



Epidemiology of intensive care admissions in cases of COVID-19 (aged 15 years and older) in Ireland in Wave 5

Report prepared by HPSC on 03/08/2022

The following report provides data on cases (aged 15 years and older) with laboratory confirmed COVID-19 who have been admitted to ICU since the start of the 5th pandemic wave (19/12/2021) and notified to the Computerised Infectious Disease Reporting system (CIDR) at HPSC, as of midnight on 30/07/2022.

A summary table of admissions to ICU during Wave 4 is included in Appendix A. A graph on total admissions to ICU (aged 15 years and older) from 16/02/2020 up to 30/07/2022 is included in Appendix B.

Reports on Wave 1, Wave 2 and Wave 3 of the pandemic can be found [here](#)

Data are provisional and subject to ongoing review, validation, and update. As a result, figures in this report may differ from previously published figures.

Please note this report only includes cases reported to HPSC who are in ICU primarily for the treatment of COVID and does not include cases in ICU for other clinical conditions who have an incidental finding of COVID-19.

Acknowledgements

The Intensive Care Society of Ireland (ICSI) and the HSE Critical Care Programme support the provision of data by hospitals on all critical care patients with COVID-19 to HPSC. The HPSC processes and reports on this information on behalf of the regional Directors of Public Health/Medical Officers of Health. Sincere thanks are extended to all those who are participating in the collection of these data. This includes staff in ICU units, the HSE COVID-19 Contact Management Programme (CMP), notifying clinicians, laboratory staff, public health doctors, nurses, surveillance scientists, microbiologists and administrative staff. Sincere thanks are also extended to the staff at the National Office of Clinical Audit for the daily provision of data on ICU admissions and discharges.

1.0 Summary of cases of COVID-19 admitted to ICU

Table 1 provides a summary of cases with confirmed COVID-19 who were admitted to ICU during Wave 5.

A summary of cases with confirmed COVID-19 who were admitted to ICU during Wave 4 is shown in Appendix A.

Table 1: Summary of cases (aged 15 years and older) of COVID-19 admitted to ICU in Ireland during Wave 5 (19/12/2021 to 30/07/2022)^{1 2 3 4}

		Number of cases	Percentage
Total number of cases admitted to ICU		340	100.0
Number currently in ICU		21	6.2
	Number in ICU, never transferred	19	5.6
	Number transferred to second ICU	2	0.6
Total number of cases discharged alive		182	53.5
Deaths in ICU cases		137	40.3
Route of admission	Ward	215	63.2
	Emergency Department	104	30.6
	Other hospital - ICU	3	0.9
	Other hospital - non ICU	15	4.4
Sex and age	Male:female ratio	1.4:1	-
	Median age (years)	65	-
	Age range (years)	15 - 97	-
	15-24	9	2.6
	25-34	21	6.2
	35-44	19	5.6
	45-54	51	15.0
	55-64	59	17.4
	65-74	111	32.6
75-84	57	16.8	
85+	13	3.8	
Underlying medical conditions	Those with underlying medical conditions (%)	290	85.3
Illness severity (at time of admission)	Acute Respiratory Distress Syndrome (ARDS)	158	46.5
	Require non-invasive mechanical ventilation	159	46.8
	Require invasive mechanical ventilation	108	31.8
	Require renal replacement therapy	24	7.1

¹ For illness severity and clinical complications, more than one option can be selected so percentages will add to over 100%

² For clinical complications, the denominator is those who have been discharged from ICU, including people who have been discharged to another ICU

³ Length of stay for those discharged alive refers to duration of stay after final discharge from ICU. Length of stay reflects the cumulative duration of stay, where applicable, for patients with more than one ICU admission.

