

SENATE SELECT COMMITTEE  
February 2022

FAS BRIEF – KEY INFORMATION

OHPR Brief XX

## COVID-19 Associated Deaths

### Trends in COVID-19 associated deaths

#### COVID-19 associated deaths - pandemic to date, as at 28 January 2022

- A total of 3,402 COVID-19 deaths have occurred in Australia.
- There have been 40 deaths among Aboriginal and Torres Strait Islander people.
  - The crude case fatality rate is slightly lower among Aboriginal and Torres Strait Islander people (0.12%) than non-Indigenous Australians (0.32%). This does not take into account different population age profiles or the increasing proportion of cases with missing data on Indigenous status.

#### Recent trends

- There have been 1,103 deaths recorded in NINDSS from 15 December 2021 (considered the current "Omicron" wave).
- Of these deaths, 84% have been in people aged 70 and over, including 24% in people aged 90 and over (Table 1). Of these deaths, 84% have been in people aged 70 and over, including 24% in people aged 90 and over (Table 1). This contrasts with the Delta wave, where 71% of deaths were in people aged 70 years and over.
- The **crude case fatality rate** appears lower than during the Delta wave, at 0.1% of confirmed cases in the current wave, compared to 0.6% of confirmed cases during the Delta wave (Tables 4 and 5).
  - However, decreasing case ascertainment since mid-December 2021 will affect estimates of the case fatality rates. Case fatality rates are calculated using the number of confirmed COVID-19 cases, which excludes reported probable cases diagnosed by rapid antigen test only and cases that are not reported to jurisdictional health departments.
- The **population mortality rate** has increased in recent weeks and, in older age groups, is approaching 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 population mortality rate of COVID-19 deaths in the current wave is in people aged 90 and over, at 91 per 100,000 population.
  - This rate is still slightly lower than population mortality rate among people aged 90 and over during the Delta wave (96 per 100,000 population)
  - However, a direct comparison between these periods is 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).
    - Increasing rates of vaccination among the general population over the course of the Delta wave
    - The shorter time period in the Omicron wave to date compared to the Delta wave.

- Among jurisdictions with at least 75% available data on vaccination status of COVID-19 deaths, approximately 24% of COVID-19 deaths occurring during the current Omicron wave had no effective vaccination and approximately 70% of COVID-19 deaths occurring during the current Omicron wave were fully vaccinated 2 doses (Table 2 and 3). In comparison, nationally 93.3% of people aged 16 and over in the general population are vaccinated. Additionally, evidence shows that, for Omicron, 3 doses is much more effective at preventing severe disease.<sup>1</sup>

#### Residential aged care facilities

- In the pandemic to date, as of 28 January 2022, approximately 40% (1,356/3,402) of COVID-19 deaths in Australia have occurred in residential aged care facility residents who may be at higher risk of severe disease and death<sup>2</sup>.

#### Comorbidity

- Of the deaths due to COVID-19 that occurred by 31 October 2021 and are registered with the Australian Bureau of Statistics (ABS), 71.2% of people had pre-existing chronic conditions certified on their death certificate. Chronic heart diseases were the most common pre-existing chronic condition for those who died from COVID-19. In the time required for death registrations and other administrative and system processes hamper more timely reporting.
- Of the cases admitted to ICU as reported by SPRINT SARI<sup>3</sup>, from 1 July 2021 to 16 January 2022, who were reported to have died and where comorbidity information was available (n=239). 81% had a least one of the specified comorbidities<sup>4</sup>.
- Of the cases admitted to ICU as reported to SPRINT SARI in the current Omicron wave:
  - Mortality increases with age (Figure 3). Approximately 50% of these ICU patients that died were aged 75 years or older.
  - The most common comorbidity in those ICU patients who died with COVID-19 in the period is diabetes (40% of patients with at least one co-morbidity), followed by obesity (27% of patients with at least one co-morbidity) (Figure 4).

#### Excess mortality

- Excess mortality analysis, in accordance with the [Australian National Disease Surveillance Plan for COVID-19](#) is sourced from the [Australian Bureau of Statistics Provisional Mortality Statistics](#).
- ABS Mortality Statistics currently cover deaths occurring up until October 2021. The ABS advise that the next excess morbidity report will cover deaths registered up until December 2021 and is due for release on 30 March 2022. Deaths can take over four to eight weeks before they are registered, which delays the compilation of these statistics. The Department is discussing options for expediting the process with the ABS.

