

SENATE SELECT COMMITTEE
~~January-February~~ 2022

FAS BRIEF – KEY INFORMATION

OHPR Brief 15
TIRM: D22-165510

**Analysis of Omicron cases:
Including enhanced data on ICU hospitalisation**

s22
Omicron case brief

Suggest we combine with other

KEY FACTS

National Interoperable Notifiable Disease Surveillance System (NINDSS)

- As at 1 February 2022, there have been 11,672 confirmed Omicron variant cases officially reported in Australia since the first case was reported on 27 November 2021
 - Information on 70% (8,183/11,672) of confirmed Omicron cases is available in NINDSS
- Of all Omicron cases reported in NINDSS, 113 cases have died, an additional 306 have been admitted to ICU and 705 have been admitted to hospital (and not admitted to ICU or died).
 - Excluding cases with an onset date in the last two weeks (to allow time for severe illness to develop), 1.3% of confirmed Omicron cases have died, an additional 3.6% have been admitted to ICU and 8.5% have been admitted to hospital (Table 2).
 - The proportion of cases admitted to hospital or ICU or to have died is much higher among confirmed Omicron cases than all confirmed cases in the current wave (estimated using cases onset since the 15 December 2021). This is likely due to prioritised sampling of severe cases for sequencing.
- The proportion of Omicron cases who have died is over 2.5 times higher in unvaccinated cases (3.5%) compared to fully vaccinated cases (1.3%) emphasising the continued importance of vaccination on preventing severe illness (Table 3).
 - This must be interpreted with caution as severe cases are more likely to be sequenced.

Data considerations

- Data are based on confirmed cases reported to the National Interoperable Notifiable Diseases Surveillance System (NINDSS) that were extracted on 1 February 2022.
- The following aspects affect the accuracy and representativeness of the data reported:
 - **Sequenced cases are not representative of all cases**
 - The case data provided only includes cases confirmed to have the Omicron variant through sequencing
 - Sequencing requires cases to have been PCR tested. Cases that are positive on RAT and do not have a confirmatory PCR test are not captured in the NINDSS currently.

- Given the resources required to sequence cases, not all cases are sequenced.
- Since November 2021, only 1.0% of confirmed cases reported to NINDSS have had sequencing information.
- Each jurisdiction has different guidelines for prioritising case sequencing.
- In general, these guidelines recommend prioritising overseas acquired cases, severe cases and cases without a known epidemiological link for sequencing.
- 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.
- Severity is reported with a 2 week delay to allow for the progression of disease.

SPRINT-SARI

- Preliminary analysis from SPRINT-SARI data suggests that the profile of people being admitted to ICU with COVID-19 attributed to Omicron differs slightly from those admitted as a result of Delta infection.
- Consistent with previous analyses, it is clear that unvaccinated individuals are at a greater risk of poor health outcomes requiring management and admission to ICU. This is the case regardless of age or which strain of COVID-19 people are infected with
 - During the Omicron wave, of those aged under 50 years, 67% of ICU admissions could have been prevented by being fully vaccinated, compared to 49% of those aged 50 years and over.
 - For the Delta wave, 98% of ICU admissions could have been avoided if fully vaccinated, compared to 93% for those aged 50 years and over.
- *Public health implications and messaging:*
 - Continued vaccination uptake, including boosters, is important, especially among those under 50 years of age
 - In addition to maintaining high levels of vaccination among those aged over 50 years, earlier treatment options should be considered, especially among those with comorbidities who are at increased risk of ICU admission and poor health outcomes.

Data considerations

- SPRINT-SARI data extracted on 18 January 2022 and represents cases with an ICU admission date of 1 July 2021 to 16 January 2022.
 - 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.
 - In the absence of comprehensive genetic sequencing data capture, timeframe has been used as a proxy for the 'Delta wave' and 'Omicron wave' respectively. For the purposes of this analysis, ICU admission dates from 1 July to 14 December 2021 are considered to be predominantly driven by Delta. Those with admission dates after 14 December 2021 are considered most likely to be driven by the Omicron strain.

