COVID-19 in Dutch Intensive Care Units;

Patient characteristics and outcomes

compared with pneumonia patients in the ICU from 2017-2019

Version 2022-08-18

This report has been made possible by the effort of all Dutch ICUs from:

Admiraal De Ruyter Ziekenhuis
Albert Schweitzer Ziekenhuis
Alrijne Zorggroep
Amphia Ziekenhuis
Amstelland
Amsterdam UMC - locatie AMC
Amsterdam UMC - locatie VUmc
Antonius Zorggroep
Beatrixziekenhuis Rivas Zorggroep
Bernhoven
BovenIJ Ziekenhuis
Bravis Ziekenhuis
Canisius Wilhelmina Ziekenhuis
Catharina Ziekenhuis
Deventer Ziekenhuis
Diakonessenhuis
Dijklander ziekenhuis locatie Hoorn
Dijklander ziekenhuis locatie Purmerend
Elisabeth Ziekenhuis - TweeSteden
Elkerliek Ziekenhuis
Erasmus Medisch Centrum
Flevoziekenhuis
Franciscus Ziekenhuis Locatie Gasthuis
Franciscus Ziekenhuis Locatie Vlietland
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Noordwest Ziekenhuisgroep Locatie Den Helder
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Saxenburgh Groep
Slingeland Ziekenhuis
Spaarne Gasthuis locatie Haarlem
St. Anna Ziekenhuis
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St. Jans-Gasthuis
St. Jansdal
Streekziekenhuis Koningin Beatrix
Tergooiziekenhuizen Locatie Blaricum
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Zaans Medisch Centrum
Ziekenhuisgroep Twente
ZorgSaam Zeeuws-Vlaanderen
Zuyderland Locatie Heerlen
Zuyderland Locatie Sittard Geleen

Introduction

Despite the increased workload in patient care, all hospitals have put great effort in registering the data concerning COVID-19 patients. By using the online data entry system of the National Intensive Care Evaluation (NICE) foundation a limited amount of data (e.g. admission and discharge date and the age of the patient) on all COVID-19 patients has been recorded. By linking this data to more extensive clinical data, which are being collected regular by the NICE registration, it becomes possible to provide more clarity about the important characteristics and outcomes of COVID-19 patients. Because these extensive clinical data are subsequently supplied in batches from the electronic health record (EHR), these are not yet available for every COVID-19 patient. This means, when reading this report, make sure the results concern an overview of all COVID-19 patients or of COVID-19 patients who are linked to the extensive clinical data.

From February 25, 2021, all individual episodes of patients who have had multiple proven COVID-19 episodes will be included. An episode is defined as a consecutive hospital admission period (in one or more hospitals) in which a patient has tested positive at any time. Once a patient is discharged from hospital and after more than three days is re-admitted to hospital with proven COVID-19, this new hospitalization will be considered as a new COVID-19 episode. This allows one patient to have multiple COVID-19 episodes. This report uses data from all recorded episodes.

This report will be updated frequently in order to include more COVID-19 patients and more clinical data in the analyses. When only a limited amount of episodes can be linked this could lead to bias: a distortion of the results can occur if the linked episodes differ from the non-linked episodes, for instance because the patients of linked episodes have been discharged relatively quickly, or because they died. If more data are available, there will be more certainty about the shown differences between time periods and the associations between patient characteristics and their outcomes.

The data included in this report has been processed by the compilers with the utmost care. The compiler cannot be held liable in any way for information that is nevertheless incomplete or incorrect.

In the table below the total number of admitted COVID-19 episodes, the COVID-19 episodes linked to the clinical data, and SARI patients are shown.

	Number of patients	**Number of hospitals**
All COVID-19 episodes	18676	72
Linked COVID-19 episodes	17696	72
SARI patients in 2017-2019	19807	80

Comparison COVID-19 with SARI

In this report, the data of the COVID-19 episodes will be compared with a group of patients who was admitted to a Dutch ICU with severe pneumonia between the period of 1 January 2017 till 31 December 2019. This group is being called Severe Acute Respiratory Infection (SARI). In this report, SARIs will be defined based on the following (APACHE IV) reasons of admission: Pulmonary sepsis; Viral pneumonia; Aspiration pneumonia; Bacterial pneumonia; Fungal pneumonia; Parasitic pneumonia (i.e. Pneumocystis pneumonia); Other pneumonia.

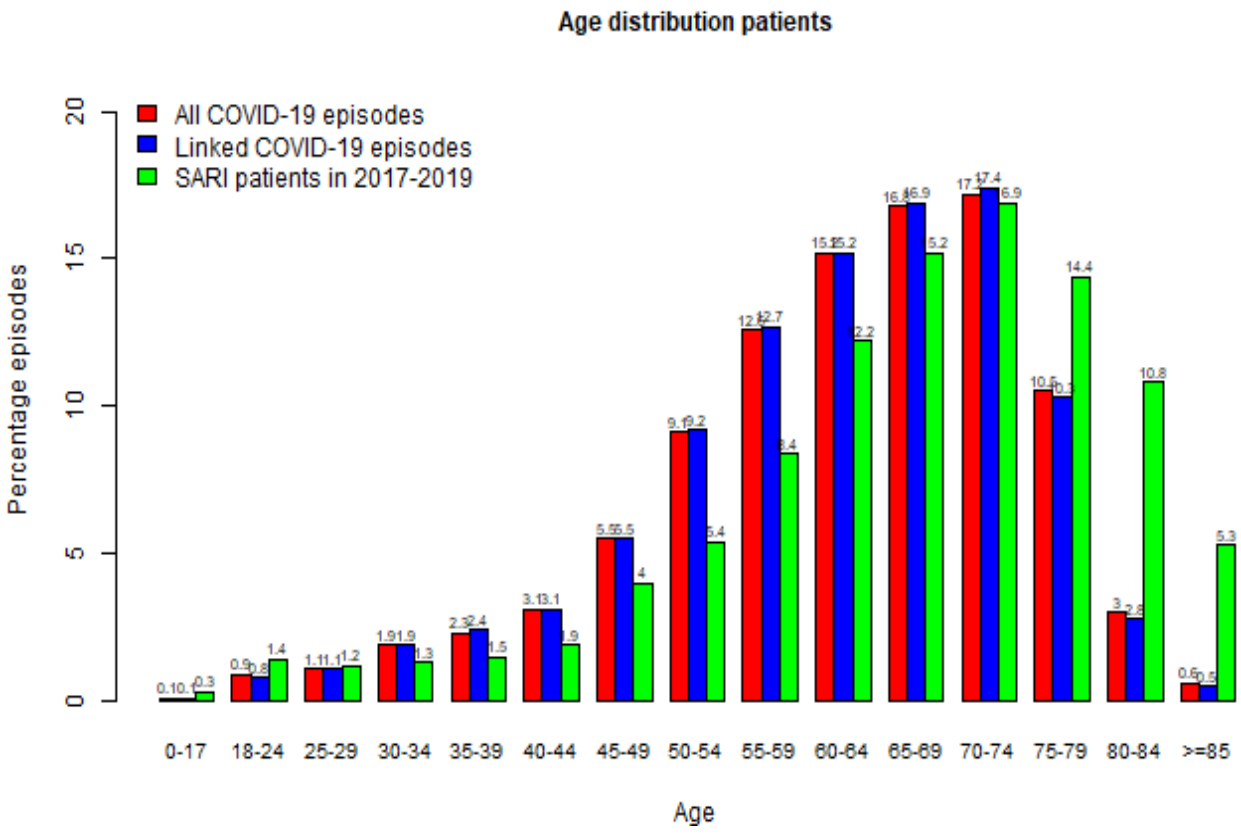
ICU length of stay

The table below shows the mean ICU length of stay of all COVID-19 episodes and admitted SARI patients, of the COVID-19 episodes of which the patients are still in the ICU, and of COVID-19 episodes and SARI patients who have been discharged recently split up into different discharge destinations. If a COVID-19 patient has been transferred to another ICU during the episode, all ICU length of stays will be added up together. The length of stay is calculated in days ((discharge date - admission date)+1).