<sup>1</sup> Khoury D et al. A meta-analysis of Early Results to predict Vaccine efficacy against Omicron. <https://doi.org/10.1101/2021.12.13.21267748> Published 17 December 2021.

<sup>2</sup> Data from COVID-19 outbreaks in Australian residential aged care facilities – 28 January 2022. *Emergency Preparedness and Response Branch, Ageing and Aged Care Group*

<sup>3</sup> 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.

<sup>4</sup> Comorbidities most commonly reported in ICU admissions (currently not available for deaths) were obesity, diabetes, past use of ACE inhibitor or A2 Blocker, cardiac, asthma, chronic pulmonary disease, chronic kidney disease, immune disorders and rheumatological disorders (in descending order for any admission after 25 June 2021)

- The Economist publishes daily modelled estimates of excess mortality globally, including for Australia. However, the lack of reliable recent data means these modelled estimates are subject to a high level of error, with estimates between 0.1 to 1.3 excess deaths per 10,000 people over recent days.

### **Vaccine effectiveness**

- The Department continues to monitor developments domestically and internationally measuring the effectiveness of vaccines on reducing an individual's risk of severe disease and death.
- Current evidence shows that for Omicron, a 3-dose course of an mRNA vaccine gives high protection against severe infection (98.2%).<sup>5</sup>
- The Department has convened a COVID-19 Vaccine Effectiveness expert panel and is currently exploring the following avenues to estimate vaccine effectiveness domestically:
  - Assessing the feasibility of using the screening method (utilising vaccination status of case data in NINDSS and population-level vaccination coverage) to estimate VE.
  - Collaborating with the National Centre for Immunisation Research and Surveillance (NCIRS) and jurisdictions that are independently pursuing cohort study (requiring data linkage) and, or test-negative study designs to estimate VE.

### **Challenges with accurately characterising COVID-19 associated deaths**

#### Data quality decreases as cases increase

- Characterisation of COVID-19 associated deaths requires additional data to be manually provided by jurisdictions. While some data may be provided through routine linkage with existing datasets, other data relies on extensive case interview.
- Jurisdictions are at various stages with linkage of notification data to available registers and data sources to improve completeness of data for purposes of current reporting and analysis needs. This process has not previously been required and thus not in place prior to the pandemic.
- Generally, the depth and quality of data has declined with the sudden and significant increase in cases since December 2021. As case numbers increase the resources available and imperative for in depth case interview decreases. To counter this the following options will be explored:
  - Sentinel systems, where high quality data are collected on a smaller, but representative sample, become more appropriate sources.
  - Detailed analyses of notification data may be focused on those jurisdictions where data are reported with a high level of completeness.
- Currently Victoria and the ACT are excluded from analyses by vaccination status due to poor data completeness.
- Co-morbidities of cases are not routinely collected by public health authorities. Collection of these data is reliant on a more extensive and time-consuming case interview and therefore quality data are currently not collected routinely as it has been perceived as not directly beneficial to the public health response. There is no standalone register or alternative data source of people with co-morbidities to enable linkage to notification data and identification of these people. As such, co-morbidities are not currently a required field in National Interoperable Notifiable Disease Surveillance System (NINDSS) reporting for COVID-19.

<sup>5</sup> Khoury D et al. A meta-analysis of Early Results to predict Vaccine efficacy against Omicron. <https://doi.org/10.1101/2021.12.13.21267748> Published 17 December 2021.

- The proportion of cases sequenced has greatly reduced as widespread community transmission has placed strain on the testing network. It is estimated by the Communicable Disease Genomics Network (CDGN) that approximately 0–3% of respiratory samples collected are sequenced, based on the caseload of the jurisdiction at the time (except WA). Therefore, it is not possible to report with confidence the number of cases and deaths due to variants of concern, and it is anticipated that the delta variant is responsible for a portion of the deaths despite case numbers being dominated by the Omicron variant. As a proxy, analyses are undertaken comparing ‘waves’ where it is extrapolated that these variants are predominantly in circulation.

#### Delays in reporting

- Outside of NINDSS, jurisdictions provide daily reports to the National Incident Centre (NIC), including data on deaths. These reports are limited to the classifications of ‘new deaths’ and ‘died’ (cumulative deaths). Further analyses of these timely but manually reported data are not possible.
- There is high level of agreement between the deaths provided in daily reports to the NIC with those available in the NINDSS. At the time of reporting 3,289 (97%) deaths had been reported to the NINDSS.
- Case fatality rates are reported with a 2-week lag to allow for progression of the disease.
- Provisional mortality statistics reported to the ABS are generally delayed by 2 months.