⁴ One person admitted during Wave 4 is still reported to be in ICU (see Appendix A)

		Number of cases	Percentage
Clinical complications reported during ICU stay (at time of discharge in those who have been discharged)	Primary viral pneumonia	236	73.5
	Secondary bacterial pneumonia	115	35.8
	Acute respiratory distress syndrome (ARDS)	169	52.6
	Acute kidney injury	93	29.0
	Sepsis	108	33.6
	Multi-organ failure	73	22.7
Type of ventilation reported during ICU stay (at time of discharge in those who have been discharged)	Biphasic intermittent positive airway pressure (BiPAP)	93	29.0
	Continuous positive airway pressure (CPAP)	109	34.0
	Conventional mechanical ventilation	148	46.1
	High frequency oscillatory ventilation (HFOV)	6	1.9
	ECMO	3	0.9
Length of stay for those discharged alive	Median (days)	6	-
	Range (days)	1 - 93	-
Length of stay for those who have died	Median (days)	8	-
	Range (days)	1 - 119	-

2.0 Admissions to ICU

2.1 Date of admission to ICU

A graph of COVID-19 cases by week of admission to ICU in Wave 5 is shown in figure 1.

A graph of all cases of COVID-19 by week of admission to ICU is shown in Appendix B.

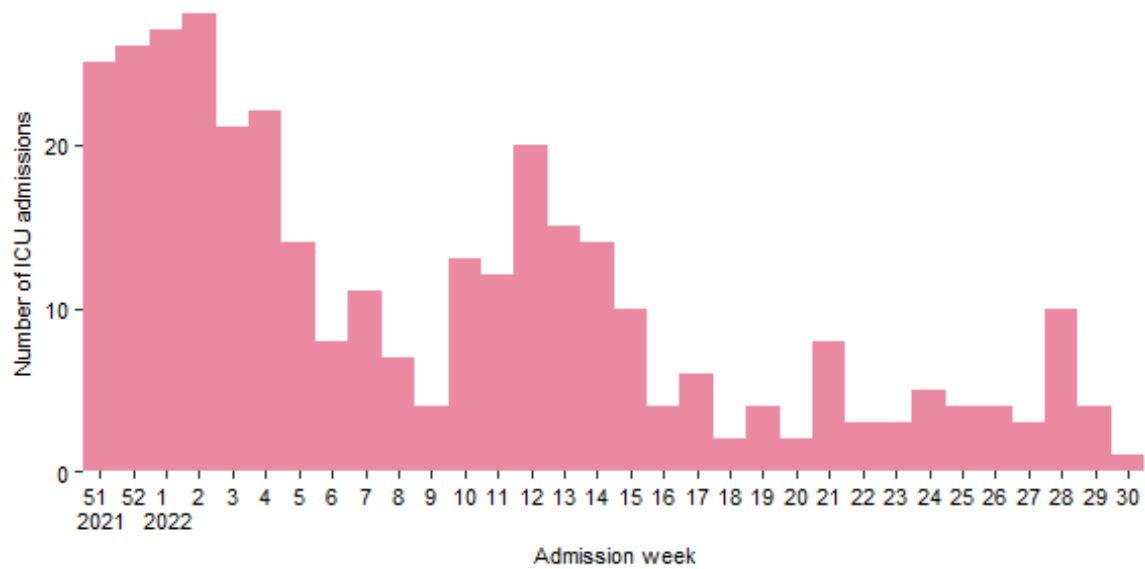


Figure 1: Cases of COVID-19 (aged 15 years and older) admitted to ICU by week of admission in Ireland during Wave 5 (19/12/2021 to 30/07/2022) ^{5 6 7}

⁵ See technical notes for more information on dates for which week numbers correspond

⁶ Please note that most recent weeks may not yet reflect all admissions

⁷ For cases with multiple ICU admissions, the date of first admission to ICU is presented

2.2 Age and sex distribution of cases of COVID-19 admitted to ICU

Of the admissions to ICU during Wave 5 (aged 15 years and over), 58% were male and 42% were female, giving a male: female ratio of 1.4:1. The mean age at time of admission to ICU was 61 years and the median age was 65 years (IQR: 51-73 years; range: 15-97 years).