	Number of COVID-19 episodes	**Mean length of stay (SD)**	**Number of SARI patients**	**Mean length of stay (SD)**
Patients who are currently being treated in the ICU *	48	77.2 (119)	0	-
Discharged to nursing ward in same or different hospital	13328	15.7 (18.9)	14110	5.9 (9.6)
Other discharge destination	745	17.0 (24.1)	2236	7.1 (11.1)
Died in the ICU	4555	17.9 (17.3)	3461	7.1 (10.5)
TOTAL	**18676**	**16.4 (20.0)**	**19807**	**6.2 (10.0)**

**N.B. For the COVID-19 episodes of which the patient is currently admitted, it concerns the ICU length of stay up till the moment that this report was generated and not the final total length of stay.*

The figure and table below show the age distribution of all COVID-19 episodes, the linked COVID-19 episodes and the SARI patients.

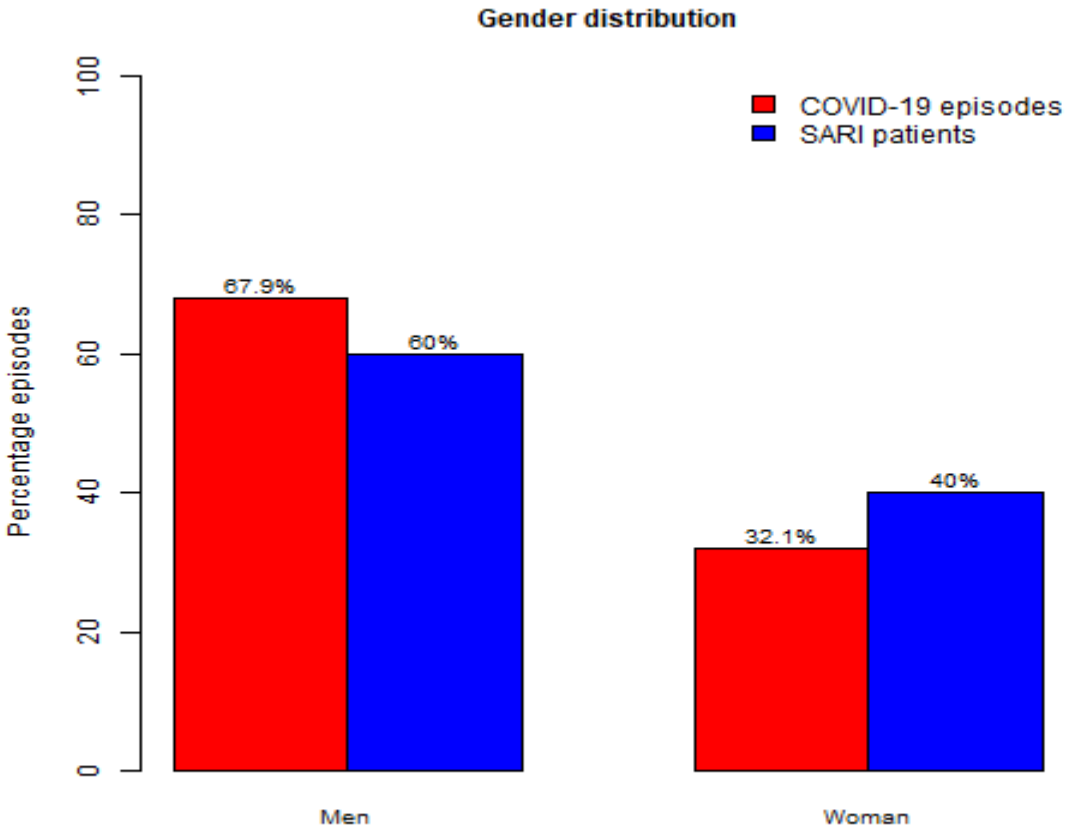


	Mean age (SD)
All COVID-19 episodes	62.0 (12.6)
Linked COVID-19 episodes	61.9 (12.5)
SARI patients in 2017-2019	66.3 (14.2)