#### Drawing on alternative surveillance systems and data sources

- The surveillance approach to measuring COVID-19 mortality to date has necessarily relied on case-based surveillance. This is unsustainable with the case numbers being seen in the Omicron wave.
- Given the shift in testing strategy, a more sophisticated approach to bringing together alternative surveillance systems and data sources through data linkage is needed.
  - Ongoing coordination of this integration will be required through an existing committee, such as CDNA. This approach would require a range of technical and governance solutions to be developed with the cooperation of all jurisdictions.
  - Regardless, data completeness is still contingent upon extensive case interview, requiring time, staffing and resourcing at the service delivery level.
- AIHW is preparing an application to develop a COVID register through the MRFF 2021 COVID-19 Treatment Access and Public Health Activities Grant Opportunity.
  - If successful, AIHW aims to have a de-identified dataset be available to Government researchers by Dec 2022, to inform evidence-based decision making.
  - This strategic approach to characterising COVID-19 mortality and translating the findings into communicating the risks to individuals requires resources and expert consideration.

#### **BACKGROUND**

A COVID-19 associated death is defined for surveillance purposes as a death in a probable or confirmed COVID-19 case, unless there is a clear alternative cause of death that cannot be related to COVID-19 (e.g. trauma). Data collected on individual cases does not allow for identification of the extent to which COVID-19 contributed to a person's deaths.

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**ATTACHMENT A: COVID-19 associated deaths notified to the National Interoperable Notifiable Disease Surveillance System (NINDSS)**

**Table 1: COVID-19 associated deaths by jurisdiction and age group, 15 December 2022 – 27 January 2022 (current Omicron wave)**

Source: NINDSS extracted 28 January 2022

	ACT		NSW		NT		Qld		SA		TAS		WA		VIC		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Under 5	0	0%	1	0%	0	0%	0	0%	2	3%	0	0%	0	-	1	0%	4	0%
5 to 11	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	-	0	0%	0	0%
12 to 15	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	-	0	0%	0	0%
16 to 17	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	-	0	0%	0	0%
18 to 29	1	20%	2	0%	0	0%	2	1%	0	0%	0	0%	0	-	0	0%	5	0%
30 to 39	0	0%	1	0%	1	100%	5	4%	4	5%	0	0%	0	-	3	1%	14	1%
40 to 49	1	20%	9	2%	0	0%	1	1%	1	1%	0	0%	0	-	6	2%	18	2%
50 to 59	1	20%	21	4%	0	0%	2	1%	4	5%	0	0%	0	-	16	4%	44	4%
60 to 69	0	0%	47	9%	0	0%	11	8%	5	6%	0	0%	0	-	27	7%	90	8%
70 to 79	0	0%	121	24%	0	0%	20	15%	12	16%	1	100%	0	-	84	23%	238	22%
80 to 89	2	40%	197	39%	0	0%	58	43%	25	32%	0	0%	0	-	148	40%	430	39%
90 and over	0	0%	112	22%	0	0%	36	27%	24	31%	0	0%	0	-	88	24%	260	24%
Unknown	0	0	0	0%	0	0%	0	0%	0	0%	0	0%	0	-	0	0%	0	0%
<b>Total</b>	<b>5</b>	<b>100%</b>	<b>511</b>	<b>100%</b>	<b>1</b>	<b>100%</b>	<b>135</b>	<b>100%</b>	<b>77</b>	<b>100%</b>	<b>1</b>	<b>100%</b>	<b>0</b>	<b>-</b>	<b>373</b>	<b>100%</b>	<b>1,103</b>	<b>100%</b>

Includes deaths with a date of death from 1 January 2022 to 27 January 2022 or deaths with a missing date of death and a date of onset from 1 January 2022.