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Omicron severity and transmissibility compared with Delta international evidence

- Evidence suggests there is a 50–70% reduction in hospital admissions for Omicron compared with Delta (UKHSA Technical briefing #33).
 - In addition, there is an estimated 81% reduction in hospitalisation risk after three doses of vaccine, compared to unvaccinated Omicron cases.
- Preliminary evidence indicates that Omicron is substantially more transmissible than Delta in populations with a high previous exposure to COVID-19 and/or high vaccination coverage suggesting escape from vaccine and/or infection derived immunity.
 - In the UK, transmission rates are higher for Omicron than Delta, particularly for contacts outside the household; 37.3% of named Omicron close contacts were outside of the household compared to Delta (20.8%) (UKHSA Technical Briefing #31)
- In addition, 19% of Omicron index cases gave rise to a secondary household case in comparison to 8.3% of Delta index cases (UKHSA Technical Briefing #31).

s22 Suggest adding to s22's brief or the FAS brief on Omicron severity

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THE FREEDOM OF INFORMATION ACT 1982
BY THE DEPARTMENT OF HEALTH

BACKGROUND

SPRINT-SARI Supporting data

Vaccination Status

Of cases admitted to ICU from 1 July to 14 December 2021 (representing the Delta wave), 76% of those aged less than 50 were unvaccinated. This trend has continued during the current wave, with the majority (53%) of cases aged less than 50 having not received an effective vaccine dose (Table 1).

- 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%), reflecting high-levels of vaccination rates among the general population.

Comorbidities

During the Delta wave, of cases aged 50 years and over, 69% had at least one of the specified comorbidities; and in the current wave, 76% of cases 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.

Deaths

Hospitalisation outcome was available for 90% (2,070/2,295) of cases admitted to ICU between 1 July and 14 December 2021, and of these 17% (345/2,070) of cases were reported to have died. Where comorbidity information was available, 81% of those who died had at least one of the specified comorbidities.

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ATTACHMENTS

Attachment A – NINDSS

- Table 1: Confirmed Omicron cases by jurisdiction and age group
- Table 2: Confirmed Omicron cases by age and highest level of illness severity, Australia, cases with an onset to 17 January 2022 (two weeks delay)
- Table 3: Confirmed Omicron cases aged 12 years and over by vaccination status and highest level of illness severity, Australia, cases with an onset to 17 January 2022 (two weeks delay)

Attachment B – SPRINT-SARI

- Table 4. COVID-19 cases admitted to ICU at participating SPRINT SARI sentinel sites by vaccination status and age group, 1 July 2021 – 16 January 2022
- Table 5. 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
- Table 6. Number of comorbidities in COVID-19 cases who died at participating SPRINT SARI sentinel sites, 1 July 2021 – 14 December 2021

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ATTACHMENT A

NINDSS

Table 1a: Confirmed Omicron cases in NINDSS by jurisdiction and age group, to 31 January 2022

Data source: NINDSS, extracted 1 February 2022

	ACT	NSW	NT	Qld	SA	Vic	WA	Total
0-4	18 (4%)	55 (3%)	1 (4%)	84 (2%)	64 (8%)	1 (0.5%)	3 (4%)	226 (3%)
5-11	16 (3%)	49 (2%)	2 (7%)	112 (3%)	30 (4%)	8 (4%)	2 (2%)	219 (3%)
12-15	5 (1%)	51 (2%)	1 (4%)	104 (2%)	14 (2%)	4 (2%)	2 (2%)	181 (2%)
16-17	5 (1%)	28 (1%)	0 (0%)	91 (2%)	10 (1%)	0 (0%)	1 (1%)	135 (7%)
18-29				1,624 (37%)			31 (37%)	
	176 (36%)	823 (38%)	9 (32%)	176 (23%)	74 (36%)			2,913 (36%)
30-39							22 (27%)	
	110 (23%)	265 (12%)	4 (14%)	798 (18%)	122 (16%)	53 (26%)		1,374 (17%)
40-49							13 (16%)	
	50 (10%)	177 (8%)	3 (11%)	542 (12%)	73 (9%)	27 (13%)		885 (11%)
50-59							4 (5%)	
	35 (7%)	168 (8%)	5 (18%)	448 (10%)	60 (8%)	20 (10%)		740 (9%)
60-69							2 (2%)	
	28 (6%)	183 (8%)	2 (7%)	304 (7%)	75 (10%)	10 (5%)		604 (7%)
70-79							2 (2%)	
	21 (4%)	198 (9%)	1 (4%)	184 (4%)	65 (8%)	6 (3%)		477 (6%)
80-89							1 (1%)	
	18 (4%)	133 (6%)	0 (0%)	120 (3%)	58 (8%)	2 (1%)		332 (4%)
90+							0 (0%)	
	4 (1%)	30 (1%)	0 (0%)	36 (1%)	23 (3%)	0 (0%)		93 (1%)
Total	486	2,160	28	4,447	770	205	83	8,179