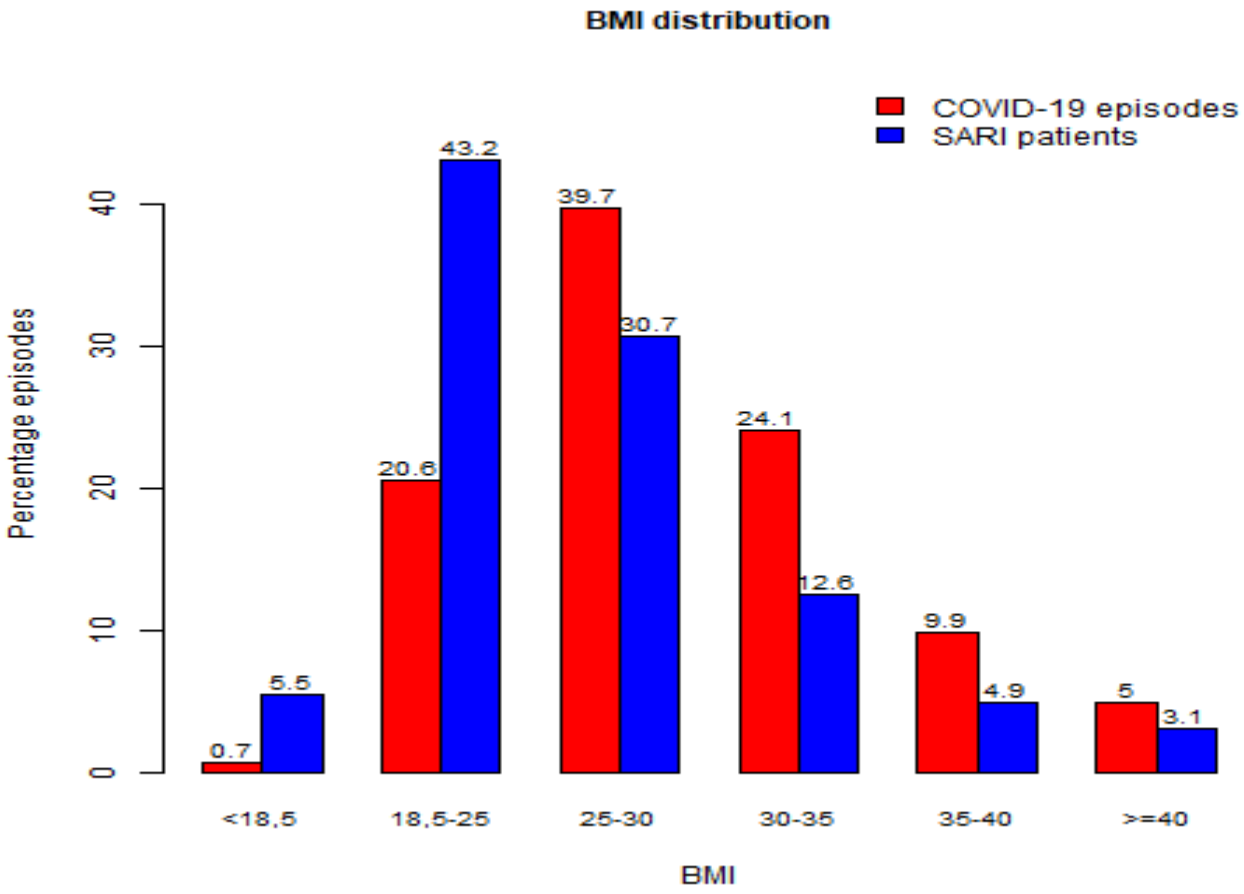
Patient characteristics

In the remainder of this report, the extensive data from the NICE registration will be used. Therefore, from here on, only the linked COVID-19 episodes will be included. This group will continuously be compared with the SARI patients who have been admitted to the ICU in the previous three years (2017-2019).

In the figure below the distribution of men and women in the linked COVID-19 episodes and the SARI patients is shown.



In the graph below, the BMI-distribution of the linked COVID-19 episodes and the SARI patients is shown.

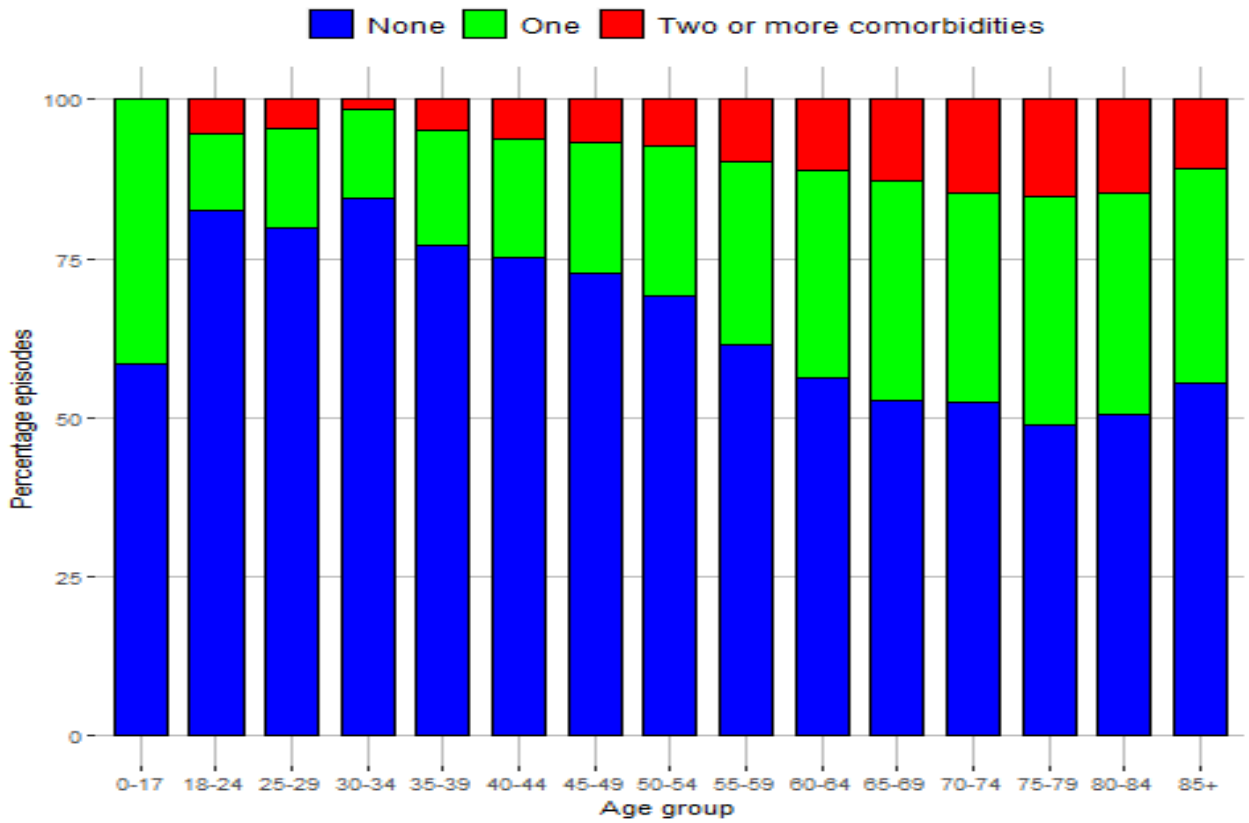


	Mean BMI (SD)
Linked COVID-19 episodes	29.4 (5.7)
SARI patients in 2017-2019	26.2 (5.9)

The table below shows for several different comorbidities (secondary diagnoses) the number and percentage of episodes of which the patient had the concerning comorbidity. Additionally, this table shows the number and percentage of episodes of which the patient were mechanically ventilated at ICU admission, and that were mechanically ventilated within the first 24 hours of ICU admission.

	COVID-19 episodes N(%)	**SARI patients N(%)**
COPD/Respiratory insufficiency	2230 (12.6)	7534 (38)
Renal failure	788 (4.5)	1722 (8.7)
Cirrhosis	87 (0.5)	238 (1.2)
Cardiovascular insufficiency	291 (1.6)	765 (3.9)
Malignancy/Haematological insufficiency	529 (3.0)	1961 (9.9)
Immunological insufficiency	1843 (10.4)	3809 (19.2)
Diabetes	3897 (22)	3998 (20.2)
Mechanically ventilated at ICU admission	5096 (28.8)	7926 (40.0)
Mechanically ventilated within the 1st 24 hours	10720 (60.6)	11127 (56.2)

In the graph below, the percentage of COVID-19 episodes of which the patient had no, one or more than one comorbidities are given for different age groups.



**Note since the report of 2020-12-10 diabetes is also counted as a comorbidity, as a result of this the percentage of episodes of which patient had one or more comorbidities may have increased compared to previous reports.*

Patient outcomes and determinants

In the table below important characteristics belonging to COVID-19 episodes of which the patient died are compared with COVID-19 episodes of which the patient survived.
N.B. This analysis excludes the episodes of which the patient is still admitted at the Intensive Care. However, the number of these episodes are being shown in the last column of the table.
The listed percentages should be read horizontally.

Per patient characteristic, the number and percentage of episodes of which the patient deceased and survived has been displayed. The column containing the P-value shows whether the differences between the episodes of deceased and survived patients are statistically significant. A P-value smaller than 0.05 shows that the presented differences are statistically significant (cannot be explained based on coincidence). A P-value of 0.05 or bigger means that the discovered differences are probably a coincidence.

