



Epidemiology of intensive care admissions in cases of COVID-19 (aged 15 years and older) in Ireland in Wave 4

The following report provides data on cases (aged 15 years and older) with laboratory confirmed COVID-19 who were admitted to ICU during the 4th pandemic wave (27/06/2021 to 18/12/2021) and notified to the Computerised Infectious Disease Reporting system (CIDR) at HPSC, as of midnight on 13/06/2022.

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 which 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 4.

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

		Number of cases	Percentage
Total number of cases admitted to ICU		737	100
Number currently in ICU		1	0.1
Total number of cases discharged alive		484	65.7
Deaths in ICU cases		252	34.2
Route of admission	Ward	534	72.5
	Emergency Department	181	24.6
	Other hospital - ICU	0	0
	Other hospital - non ICU	22	3
Sex and age	Male:female ratio	1.5:1	-
	Median age (years)	60	-
	Age range (years)	15 - 88	-
	15-24	16	2.2
	25-34	56	7.6
	35-44	91	12.3
	45-54	141	19.1
	55-64	155	21
	65-74	211	28.6
	75-84	61	8.3
	85+	6	0.8
Underlying medical conditions	Those with underlying medical conditions (%)	606	82.2
Illness severity (at time of admission)	Acute Respiratory Distress Syndrome (ARDS)	496	67.3
	Required non-invasive mechanical ventilation	482	65.4
	Required invasive mechanical ventilation	205	27.8
	Required 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	85.5
	Secondary bacterial pneumonia	222	30.2
	Acute respiratory distress syndrome (ARDS)	511	69.4
	Acute kidney injury	177	24
	Sepsis	206	28

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.

		Number of cases	Percentage
	Multi-organ failure	116	15.8
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
	Continuous positive airway pressure (CPAP)	345	46.9
	Conventional mechanical ventilation	380	51.6
	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	-

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 4 is shown in figure 1.

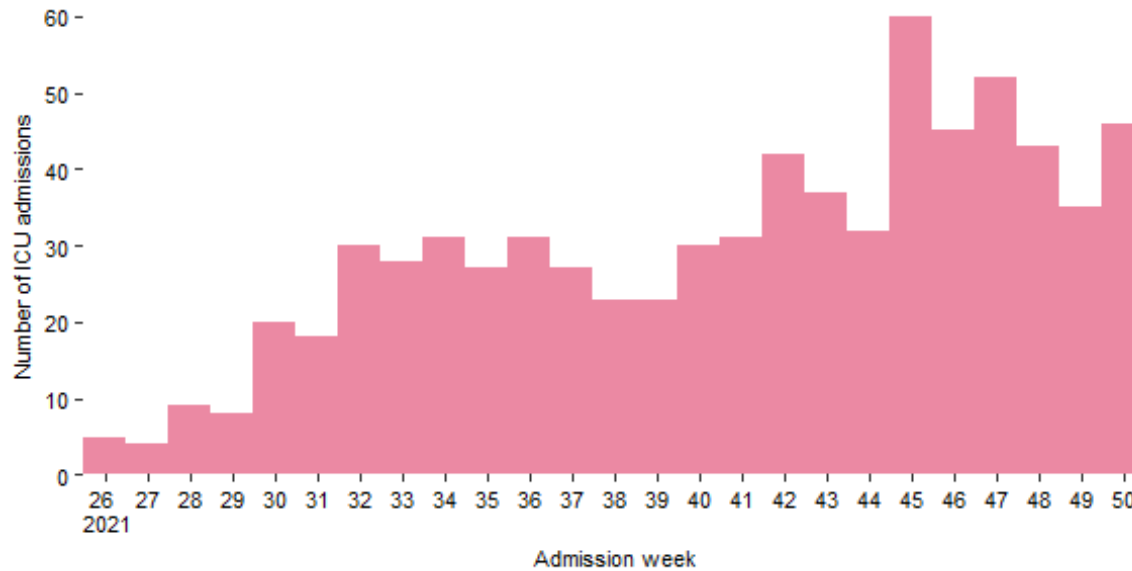


Figure 1: Cases of COVID-19 (aged 15 years and older) admitted to ICU by week of admission in Ireland during Wave 4 ^{4 5 6}

⁴ See technical notes for more information on dates for which week numbers correspond

⁵ Please note that most recent weeks may not yet reflect all admissions

⁶ 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 4 (aged 15 years and over), 61% were male and 39% were female, giving a male: female ratio of 1.5:1. The mean age at time of admission to ICU was 57 years and the median age was 60 years (IQR: 46-68 years; range: 15-88 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 (Wave 4)

Age group (yrs)	Female		Male		Total		Rate per 100,000 population
	(n)	(%)	(n)	(%)	(n)	(%)	
15-24	9	3.1	7	1.6	16	2.2	2.8
25-34	39	13.4	17	3.8	56	7.6	8.5
35-44	40	13.8	51	11.4	91	12.3	12.2
45-54	44	15.2	97	21.7	141	19.1	22.5
55-64	59	20.3	96	21.5	155	21.0	30.5
65-74	78	26.9	133	29.8	211	28.6	56.5
75-84	19	6.6	42	9.4	61	8.3	31.0
85+	2	0.7	4	0.9	6	0.8	8.9
Total	290	100.0	447	100.0	737	100.0	19.6

