2022

Vaccination status	Not severe (no hospital or death)	Hospitalised (no ICU or death)	ICU (but no death)	COVID-19 related death	Total cases
Cases aged 12 to 49					
Fully vaccinated	9,246 (95.6%)	415 (4.3%)	15 (0.16%)	0 (0.0%)	9,676
Partially vaccinated	4,797 (92.7%)	349 (6.8%)	25 (0.48%)	3 (0.06%)	5,174
No effective vaccination**	30,374 (87.6%)	3,816 (11.0%)	429 (1.24%)	48 (0.14%)	34,667
Unknown	6,151 (86.7%)	833 (11.7%)	110 (1.55%)	0 (0.0%)	7,094
Total	50,568 (89.3%)	5,413 (9.6%)	579 (1.02%)	51 (0.09%)	56,611
Cases aged 50 and over					
Fully vaccinated	3,410 (81.5%)	599 (14.3%)	62 (1.5%)	112 (2.7%)	4,183
Partially vaccinated	1,898 (77.0%)	439 (17.8%)	56 (2.27%)	72 (2.92%)	2,465
No effective vaccination**	4,521 (62.78%)	1,841 (25.6%)	460 (6.39%)	379 (5.26%)	7,201
Unknown	1,098 (62.3%)	509 (28.9%)	146 (8.3%)	9 (0.51%)	1,762
Total	10,927 (70.0%)	3,388 (21.7%)	724 (4.64%)	572 (3.67%)	15,611

** Includes cases without a vaccination and cases with symptom onset within 21 days of a single dose of a two dose regimen
[^]Note this information should be interpreted with caution as hospitalisation and ICU status in NINDSS may be incomplete and the definitions used by states are not consistent. There is also potential for severe cases to be overrepresented among confirmed case numbers, as severe cases are more likely to receive a PCR test.
Vaccination status is more likely to be known for severe cases
Only cases from ACT, NSW, SA and Qld are included as the proportion with unknown vaccination status in these jurisdictions is <25%.

Table 9: Confirmed cases aged 12 years and over by vaccination status and highest level of illness severity, NSW, SA and QLD, 15 December 2021 to 13 January 2022 ("Current Omicron wave") ^*

Data source: NINDSS extracted 28 January 2022

Vaccination status	Not severe (no hospital or death)	Hospitalised (no ICU or death)	ICU (but no death)	COVID-19 related death	Total cases
Cases aged 12 to 49					
Fully vaccinated	312,688 (98.9%)	3,395 (1.1%)	54 (0.02%)	9 (<0.01%)	316,146
Partially vaccinated	10,269 (98.6%)	143 (1.4%)	4 (0.04%)	0 (0.00%)	10,416
No effective vaccination**	12,002 (97.8%)	247 (2.0%)	17 (0.14%)	6 (0.05%)	12,272
Unknown	92,276 (98.7%)	1,198 (1.3%)	456 (0.05%)	2 (<0.01%)	93,522
Total	427,235 (98.8%)	4,983 (1.2%)	121 (0.03%)	17 (<0.01%)	432,356
Cases aged 50 and over					
Fully vaccinated	94,285 (95.8%)	3,627 (3.7%)	212 (0.2%)	348 (0.35%)	98,472
Partially vaccinated	1,526 (92.9%)	88 (5.4%)	9 (0.6%)	20 (1.22%)	1,643
No effective vaccination**	2,881 (88.4%)	245 (7.8%)	23 (0.7%)	94 (2.90%)	3,243
Unknown	18,184 (95.3%)	787 (4.1%)	94 (0.5%)	25 (0.13%)	19,090
Total	116,878 (95.5%)	4,747 (3.9%)	338 (0.28%)	487 (0.04%)	122,448

** Includes cases without a vaccination and cases with symptom onset within 21 days of a single dose of a two dose regimen

*Note this information should be interpreted with caution as hospitalisation and ICU status in NINDSS may be incomplete and the definitions used by states are not consistent. There is also potential for severe cases to be overrepresented among confirmed case numbers, as severe cases are more likely to receive a PCR test.

Vaccination status is more likely to be known for severe cases

Only cases from NSW, SA and Qld are included as the proportion with unknown vaccination status in these jurisdictions is <25%.

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