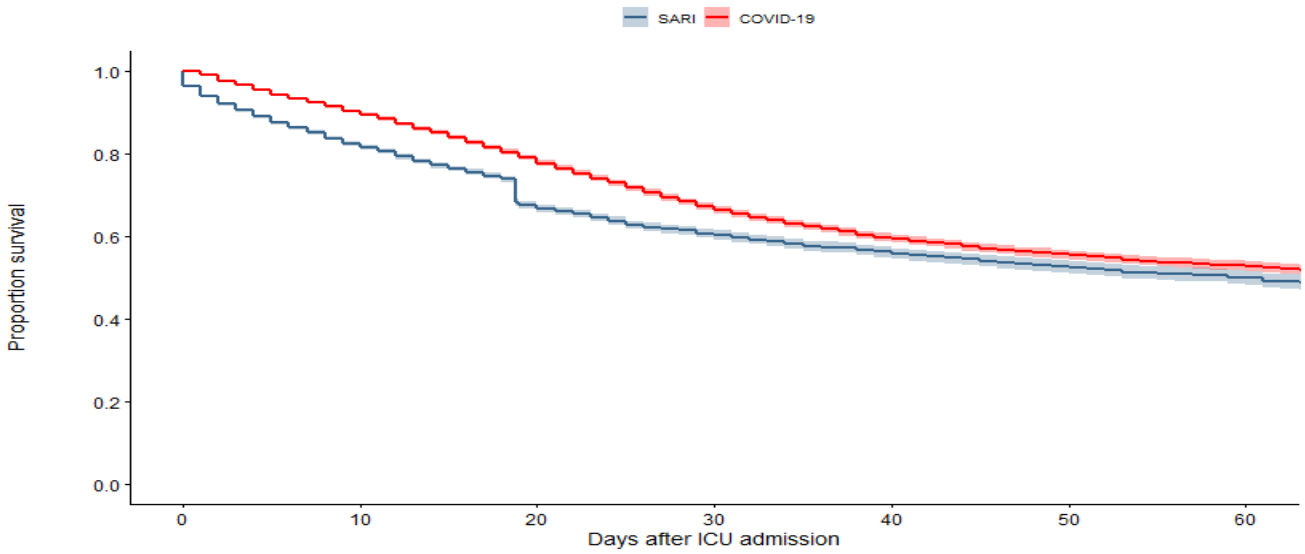
Finally, the association between the patient characteristic and mortality is shown with Odds Ratio's (OR). An OR shows approximately how much the risk of dying is increased in relation to the comparison category, also known as the reference population. Regarding age: due to the small numbers, the seven youngest age categories have been combined into one reference population. Therefore, in the remaining age categories the OR indicate how much more the risk of dying is increased in comparison to this reference population. The 95%-confidence interval (CI) of the OR is displayed in the second last column and indicates whether the association found between the patient characteristics and mortality is statistically significant (confidence interval does NOT include 1) or not significant (confidence interval DOES include1).

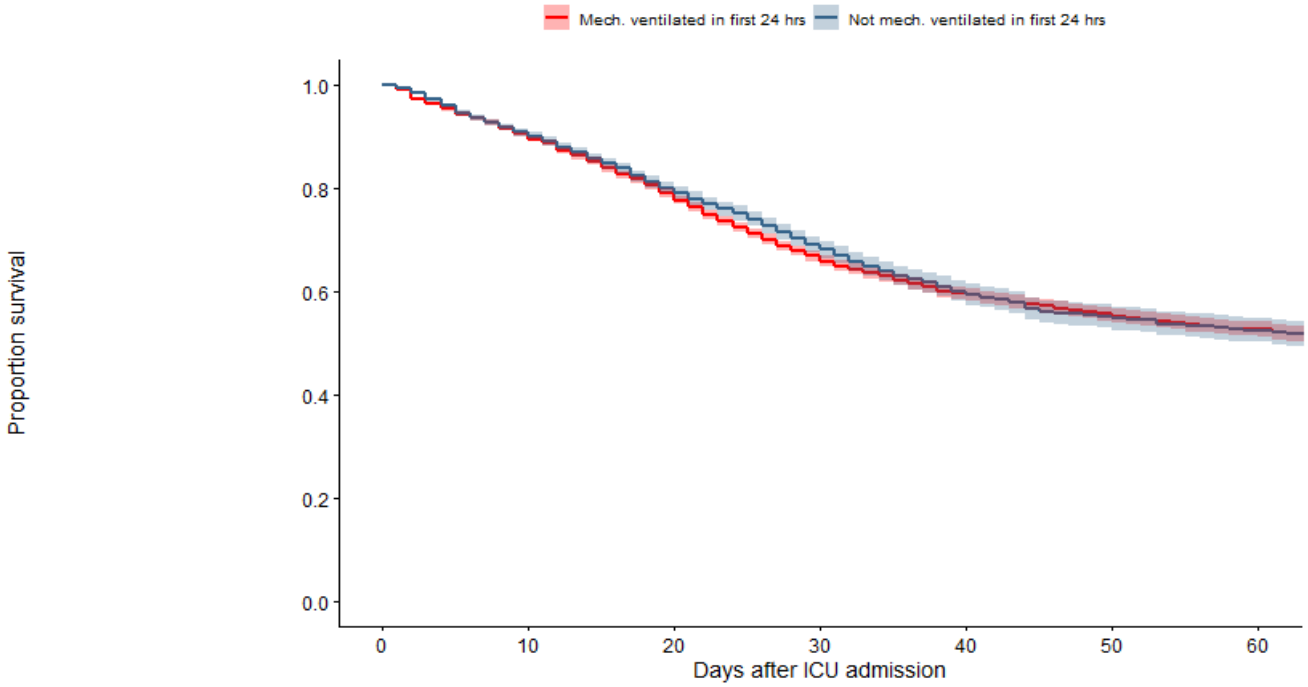
	COVID-19 survivors N (%)	**COVID-19 deceased N (%)**	**P-value**	**Odds ratio (95% CI)**	**COVID-19 still in hospital N**
All episodes	12517 (71.8)	4912 (28.2)			267
Age groups			<0.001		
0-17	10 (90.9)	1 (9.1)		reference	1
18-24	138 (96.5)	5 (3.5)		reference	7
25-29	175 (93.6)	12 (6.4)		reference	6
30-34	312 (96)	13 (4)		reference	11
35-39	395 (93.8)	26 (6.2)		reference	3
40-45	498 (91.2)	48 (8.8)		reference	11
45-50	886 (91.3)	84 (8.7)		reference	7
50-55	1394 (87.1)	207 (12.9)		1.9 (1.55-2.34)	34
55-60	1856 (83.9)	356 (16.1)		2.46 (2.04-2.96)	34
60-65	2016 (75.9)	640 (24.1)		4.07 (3.42-4.83)	34
65-70	1961 (66.7)	977 (33.3)		6.38 (5.4-7.54)	34
70-75	1729 (57)	1302 (43)		9.65 (8.18-11.37)	51
75-80	892 (49.5)	910 (50.5)		13.07 (10.98-15.56)	51
80-85	210 (42.3)	286 (57.7)		17.45 (13.84-21.99)	51
>85	38 (45.8)	45 (54.2)		15.17 (9.61-23.94)	51
Gender			<0.001		
Men	8273 (69.9)	3561 (30.1)		reference	187
Woman	4244 (75.9)	1351 (24.1)		0.74 (0.69-0.8)	80