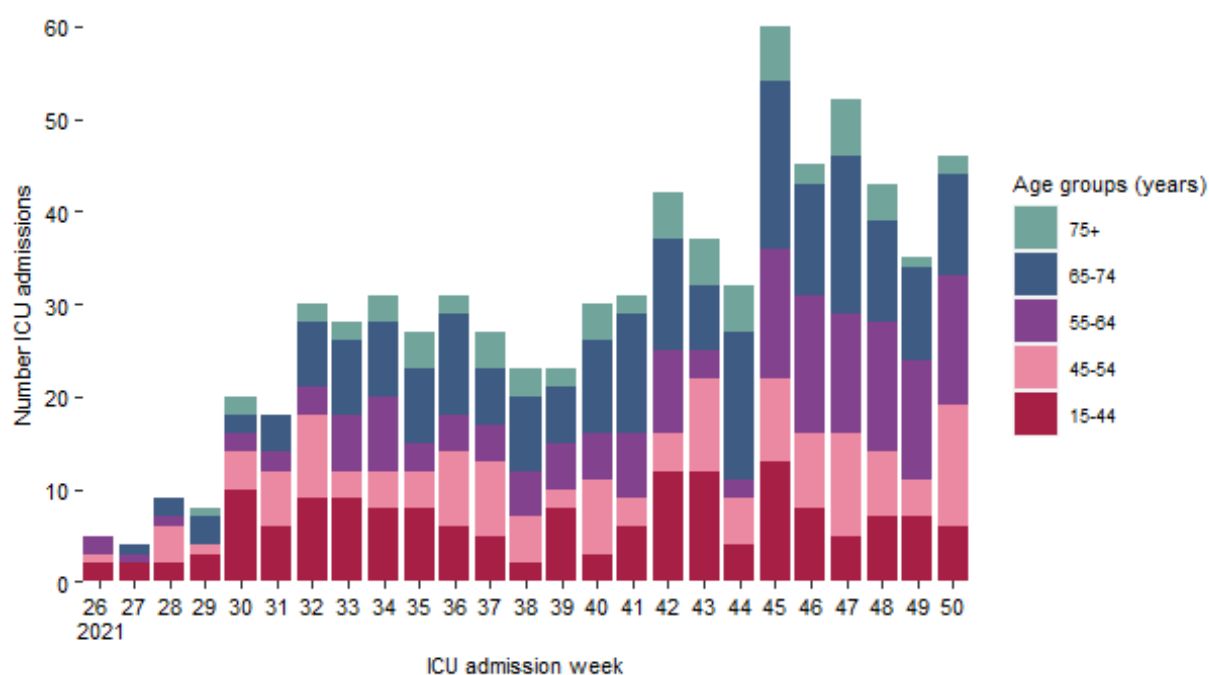


Figure 2: Cases of COVID-19 (aged 15 years and older) admitted to ICU by week of admission in Ireland, stratified by age group ⁷ (Wave 4)

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

There were 39 confirmed cases of COVID-19 reported among pregnant women or women less than six weeks post-partum during Wave 4 (44% of female cases aged 15-44 years).

Table 3: Underlying medical conditions in cases of COVID-19 (aged 15 years and older) at time of first admission to ICU, Ireland ⁸ (Wave 4)

Underlying medical conditions	Number	Total admissions
One or more underlying clinical conditions	606	82.2
No underlying medical conditions	131	17.8
	Number	Those with underlying illness
Chronic heart disease	204	33.7
Hypertension	268	44.2
Chronic kidney disease	76	12.5
Chronic liver disease	25	4.1
Chronic neurological disease	30	5
Cancer malignancy	72	11.9
Immunodeficiency including HIV	104	17.2
Immunodeficiency due to HIV	1	0.2
Immunodeficiency due to solid organ transplant	24	4
Immunodeficiency due to therapy	81	13.4
Chronic respiratory disease	187	30.9
Chronic obstructive pulmonary disease	95	15.7
Bronchiectasis	9	1.5
Cystic fibrosis	1	0.2
Interstitial lung fibrosis	10	1.7
Asthma (requiring medication)	76	12.5
Severe asthma	1	0.2
Mild to moderate asthma	64	10.6
Pregnant	27	4.5
<= 6 weeks post partum	12	2
Obesity (BMI >= 40)	71	11.7
Diabetes	144	23.8
Type 1	13	2.1
Type 2	111	18.3
Gestational diabetes	6	1
Type unspecified	14	2.3
Haemoglobinopathy	4	0.7
Alcohol related disease	19	3.1

⁸ More than one option can be selected for underlying condition so percentages will add to greater than 100%

3.0 Outcome for cases of COVID-19 admitted to ICU

Of the 737 cases (aged 15 years and over) admitted to ICU in Wave 4, 484 were discharged alive (66%), 252 died (34%) and 1 person is still in ICU (as of 21/06/2022). Of those who died, 232 patients were reported as having died in ICU and 20 died following transfer from ICU to a ward or high dependency unit.