**Table 2: COVID-19 associated deaths by jurisdiction and vaccination status, 15 December 2021 – 27 January 2022 (current Omicron wave)**

Source: NINDSS extracted 28 January 2022

	ACT		NSW		NT		Qld		SA		TAS		WA		VIC		Total		Total: excluding Vic, SA and ACT*	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Fully vaccinated	2	40%	361	71%	0	0%	91	67%	50	65%	0	0%	0	-	0	0%	504	46%	452	70%
Partially vaccinated	0	0%	15	3%	1	100%	8	6%	7	9%	0	0%	0	-	0	0%	31	3%	24	4%
No effective vaccination**	0	0%	121	24%	0	0%	33	24%	1	1%	0	0%	0	-	19	5%	174	16%	154	24%
Unknown	3	60%	14	3%	0	0%	3	2%	19	25%	1	100%	0	-	354	95%	394	36%	18	3%
<b>Total</b>	<b>5</b>	<b>100%</b>	<b>511</b>	<b>100%</b>	<b>1</b>	<b>100%</b>	<b>135</b>	<b>100%</b>	<b>77</b>	<b>100%</b>	<b>1</b>	<b>100%</b>	<b>0</b>	<b>-</b>	<b>373</b>	<b>100%</b>	<b>1,103</b>	<b>100%</b>	<b>648</b>	<b>100%</b>

Includes deaths with a date of death from 15 December 2021 to 27 January 2022 or deaths with a missing date of death and a date of onset from 15 December 2021.

For jurisdictions that link to the Australian Immunisation Register (AIR), quality of vaccination status may vary by day of the week due to weekly linkage

\*Selected jurisdictions are included based on the availability of vaccination data. Excluded jurisdictions have a high proportion of cases with no information on vaccination status.

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

**Table 3: COVID-19 deaths by age group and vaccination status, Australia excluding ACT, SA and VIC\*, 15 December 2021 – 27 January 2022**

Source: NINDSS extracted 28 January 2022

	0-17		18-39		40-69		70-79		80-89		90 plus		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Fully vaccinated	0	0%	5	45%	47	52%	105	74%	188	74%	107	72%	452	70%
Partially vaccinated	0	0%	1	9%	6	7%	2	1%	11	4%	4	3%	24	4%
No effective vaccination	1	100%	4	36%	37	41%	30	21%	50	20%	32	22%	154	24%
Unknown	0	0%	1	9%	1	1%	5	4%	6	2%	5	3%	18	3%
<b>Total</b>	<b>1</b>	<b>100%</b>	<b>11</b>	<b>100%</b>	<b>91</b>	<b>100%</b>	<b>142</b>	<b>100%</b>	<b>255</b>	<b>100%</b>	<b>148</b>	<b>100%</b>	<b>648</b>	<b>100%</b>

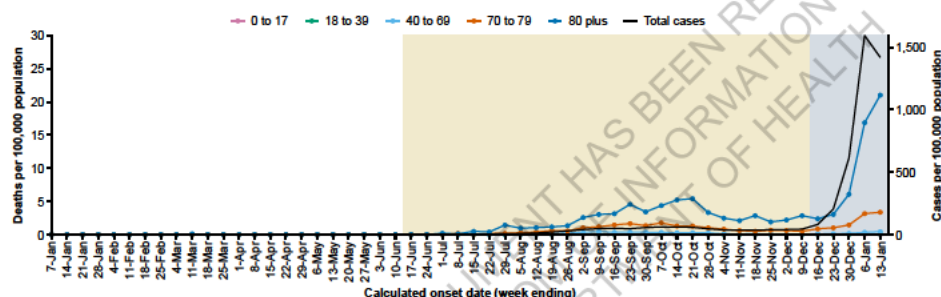
\*Selected jurisdictions are included based on the availability of vaccination data. Excluded jurisdictions have a high proportion of cases with no information on vaccination status.

Includes deaths with a date of death from 15 December 2021 to 27 January 2022 or deaths with a missing date of death and a date of onset from 15 December 2021.

For jurisdictions that link to the Australian Immunisation Register (AIR), quality of vaccination status may vary by day of the week due to weekly linkage

**Figure 1: Age-specific rates per 100,000 population of COVID-19 deaths, Australia, 1 January 2021 to 13 January 2022**

Source: NINDSS extracted 28 January 2022



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.

Yellow shading: Delta wave (16 June 2021 – 14 December 2021)

Blue shading: Current omicron wave (15 December 2021 onwards)



**Table 4: COVID-19 deaths and mortality rate, by age group, Australia, 15 December 2021 to 13 January 2022 (current omicron wave)**

Source: NINDSS extracted 28 January 2022

	Deaths	Case fatality rate	Mortality rate per 100,000 population
Under 5	2	<0.05%	0.1
5 to 11	0	0.0%	0.0
12 to 15	0	0.0%	0.0
16 to 17	0	0.0%	0.0
18 to 29	4	<0.05%	0.1
30 to 39	9	<0.05%	0.2
40 to 49	10	<0.05%	0.3
50 to 59	28	<0.05%	0.9
60 to 69	57	0.1%	2.1
70 to 79	172	0.7%	9.2
80 to 89	312	3.0%	36.9
90 and over	193	6.2%	91.3
<b>Total</b>	<b>787</b>	<b>0.1%</b>	<b>3.1</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.