	COVID-19 survivors N (%)	COVID-19 deceased N (%)	P-value	Odds ratio (95% CI)	COVID-19 still in hospital N
BMI groups			<0.001		
<18.5	77 (65.8)	40 (34.2)		1.09 (0.74-1.6)	6
18.5-25	2347 (67.4)	1134 (32.6)		reference	75
25-30	4782 (70.7)	1978 (29.3)		0.87 (0.8-0.94)	92
30-35	3073 (74.7)	1042 (25.3)		0.71 (0.64-0.78)	53
35-40	1284 (76)	406 (24)		0.66 (0.58-0.75)	21
>40	671 (77.9)	190 (22.1)		0.59 (0.5-0.71)	10
Comorbidities					
COPD & respiratory insufficiency No	11151 (73.2)	4079 (26.8)	<0.001	reference	236
COPD & respiratory insufficiency Yes	1366 (62.1)	833 (37.9)		1.67 (1.52-1.83)	31
Renal failure No	12158 (73)	4494 (27)	<0.001	reference	256
Renal failure Yes	359 (46.2)	418 (53.8)		3.15 (2.72-3.64)	11
Cardiovascular insufficiency No	12367 (72.1)	4776 (27.9)	<0.001	reference	262
Cardiovascular insufficiency Yes	150 (52.4)	136 (47.6)		2.35 (1.86-2.97)	5
Malignancy No	12267 (72.6)	4639 (27.4)	<0.001	reference	261
Malignancy Yes	250 (47.8)	273 (52.2)		2.89 (2.42-3.44)	6
Immunological insufficiency No	11488 (73.6)	4131 (26.4)	<0.001	reference	234
Immunological insufficiency Yes	1029 (56.9)	781 (43.1)		2.11 (1.91-2.33)	33
Number of comorbidities			<0.001		
None	7978 (77.8)	2282 (22.2)		reference	162
1	3535 (67.7)	1684 (32.3)		1.65 (1.53-1.78)	76
>1	1004 (51.5)	946 (48.5)		3.21 (2.9-3.55)	29
Diagnoses at ICU-admission					
Cardiopulmonary resuscitation No	12409 (72.4)	4731 (27.6)	<0.001	reference	259
Cardiopulmonary resuscitation Yes	108 (37.4)	181 (62.6)		4.4 (3.46-5.59)	8
Mechanical ventilation at admission No	9236 (74.3)	3189 (25.7)	<0.001	reference	175
Mechanical ventilation at admission Yes	3281 (65.6)	1723 (34.4)		1.52 (1.42-1.63)	92
Gastrointestinal bleeding No	12481 (71.8)	4892 (28.2)	0.22	reference	266
Gastrointestinal bleeding Yes	36 (64.3)	20 (35.7)		1.42 (0.82-2.45)	1
Diabetes No	10002 (73.6)	3581 (26.4)	<0.001	reference	216
Diabetes Yes	2515 (65.4)	1331 (34.6)		1.48 (1.37-1.6)	51
Diagnoses in 1st 24 hours of ICU-admission					
Acute renal failure No	11939 (73.8)	4239 (26.2)	<0.001	reference	241
Acute renal failure Yes	578 (46.2)	673 (53.8)		3.28 (2.92-3.68)	26
Mechanical ventilation within the 1st 24 hours No	5375 (78.2)	1501 (21.8)	<0.001	reference	100
Mechanical ventilation within the 1st 24 hours Yes	7142 (67.7)	3411 (32.3)		1.71 (1.59-1.83)	167
Confirmed infection No	2657 (72.8)	995 (27.2)	0.163	reference	67
Confirmed infection Yes	9860 (71.6)	3917 (28.4)		1.06 (0.98-1.15)	200
Vasoactive medication No	6777 (77.6)	1956 (22.4)	<0.001	reference	118
Vasoactive medication Yes	5740 (66)	2956 (34)		1.78 (1.67-1.91)	149

Kaplan Meier survival curve

In the figure below, one can see a first estimate of the percentage of COVID-19 episodes (the vertical axis) of which patients survived the hospitalisation, including a period in ICU, since the day of ICU admission until a certain moment in time (the horizontal axis). In the first figure a distinction has been made between all COVID-19 episodes (black line), the linked COVID-19 episodes (red line) and the SARI patients from the years 2017-2019 (blue line). The second figure shows the linked COVID-19 episodes of which the patient has (red line) or has not (blue line) been mechanically ventilated at the first day of admission.
These estimations have to be interpreted with care, because the episodes of which the patient is currently being treated have been included in these analyses too and consequently their outcome is not yet known. Therefore, based on this figure we cannot conclude that COVID-19 patients have a better prognosis compared to the SARIs. The current group of COVID-19 episodes and the previous SARI patients possibly differ regarding important clinical characteristics such as age and secondary diseases such as diabetes or COPD. Further research could prove whether the survival chance differs between the COVID-19 and SARI population.





Number of episodes at risk

Mech. ventilated in first 24 hrs	10720	9133	5816	3522	2222	1453	914
Not mech. ventilated in first 24 hrs	6976	4681	2192	1218	753	505	337

Groups of COVID-19 patients admitted to the ICU and their survival chances

To provide more insight into the chance of survival of COVID-19 patients at the time of ICU admission, a table with survival chances of different COVID-19 patients groups has been made based on the data of 13,389 COVID-19 patients admitted to the ICU between February 27, 2020 and November 23, 2021. In the analyses, the in-hospital mortality/survival was used as outcome measure. The MDS data items known at the time of ICU admission were used to identify distinguishing groups: admission type, age, gender, readmission, referring specialty, BMI, duration of treatment before ICU admission, number of chronic comorbidities (being one of the following comorbidities defined in the NICE Data Dictionary: (1) immunologic insufficiency or AIDS; (2) chronic renal failure or chronic dialysis; (3) respiratory failure or COPD; (4) neoplasm or haematological malignancy; (5) cardiovascular insufficiency ; (6) liver cirrhosis; (7) diabetes). The groups as shown in the table were generated using a regression tree analysis. For a more detailed explanation, see https://stichting-nice.nl/download/file?link=HulpmiddelCOVIDpatie776ntenvoorICopname.