Table 2 describes the sex and age distribution of cases of COVID-19 admitted to ICU. Figure 2 shows a graph of cases of COVID-19 admitted to ICU by week of ICU admission, stratified by age group.

Table 2: Cases of COVID-19 (aged 15 years and older) admitted to ICU by sex and age group, Ireland (19/12/2021 to 30/07/2022)

Age group (yrs)	Female		Male		Total		Rate per 100,000 population
	(n)	(%)	(n)	(%)	(n)	(%)	
15-24	4	2.8	5	2.5	9	2.6	1.6
25-34	9	6.3	12	6.1	21	6.2	3.2
35-44	8	5.6	11	5.6	19	5.6	2.5
45-54	21	14.7	30	15.2	51	15.0	8.1
55-64	26	18.2	33	16.8	59	17.4	11.6
65-74	50	35.0	61	31.0	111	32.6	29.7
75-84	19	13.3	38	19.3	57	16.8	29.0
85+	6	4.2	7	3.6	13	3.8	19.2
Total	143	100.0	197	100.0	340	100.0	9.1

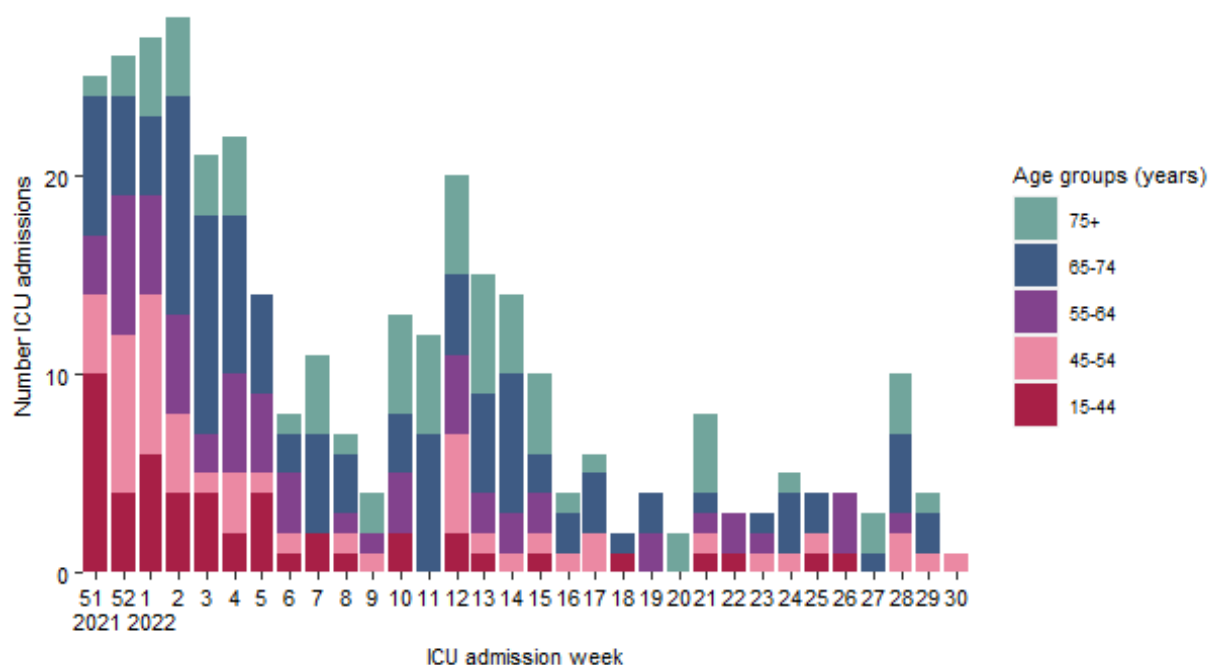


Figure 2: Cases of COVID-19 (aged 15 years and older) admitted to ICU by week of admission in Ireland, stratified by age group⁸ (19/12/2021 to 30/07/2022)

⁸ See technical notes for more information on dates for which week numbers correspond

2.3 Underlying medical conditions at time of admission to ICU

Table 4 describes the underlying medical conditions in cases of COVID-19 at time of first admission to ICU in Ireland.