**Table 5: COVID-19 deaths and mortality rate, by age group, Australia, 16 June 2021 to 14 December 2021 (Delta wave)**

Source: NINDSS extracted 28 January 2022

	Deaths	Case fatality rate	Mortality rate per 100,000 population
Under 5	0	0.0%	0.0
5 to 11	1	<0.05%	0.0
12 to 15	1	<0.05%	0.1
16 to 17	0	0.0%	0.0
18 to 29	8	<0.05%	0.2
30 to 39	21	0.1%	0.6
40 to 49	45	0.2%	1.4
50 to 59	117	0.6%	3.7
60 to 69	203	1.8%	7.5
70 to 79	345	5.7%	18.4
80 to 89	407	13.5%	48.2
90 and over	203	24.7%	96.1
<b>Total</b>	<b>1,351</b>	<b>0.6%</b>	<b>5.3</b>

**Table 6: COVID-19 deaths and mortality rate, by age group, Australia, 1 January 2022 - 15 June 2021 (pre-vaccination/Delta)**

Source: NINDSS extracted 28 January 2022

	Deaths	Case fatality rate	Mortality rate per 100,000 population
Under 5	0	0.0%	0.0
5 to 11	0	0.0%	0.0
12 to 15	0	0.0%	0.0
16 to 17	0	0.0%	0.0
18 to 29	1	<0.05%	0.0
30 to 39	2	<0.05%	0.1
40 to 49	2	0.1%	0.1
50 to 59	15	0.4%	0.5
60 to 69	38	1.5%	1.4
70 to 79	157	9.4%	8.4
80 to 89	379	29.5%	44.9
90 and over	317	40.4%	150.0
<b>Total</b>	<b>911</b>	<b>3.0%</b>	<b>3.5</b>

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), case fatality rates and population mortality rates are not directly comparable between each wave.

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ATTACHMENT B: SPRINT SARI data

Figure 3. Mortality in ICU patients admitted to SPRINT SARI hospitals, 15 December 2021 to 31 January 2022