Age	Number of comorbidities	Survival chance
≤58	≤1	90.0%
≥59 en ≤65	≤1	78.8%
≥66 en ≤70		66.4%
≤65	≥2	62.5%
≥71 en ≤77	0	60.3%
≥71 en ≤77	≥1	48.6%
≥78		41.2%

Variations over time

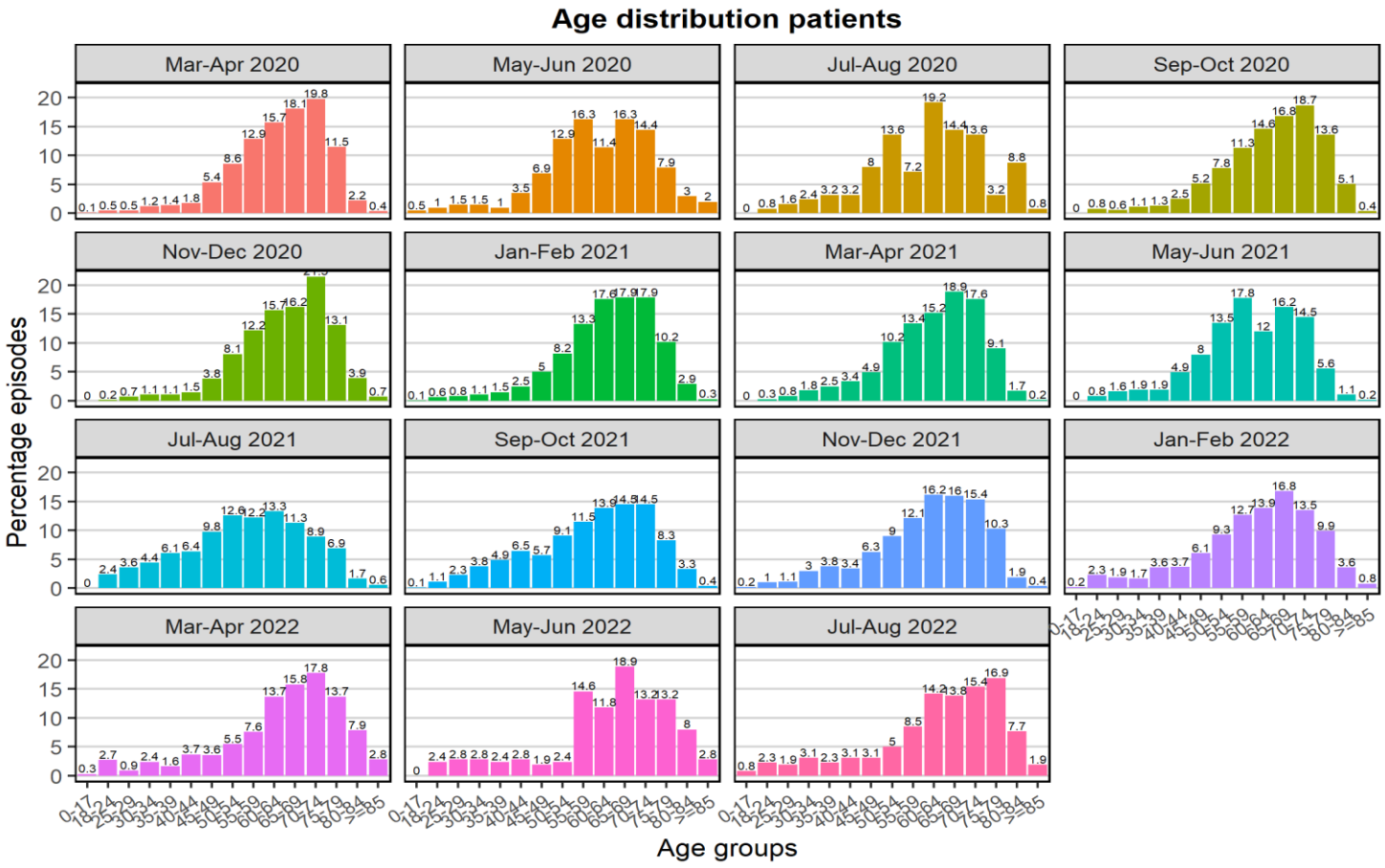
COVID-19 is a new clinical condition for which new knowledge is continuously being obtained, new treatment methods are used and as a result the prognoses / outcomes of the patients may change. To provide insight into these changes, the section below of the report will break down some important patient characteristics and outcomes into two-month periods of the COVID-19 epidemic.

The table below shows the number of COVID-19 episodes per two months.

	Number of episodes	**Number of episodes of which the patient is deceased (%) ***	**Number of episodes linked to clinical data (%)**
March-April 2020	2672	820 (30.7)	2607 (97.6)
May-June 2020	202	37 (18.3)	194 (96.0)
July-August 2020	125	30 (24.0)	120 (96.0)
Sept-Oct 2020	1419	469 (33.1)	1371 (96.6)
Nov-Dec 2020	2200	718 (32.6)	2093 (95.1)
Jan-Feb 2021	2026	564 (27.8)	1987 (98.1)
March-April 2021	2963	747 (25.2)	2927 (98.8)
May-June 2021	1109	224 (20.2)	1096 (98.8)
July-August 2021	723	142 (19.6)	712 (98.5)
Sept-Oct 2021	733	209 (28.5)	720 (98.2)
Nov-Dec 2021	2387	684 (28.7)	2238 (93.8)
Jan-Feb 2022	883	232 (26.3)	795 (90.0)
March-April 2022	748	179 (23.9)	606 (81.0)
May-June 2022	212	61 (28.8)	157 (74.1)
July-August 2022	261	61 (16.9)	65 (24.9)

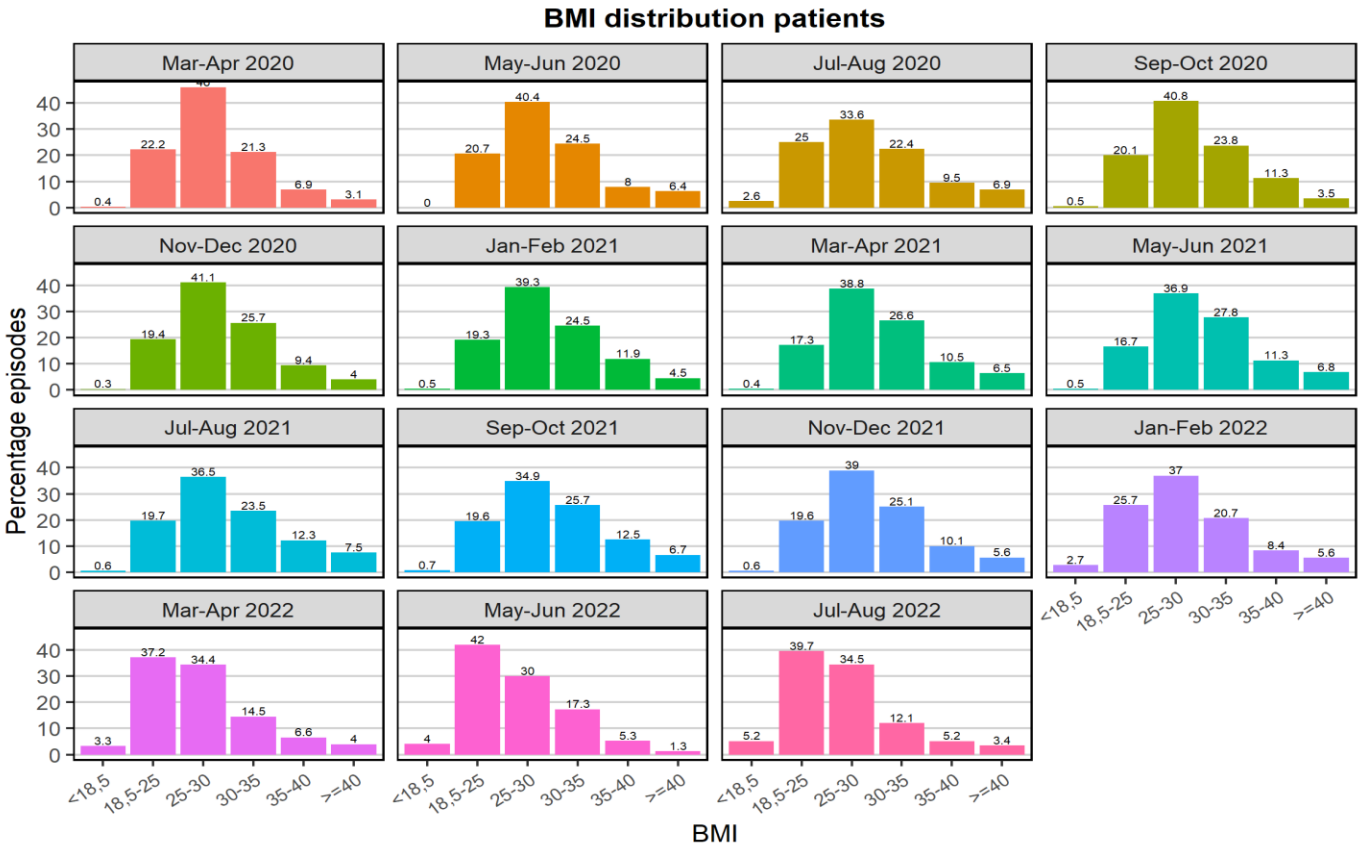
** Note a large proportion of patients of the episodes from the more recent periods are still hospitalized of which a part may still die, so the numbers can still rise (considerably).*