Table 2: Underlying medical conditions in cases of COVID-19 (aged 15 years and older) at time of first admission to ICU, Ireland ⁹ (19/12/2021 to 30/07/2022)

Underlying medical conditions	Number	Total admissions
One or more underlying clinical conditions	290	85.3
No underlying medical conditions	49	14.4
	Number	Those with underlying illness
Chronic heart disease	85	29.3
Hypertension	118	40.7
Chronic kidney disease	40	13.8
Chronic liver disease	16	5.5
Chronic neurological disease	34	11.7
Cancer malignancy	57	19.7
Immunodeficiency including HIV	67	23.1
Immunodeficiency due to HIV	3	1
Immunodeficiency due to solid organ transplant	17	5.9
Immunodeficiency due to therapy	52	17.9
Chronic respiratory disease	94	32.4
Chronic obstructive pulmonary disease	54	18.6
Bronchiectasis	8	2.8
Cystic fibrosis		
Interstitial lung fibrosis	9	3.1
Asthma (requiring medication)	28	9.7
Severe asthma	2	0.7
Mild to moderate asthma	16	5.5
Pregnant	1	0.3
<= 6 weeks post partum	2	0.7
Obesity (BMI >= 40)	19	6.6
Diabetes	66	22.8
Type 1	9	3.1
Type 2	52	17.9
Gestational diabetes	0	0.0
Type unspecified	5	1.7
Haemoglobinopathy	4	1.4
Alcohol related disease	22	7.6

⁹ More than one option can be selected for underlying condition so percentages will add to greater than 100%

2.4 Pregnancy ¹⁰

There are 3 confirmed cases of COVID-19 reported among pregnant women or women less than six weeks post- partum during Wave 5 (14% of female cases aged 15-44 years).

This compares to:

- 2 cases in Wave 1 (16/02/2020-01/08/2020) representing 12% of female cases aged 15-44 years
- 1 case in Wave 2 (02/08/2020-21/11/2020) representing 17% of female cases aged 15-44 years
- 23 cases in Wave 3 (22/11/2020-26/06/2021) representing 35% of female cases aged 15-44 years and
- 39 cases in Wave 4 (27/06/2021-18/12/2021) representing 44% of female cases aged 15-44 years

¹⁰ As the number of cases are small, further details are not provided.

3.0 Outcome for cases of COVID-19 admitted to ICU

Of the 340 cases (aged 15 years and over) admitted to ICU in Wave 5, 182 were discharged alive (54% of total patients admitted to ICU), 137 died (40% of total patients admitted to ICU) and 21 are still in ICU (6% of total patients admitted to ICU) – including 2 transferred to another ICU. Of those who died, 121 patients were reported as having died in ICU and 16 died following transfer from ICU to a ward or high dependency unit.

Table 5 describes the profile of patients with COVID-19 who have either been discharged alive from ICU or died in/post admission to ICU.

Figure 3 describes the percentage of cases who have died by age group, sex and presence of underlying medical conditions.

Table 3: Profile of cases of confirmed COVID-19 (aged 15 years and older) who were discharged alive from or died in/post admission to ICU in Ireland (19/12/2021 to 30/07/2022)

		Discharged alive		Died		Total
		Number of cases	Percentage	Number of cases	Percentage	
Age group (years)	15-44	40	87.0	6	13.0	46
	45-54	30	63.8	17	36.2	47
	55-64	36	64.3	20	35.7	56
	65-74	45	43.3	59	56.7	104
	75+	31	47.0	35	53.0	66
Sex	Male	102	54.3	86	45.7	188
	Female	80	61.1	51	38.9	131
Underlying conditions	Yes	146	53.3	128	46.7	274
	No	36	80.0	9	20.0	45