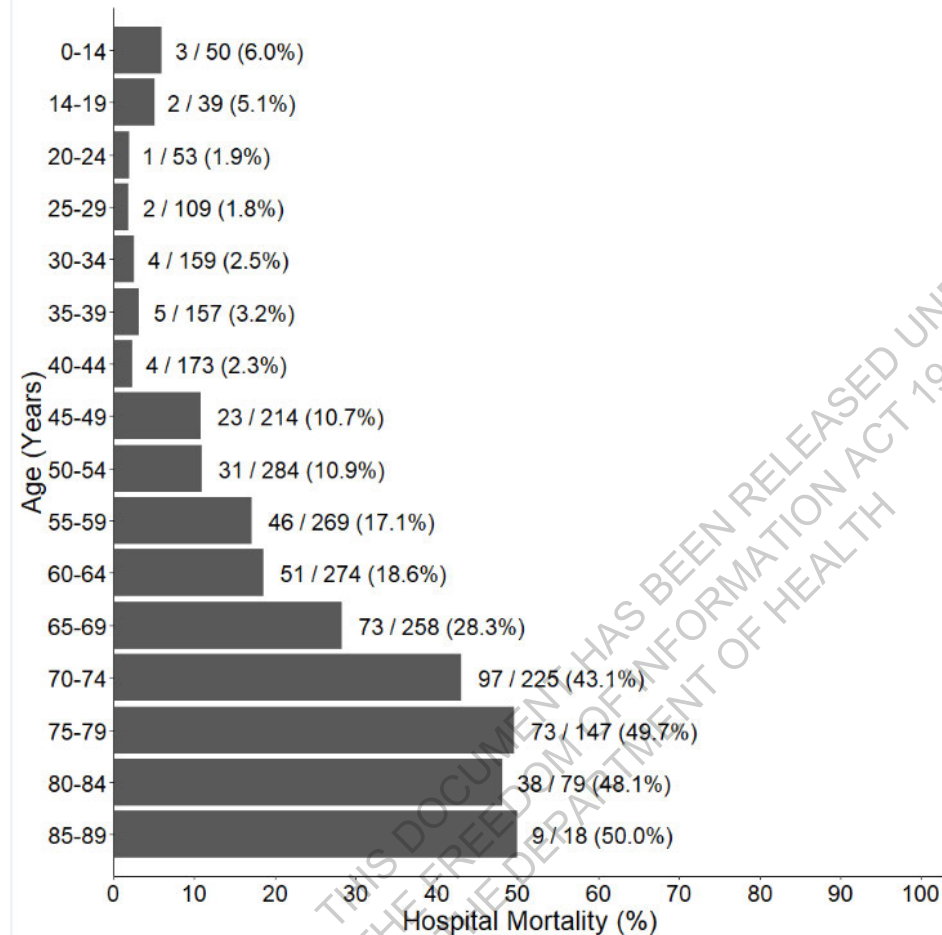
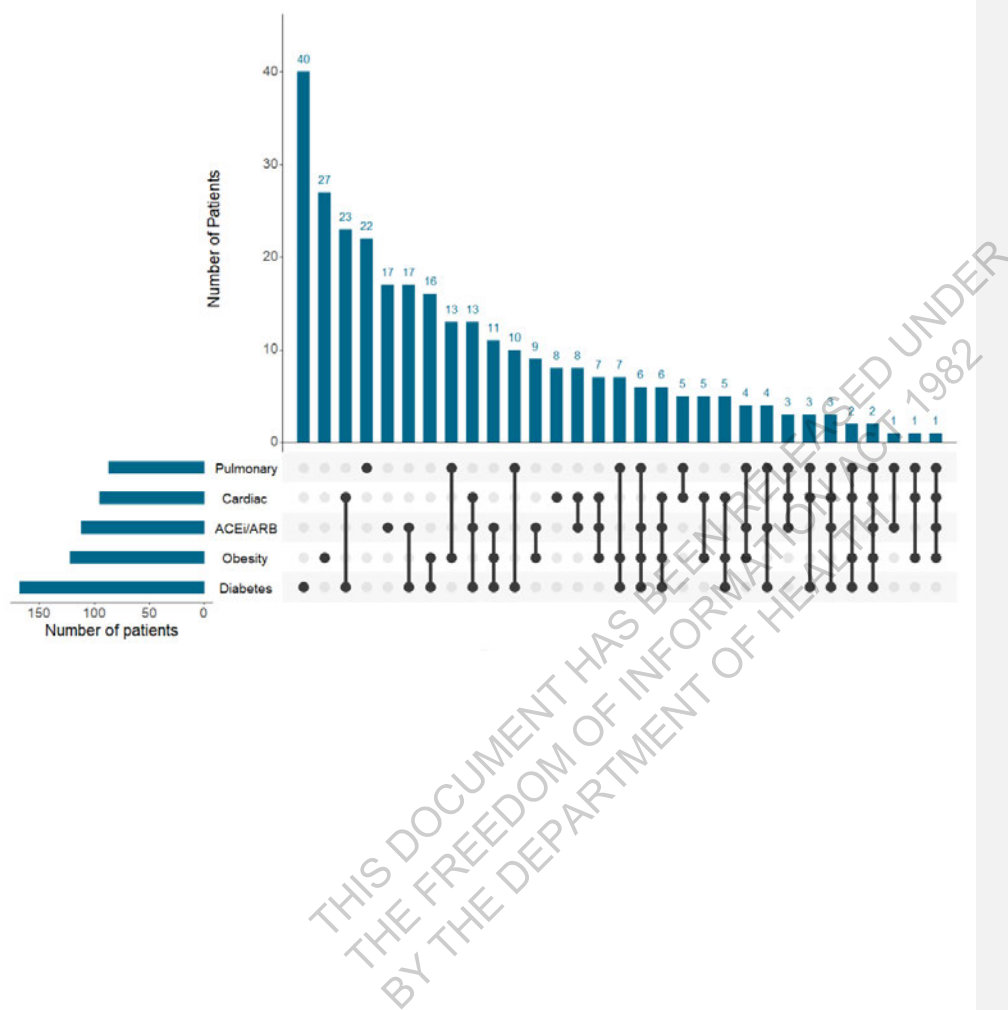


Figure 4. Combination of comorbidities among ICU patients admitted to SPRINT SARI hospitals, 15 December 2021 to 31 January 2022



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