Table 1b: All confirmed cases in NINDSS by jurisdiction and age group, 15 December 2021 to 31 January 2022

Data source: NINDSS, extracted 1 February 2022

	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Total
0-4	1,194 (5%)	28,394 (5%)	48 (2%)	7,544 (3%)	3,924 (4%)	518 (4%)	15,948 (4%)	5 (3%)	57,575 (4%)
5-11	1,865 (7%)	45,704 (8%)	112 (5%)	15,627 (5%)	6,250 (7%)	515 (4%)	26,977 (6%)	2 (1%)	97,052 (7%)
12-15	854 (3%)	25,109 (4%)	46 (2%)	10,307 (4%)	3,601 (4%)	301 (2%)	12,397 (3%)	3 (2%)	52,618 (4%)
16-17	682 (3%)	17,061 (3%)	40 (2%)	6,761 (2%)	2,681 (3%)	316 (2%)	8847 (2%)	1 (1%)	36,389 (2%)
18-29	9,254 (36%)	164,037 (27%)	1,081 (48%)	91,991 (31%)	28,096 (31%)	5,915 (42%)	144,860 (33%)	61 (42%)	445,295 (30%)
30-39	5,176 (20%)	105,973 (18%)	455 (20%)	56,178 (19%)	16,316 (18%)	2,586 (18%)	82,791 (19%)	35 (24%)	269,510 (18%)
40-49	2,898 (11%)	77,854 (13%)	213 (9%)	41,600 (14%)	11,137 (12%)	1,322 (9%)	51,380 (12%)	17 (12%)	186,421 (13%)
50-59	2,105 (8%)	62,301 (10%)	165 (7%)	31,798 (11%)	9,405 (10%)	1181 (8%)	41,120 (9%)	11 (7%)	148,086 (10%)
60-69	1,129 (4%)	40,943 (7%)	57 (3%)	18,103 (6%)	5,621 (6%)	742 (5%)	24,939 (6%)	5 (3%)	91,539 (6%)
70-79	499 (2%)	20,534 (3%)	20 (1%)	8,253 (3%)	2,642 (3%)	388 (3%)	11,921 (6%)	6 (4%)	44,263 (3%)
80-89	221 (1%)	8,549 (1%)	7 (<1%)	3,273 (1%)	1,322 (1%)	146 (1%)	4,973 (1%)	1 (1%)	18,492 (1%)
90+	70 (<1%)	2,537 (<1%)	0 (0%)	1,121 (<1%)	560 (1%)	58 (<1%)	1,301 (0.3%)	0 (0%)	5,647 (0.4%)
Unknown	0 (0%)	122 (<1%)	1 (0.04%)	1,475 (1%)	89 (0.1%)	4 (0.03%)	6161 (1%)	0 (0%)	7,852 (0.5%)
Total	25,947 (100%)	599,118 (100%)	2,245 (100%)	294,031 (100%)	916,44 (100%)	13,992 (100%)	433,615 (100%)	147 (100%)	1,460,739 (100%)

Table 2a: Confirmed Omicron cases by age and highest level of illness severity, Australia, cases with an onset to 4 January 2022 (two weeks delay) ^*

Data source: NINDSS, extracted 1 February 2022

Age group	Count					% of total cases by age group		
	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
0-4	184	23	2	1	210	11.0%	1.0%	0.5%
5-11	197	7	1	0	205	3.4%	0.5%	0.0%
12-15	165	5	0	0	170	2.9%	0.0%	0.0%
16-17	127	1	1	0	129	0.8%	0.8%	0.0%
18-29	2,692	143	12	1	2,848	5.0%	0.4%	<0.05%
30-39	1,198	83	18	5	1,304	6.4%	1.4%	0.4%
40-49	757	47	28	3	835	5.6%	3.4%	0.4%
50-59	583	60	43	11	697	8.6%	6.2%	1.6%
60-69	399	69	59	15	542	12.7%	10.9%	2.8%
70-79	246	84	72	28	430	19.5%	16.7%	6.5%
80-89	123	103	39	23	288	35.8%	13.5%	8.0%
90+	37	31	2	13	83	37.3%	2.4%	15.7%
Unknown	0	0	0	0	0	NA	NA	NA
Total	6,708	656	277	100	7,741	8.5%	3.6%	1.3%

^Given the delay between illness onset and severe illness, to provide a more accurate assessment of the highest level of severity, cases with an onset in the last two weeks were excluded from the analysis.