Table 4 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 4: 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 (Wave 4)

		Discharged alive		Died		Total
		Number of cases	Percentage	Number of cases	Percentage	
Age group (years)	15-44	153	93.9	10	6.1	163
	45-54	104	73.8	37	26.2	141
	55-64	101	65.6	53	34.4	154
	65-74	108	51.2	103	48.8	211
	75+	18	26.9	49	73.1	67
Sex	Male	284	63.7	162	36.3	446
	Female	200	69.0	90	31.0	290
Underlying conditions	Yes	379	62.6	226	37.4	605
	No	105	80.2	26	19.8	131

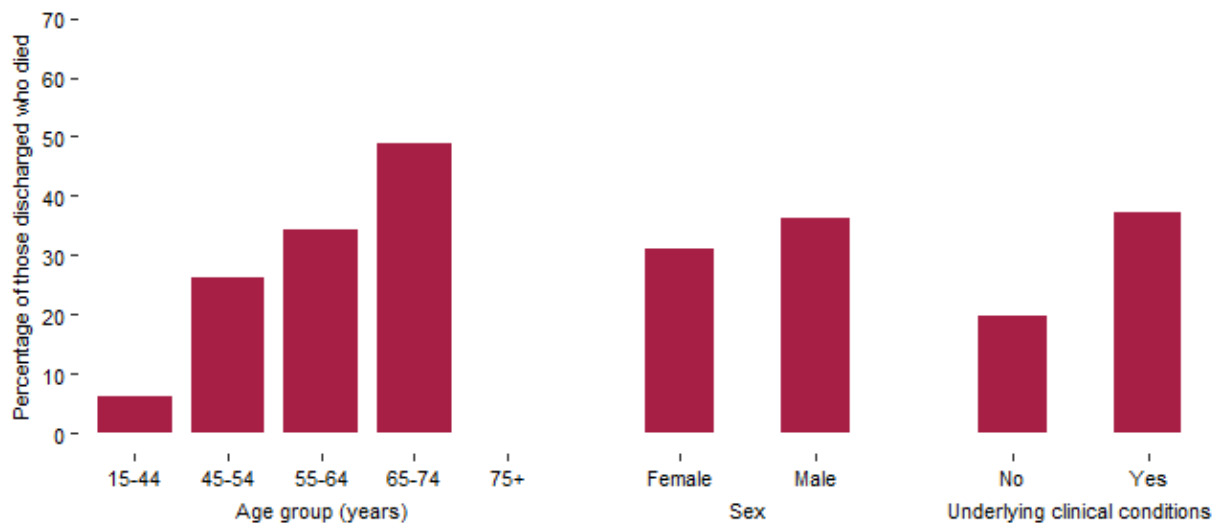


Figure 3: Profile of cases of confirmed COVID-19 (aged 15 years and older) who died in/post admission to ICU in Ireland (Wave 4)

3.1 Clinical complications among those discharged from ICU

Discharge information has been received for 736 patients: 484 were discharged alive and 252 died.

Table 5 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 5: Clinical complications and outcome of cases of COVID-19 (aged 15 years and older) at time of discharge from ICU, Ireland^{9 10} (Wave 4)

	Number	
Total number of cases discharged from ICU	736	99.9
Complications/illness during ICU stay	Number	Of those discharged
Primary viral pneumonia	629	85.5
Secondary bacterial pneumonia	222	30.2
Acute respiratory distress syndrome (ARDS)	511	69.4
Pressor dependence during ICU stay	354	48.1
Myocarditis	9	1.2
Encephalitis	5	0.7
Sepsis	206	28
Multi-organ failure	116	15.8
Anti-coagulation for thrombotic event	95	12.9
Treatment acute kidney injuries (AKI)		
Acute kidney injury	177	24
Received CRRT/IHD	109	14.8
Use of ventilation during ICU stay		
Yes	633	86
No	103	14
Type of ventilations		
Biphasic intermittent positive airway pressure (BiPAP)	243	33
Continuous positive airway pressure (CPAP)	345	46.9
Conventional (including lung protective) mechanical ventilation	380	51.6
High frequency oscillatory ventilation (HFOV)	18	2.4
Required ECMO	14	1.9

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

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

Table 6: Area of residence of cases of COVID-19 (aged 15 years and older) admitted to ICU¹¹, Ireland (Wave 4)

HSE area	Number of cases	Percentage	Rate per 100,000 population
East	258	35.0	15.1
Midlands	66	9.0	22.6
Mid-West	44	6.0	11.4
North-East	91	12.3	19.7
North-West	53	7.2	20.6
South-East	70	9.5	13.7
South	88	11.9	12.7
West	67	9.1	14.8
Total	737	100.0	15.5

¹¹ See technical notes for counties associated with each HSE area

Report prepared by Epi Team, HPSC, 21/06/2022

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](#)