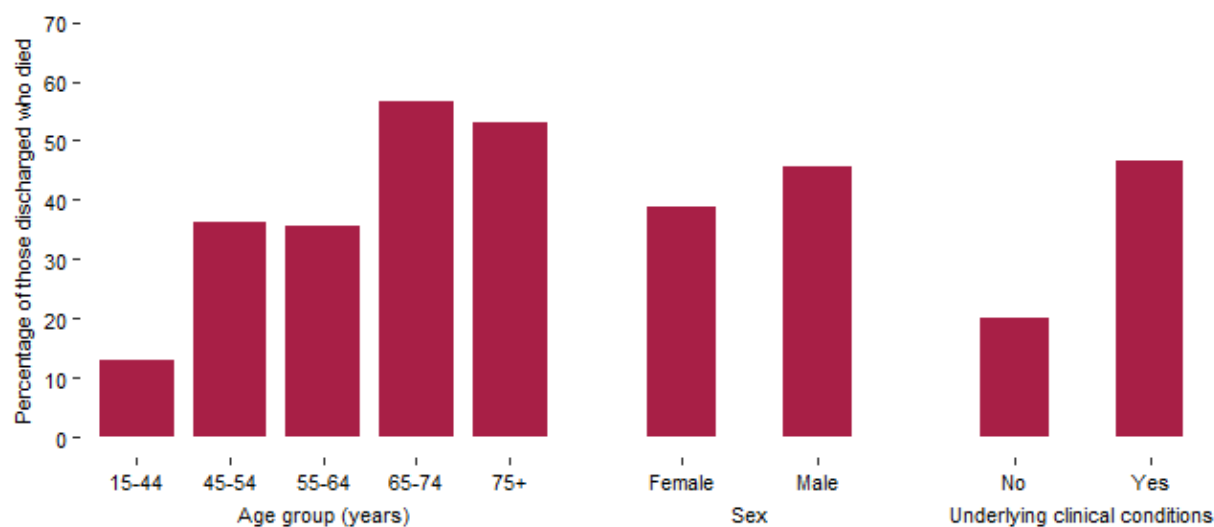


Figure 3: Profile of cases of confirmed COVID-19 (aged 15 years and older) who died in/post admission to ICU in Ireland (19/12/2021 to 30/07/2022)

3.1 Clinical complications among those discharged from ICU

Discharge information has been received for 321 patients: 182 were discharged alive; 137 died and 2 were discharged to another ICU.

Table 6 describes the clinical complications reported for cases of COVID-19 at the time of discharge from ICU (includes information reported upon discharge, for those discharged to another ICU).

Table 4: Clinical complications and outcome of cases of COVID-19 (aged 15 years and older) at time of discharge from ICU, Ireland ^{11 12} (19/12/2021 to 30/07/2022)

	Number	
Total number of cases discharged from ICU	321	94.4
Complications/illness during ICU stay	Number	Of those discharged
Primary viral pneumonia	236	73.5
Secondary bacterial pneumonia	115	35.8
Acute respiratory distress syndrome (ARDS)	169	52.6
Pressor dependence during ICU stay	167	52.0
Myocarditis	8	2.5
Encephalitis	4	1.2
Sepsis	108	33.6
Multi-organ failure	73	22.7
Anti-coagulation for thrombotic event	41	12.8
Treatment acute kidney injuries (AKI)		
Acute kidney injury	93	29.0
Received CRRT/IHD	49	15.3
Use of ventilation or intervention during ICU stay		
Yes	241	75.1
No	80	24.9
Type of ventilations		
Biphasic intermittent positive airway pressure (BiPAP)	93	29.0
Continuous positive airway pressure (CPAP)	109	34.0
Conventional (including lung protective) mechanical ventilation	148	46.1
High frequency oscillatory ventilation (HFOV)	6	1.9
Required ECMO	3	0.9

¹¹ More than one option can be selected for clinical complications so percentages will add to greater than 100%

¹² For the analysis in this table, please note that the number discharged includes people who have been discharged to another ICU

4.0 Admission activity by location

Table 9 describes the distribution of cases of COVID-19 admitted to ICU in Ireland by HSE area of residence.