*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 omicron case numbers, as severe cases are more likely to be sequenced.

Table 2b: All confirmed cases by age and highest level of illness severity, Australia, cases with an onset from 15 December 2021 to 17 January 2022 (two weeks delay) ^*

Data source: NINDSS, extracted 1 February 2022

Age group	Count					% of total cases by age group		
	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
0-4	37,435	887	14	2	38,338	2.3%	<0.05%	<0.05%
5-11	67,101	433	7	0	67,541	0.6%	<0.05%	0.0%
12-15	38,398	226	1	0	38,625	0.6%	<0.05%	0.0%
16-17	28,478	212	5	0	28,695	0.7%	<0.05%	0.0%
18-29	380,626	3,156	53	4	383,839	0.8%	<0.05%	<0.05%
30-39	208,440	2,134	70	14	210,658	1.0%	<0.05%	<0.05%
40-49	139,102	1,550	81	13	140,746	1.1%	0.1%	<0.05%
50-59	112,494	1,666	118	37	114,315	1.5%	0.1%	<0.05%
60-69	65,713	1,837	196	76	67,822	2.7%	0.3%	0.1%
70-79	29,209	2,077	198	235	31,719	6.5%	0.6%	0.7%
80-89	10,570	1,977	79	418	13,044	15.2%	0.6%	3.2%
90+	2,990	625	10	265	3,890	16.1%	0.3%	6.8%
Unknown	7,738	14	0	0	7,752	0.2%	0.0%	0.0%
Total	1,128,294	16,794	832	1,064	1,146,984	1.5%	0.1%	0.1%

^aGiven the delay between illness onset and severe illness, to provide a more accurate assessment of the highest level of severity, cases with an onset in the last two weeks were excluded from the analysis.

^{*}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.

Table 3a: Confirmed Omicron cases aged 12 years and over by vaccination status and highest level of illness severity, Australia, cases with an onset to 17 January 2022 (two weeks delay) ^{^*}

Data source: NINDSS, extracted 1 February 2022

Vaccination status	Not severe (no hospital or death)	Hospitalised (no ICU or death)	ICU (but no death)	COVID-19 related death	Total cases
Fully vaccinated	4,359 (86.4%)	436 (8.6%)	185 (3.7%)	66 (1.3%)	5,046
Partially vaccinated	318 (87.1%)	32 (8.8%)	9 (2.5%)	6 (1.6%)	365
No effective vaccination**	423 (87.8%)	32 (6.6%)	10 (2.1%)	17 (3.5%)	482
Unknown	1,227 (85.6%)	126 (8.8%)	70 (4.9%)	10 (0.7%)	1,433
Total	6,327 (86.4%)	626 (8.5%)	274 (3.7%)	99 (1.4%)	7,326

^{**} 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 omicron case numbers, as severe cases are more likely to be sequenced. Vaccination status is more likely to be known for severe cases

Table 3b: All confirmed cases aged 12 years and over by vaccination status and highest level of illness severity, NSW, SA and QLD, cases with an onset from 15 December 2021 to 17 January 2022 (two weeks delay) ^{^*}

Data source: NINDSS, extracted 1 February 2022

Vaccination status	Not severe (no hospital or death)	Hospitalised (no ICU or death)	ICU (but no death)	COVID-19 related death	Total cases
Fully vaccinated	516,471 (98.1%)	8,974 (1.7%)	389 (<0.1%)	538 (0.1%)	526,372
Partially vaccinated	15,013 (97.9%)	269 (1.8%)	16 (0.1%)	31 (0.2%)	15,329
No effective vaccination**	20,418 (96.5%)	538 (2.5%)	44 (0.2%)	151 (0.7%)	21,151
Unknown	140,080 (98.0%)	2,606 (1.8%)	187 (0.1%)	43 (<0.1%)	142,916
Total	691,982 (98.1%)	12,387 (1.85)	636 (<0.1%)	763 (0.1%)	705,768

^{**} 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%.

ATTACHMENT B

SPRINT-SARI

Table 4. 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 45. 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 56. Number of comorbidities in COVID-19 cases who died at participating SPRINT SARI sentinel sites, 1 July 2021 – 14 December 2021[^]

Number of comorbidities	Deaths
None	56
	19%
One or more	239
	81%
Two or more	152
	52%
Three or more	71
	24%

[^]Excludes 50 deaths for which comorbidity information was unavailable.

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