The figure and table below shows the age distribution of the patients from all COVID-19 episodes over different time periods.



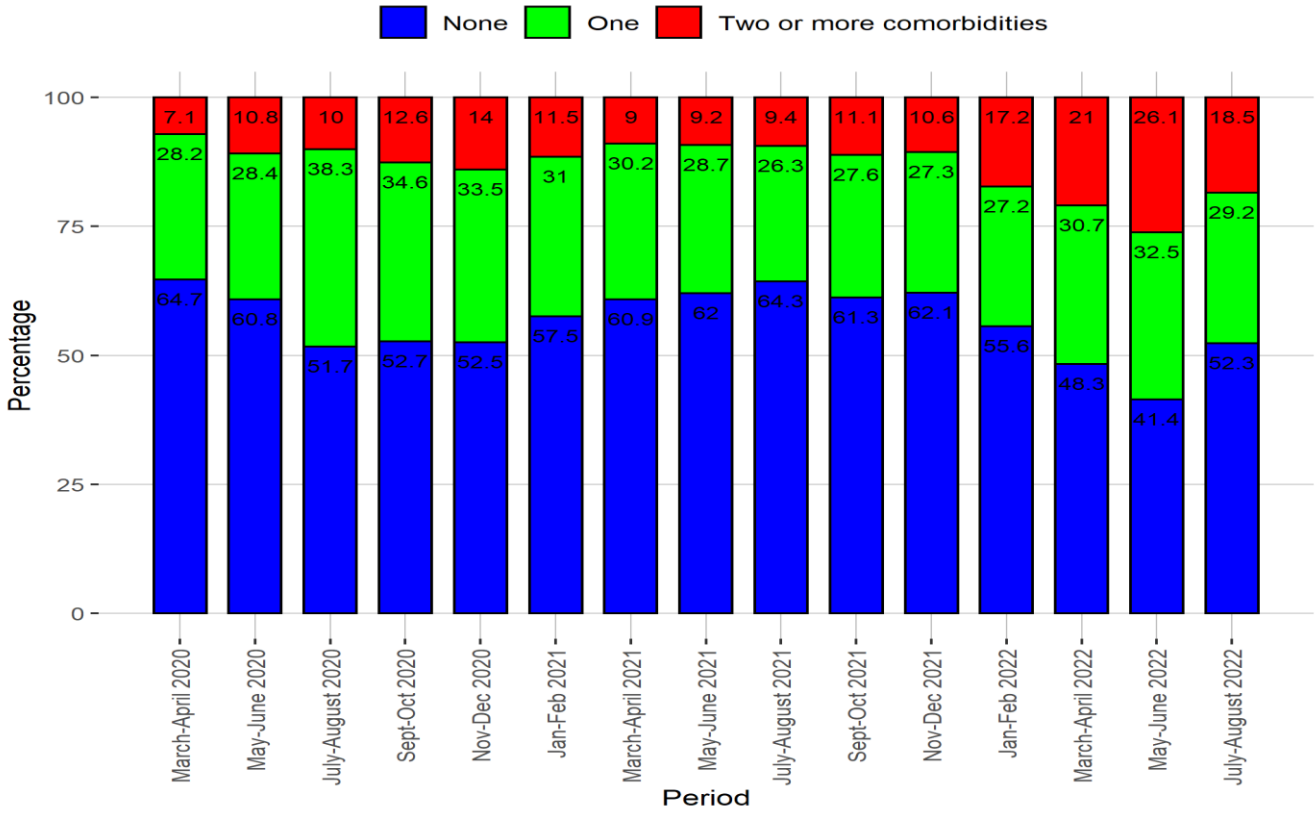
	Mean age (SD)	Median Age (IQR)
March-April 2020	63.4 (11.2)	65 (57-72)
May-June 2020	61.0 (13.1)	62 (53-70)
July-August 2020	60.5 (13.4)	64 (51-70)
Sept-Oct 2020	64.1 (11.9)	66 (57-73)
Nov-Dec 2020	64.7 (11.1)	66 (58-73)
Jan-Feb 2021	62.9 (11.5)	64 (57-71)
March-April 2021	61.8 (11.7)	64 (55-71)
May-June 2021	59.1 (12.0)	59 (52-69)
July-August 2021	55.2 (14.6)	56 (46-66)
Sept-Oct 2021	58.9 (14.4)	61 (50-70)
Nov-Dec 2021	60.5 (13.2)	63 (53-71)
Jan-Feb 2022	60.2 (14.1)	63 (53-70)
March-April 2022	64.0 (14.9)	67 (57-74)
May-June 2022	63.4 (15.4)	67 (58-74)
July-August 2022	63.5 (15.8)	67 (58-75)

The figure and table below shows the BMI distribution of the patients of all COVID-19 episodes over different time periods.



	Mean BMI (SD)	Median BMI (IQR)
March-April 2020	28.7 (4.9)	27.8 (25.3-31.1)
May-June 2020	29.6 (6.0)	28.6 (25.6-32.4)
July-August 2020	29.3 (6.6)	27.9 (24.7-32.8)
Sept-Oct 2020	29.3 (5.3)	28.7 (25.6-32.0)
Nov-Dec 2020	29.4 (5.3)	28.4 (25.7-32.3)
Jan-Feb 2021	29.7 (5.5)	28.8 (25.8-32.8)
March-April 2021	30.1 (5.9)	29.1 (26.0-32.9)
May-June 2021	30.3 (6.0)	29.4 (26.1-33.5)
July-August 2021	30.2 (6.3)	29.2 (25.8-33.6)
Sept-Oct 2021	30.2 (6.3)	29.3 (26.0-33.5)
Nov-Dec 2021	29.7 (5.7)	28.7 (25.8-32.7)
Jan-Feb 2022	28.7 (6.3)	27.8 (24.7-31.8)
March-April 2022	27.3 (6.1)	26.3 (23.5-30.0)
May-June 2022	26.6 (5.9)	25.7 (22.6-29.6)
July-August 2022	26.6 (6.1)	25.5 (22.9-29.8)

In the graph below, the percentage episodes of which the patients had no, one or more than one comorbidities are given for different periods.