Table 5: Area of residence of cases of COVID-19 (aged 15 years and older) admitted to ICU¹³, Ireland (19/12/2021 to 30/07/2022)

HSE area	Number of cases	Percentage	Rate per 100,000 population
East	137	40.3	8.0
Midlands	28	8.2	9.6
Mid-West	19	5.6	4.9
North-East	44	12.9	9.5
North-West	18	5.3	7.0
South-East	22	6.5	4.3
South	42	12.4	6.1
West	30	8.8	6.6
Total	340	100.0	7.1

¹³ See technical notes for counties associated with each HSE area

Appendix A: Cases of COVID-19 (aged 15 years and older) admitted to ICU during Wave 4 in Ireland, from 27/06/2021 to 18/12/2021 ^{14 15 16}

		Number of cases	Percentage
Total number of cases admitted to ICU		736	100.0
Number currently in ICU		1	0.1
	Number in ICU, never transferred	1	0.1
	Number transferred to second ICU	0	0
Total number of cases discharged alive		484	65.8
Deaths in ICU cases		251	34.1
Route of admission			
	Ward	534	72.6
	Emergency department	180	24.5
	Other hospital - ICU	0	0
	Other hospital - non ICU	22	3.0
Sex and age			
	Male:female ratio	1.5	-
	Median age (years)	60	-
	Age range (years)	15 - 88	-
	15-24	16	2.2
	24-34	56	7.6
	35-44	91	12.4
	45-54	141	19.2
	55-64	154	20.9
	65-74	211	28.7
	75-84	61	8.3
	85+	6	0.8
Underlying medical conditions		Those with underlying medical conditions (%)	601 81.7
Illness severity (at time of admission)			
	Acute Respiratory Distress Syndrome (ARDS)	496	67.4
	Require non-invasive mechanical ventilation	482	65.5
	Require invasive mechanical ventilation	205	27.9
	Require renal replacement therapy	32	4.3
Clinical complications reported during ICU stay (at time of discharge in those who have been discharged)			
	Primary viral pneumonia	629	85.6
	Secondary bacterial pneumonia	222	30.2
	Acute respiratory distress syndrome (ARDS)	511	69.5
	Acute kidney injury	177	24.1
	Sepsis	206	28.0
	Multi-organ failure	116	15.8

¹⁴ See technical notes for more information on week numbers

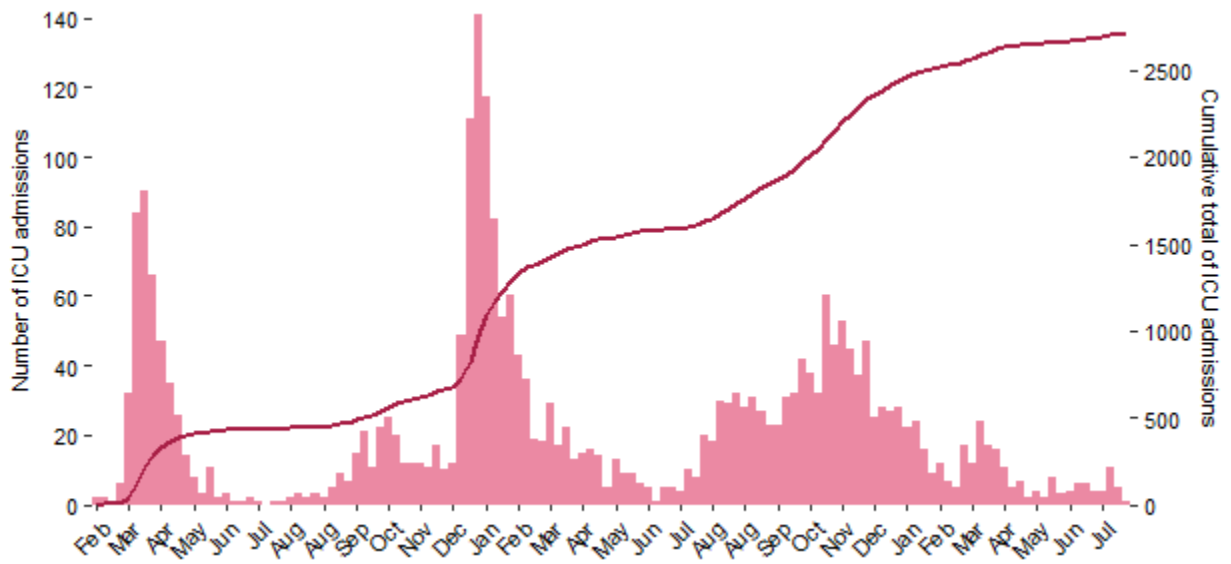
¹⁵ Please note that most recent weeks may not yet reflect all admissions

¹⁶ For cases with multiple ICU admissions, the date of first admission to ICU is presented

		Number of cases	Percentage
Type of ventilation reported during ICU stay (at time of discharge in those who have been discharged)	Biphasic intermittent positive airway pressure (BiPAP)	243	33.1
	Continuous positive airway pressure (CPAP)	345	46.9
	Conventional mechanical ventilation	380	51.7
	High frequency oscillatory ventilation (HFOV)	18	2.4
	ECMO	14	1.9
Length of stay for those discharged alive	Median (days)	9	-
	Range (days)	1 - 163	-
Length of stay for those who have died	Median (days)	13	-
	Range (days)	1 - 97	-

Appendix B: Cases of COVID-19 (aged 15 years and older) admitted to ICU by week of admission in Ireland, from 16/02/2020 to 30/07/2022 ¹⁷

¹⁸ ¹⁹



¹⁷ See technical notes for more information on week numbers

¹⁸ Please note that most recent weeks may not yet reflect all admissions

¹⁹ For cases with multiple ICU admissions, the date of first admission to ICU is presented

Further reports

Further reports on COVID-19 surveillance can be found [here](#)

Technical notes

1. Data in this report are confidential and provisional, and may change following further data validation and review. Some of the variables in the tables have missing or unknown data and ongoing validation work will improve the accuracy and completeness of the data.
2. Case definitions for COVID-19 are [available](#)
3. Deaths included in this report can be during or after ICU stay. If a person was discharged alive from ICU and is reported to have subsequently died, they will be included as died for the analysis in this report.
4. Due to the relatively low proportion of patients that have completed their critical care, all outcomes should be interpreted with caution.
5. Please note that patients whose outcome data have not been received are assumed to remain in ICU.
6. Length of stay
 - Refers to duration of stay for patients after final discharge from ICU for those discharged alive from ICU (and excludes those transferred to another ICU).
 - Reflects the cumulative duration of stay, where applicable, for patients with more than one ICU admission
7. HSE areas: The counties covered by each HSE area are as follows:
 - HSE East (E): Dublin, Kildare & Wicklow;
 - HSE Midlands (M): Laois, Longford, Offaly & Westmeath;
 - HSE Midwest (MW): Clare, Limerick & N. Tipperary;
 - HSE Northeast (NE): Cavan, Louth, Meath & Monaghan;
 - HSE Northwest (NW): Donegal, Leitrim & Sligo;
 - HSE South (S): Kerry & Cork;
 - HSE Southeast (SE): Carlow, Kilkenny, S. Tipperary, Waterford & Wexford;
 - HSE West (W): Galway, Mayo & Roscommon.
8. Information on the epidemiological weeks can be found [here](#)