**Note since the report of 2020-12-10 diabetes is also counted as a comorbidity, as a result of this the percentage episodes of which patients had no, one or more than one comorbidities may have increased compared to previous reports.*

The table below shows per two months period the mean ICU length of stay of all COVID-19 episodes, of the COVID-19 episodes of which the patient is still in the ICU, and of COVID-19 episodes of which the patient has been discharged recently split up into different discharge destinations. If a patient has been transferred to another ICU during an episode, all ICU length of stays will be added up together. The length of stay is calculated in days ((discharge date - admission date)+1). Note that the most recent period still yields many uncertain results because a large part of this population is still included, so the averages shown will most likely increase.

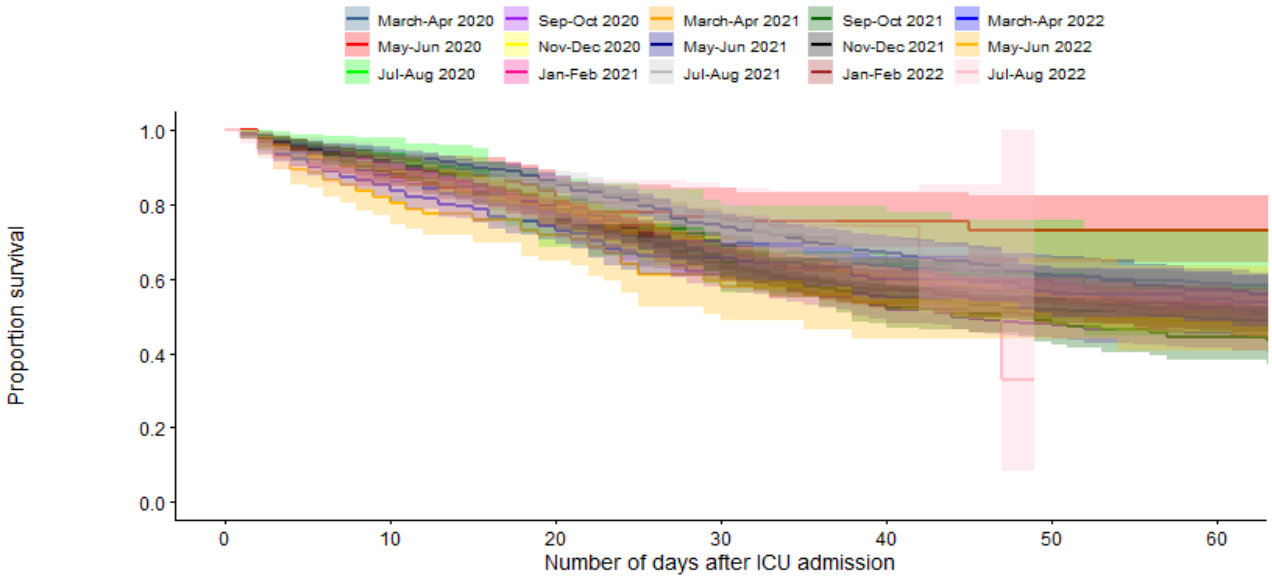
	Number of episodes	**Mean length of ICU stay (SD)**
Period March-April 2020		
Patients who are currently being treated in the ICU *	0	-
Discharged to nursing ward in same or different hospital	1818	21.9 (17.3)
Other discharge destination	105	27.1 (33.7)
Died in the ICU	749	15.9 (18.4)
TOTAL	**2672**	**20.4 (18.7)**
Period May-June 2020		
Patients who are currently being treated in the ICU *	0	-
Discharged to nursing ward in same or different hospital	162	15.4 (14.9)
Other discharge destination	10	19.8 (32.4)
Died in the ICU	30	13.4 (10.4)
TOTAL	**202**	**15.3 (15.5)**
Period July-August 2020		
Patients who are currently being treated in the ICU *	0	-
Discharged to nursing ward in same or different hospital	95	12.6 (13.9)
Other discharge destination	8	27.6 (24.6)
Died in the ICU	22	16.8 (16.6)
TOTAL	**125**	**14.3 (15.5)**
Period Sept-Oct 2020		
Patients who are currently being treated in the ICU *	0	-
Discharged to nursing ward in same or different hospital	978	15.7 (17.5)
Other discharge destination	35	15.6 (18.2)
Died in the ICU	406	19.6 (14)
TOTAL	**1419**	**16.8 (16.7)**
Period Nov-Dec 2020		
Patients who are currently being treated in the ICU *	0	-
Discharged to nursing ward in same or different hospital	1512	16.7 (18.1)
Other discharge destination	62	16.9 (17.9)
Died in the ICU	626	18.1 (14.3)
TOTAL	**2200**	**17.1 (17.1)**
Period Jan-Feb 2021		
Patients who are currently being treated in the ICU *	1	545 (NA)
Discharged to nursing ward in same or different hospital	1489	17 (25.8)
Other discharge destination	37	18.9 (21.2)
Died in the ICU	499	19.3 (22.1)
TOTAL	**2026**	**17.8 (27.5)**

	Number of episodes	Mean length of ICU stay (SD)
Period March-April 2021		
Patients who are currently being treated in the ICU *	0	-
Discharged to nursing ward in same or different hospital	2215	15.2 (17.7)
Other discharge destination	78	23.6 (30.1)
Died in the ICU	670	19.6 (14.3)
TOTAL	**2963**	**16.4 (17.6)**
Period May-June 2021		
Patients who are currently being treated in the ICU *	0	-
Discharged to nursing ward in same or different hospital	868	14.9 (17)
Other discharge destination	41	23.6 (26.7)
Died in the ICU	200	19.6 (14.8)
TOTAL	**1109**	**16.1 (17.2)**
Period July-August 2021		
Patients who are currently being treated in the ICU *	0	-
Discharged to nursing ward in same or different hospital	558	14.3 (16.6)
Other discharge destination	36	23.1 (32.7)
Died in the ICU	129	20.4 (14.6)
TOTAL	**723**	**15.8 (17.6)**
Period Sept-Oct 2021		
Patients who are currently being treated in the ICU *	2	321 (39.6)
Discharged to nursing ward in same or different hospital	529	14 (14.5)
Other discharge destination	23	11.6 (14)
Died in the ICU	179	20.3 (13.8)
TOTAL	**733**	**16.3 (21.6)**
Period Nov-Dec 2021		
Patients who are currently being treated in the ICU *	5	269.4 (10.6)
Discharged to nursing ward in same or different hospital	1646	14 (14)
Other discharge destination	136	15 (18.9)
Died in the ICU	600	16.7 (13)
TOTAL	**2387**	**15.2 (17.1)**
Period Jan-Feb 2022		
Patients who are currently being treated in the ICU *	0	-
Discharged to nursing ward in same or different hospital	633	11.1 (14.8)
Other discharge destination	48	9.2 (11.7)
Died in the ICU	202	17.2 (16.3)
TOTAL	**883**	**12.4 (15.2)**
Period March-April 2022		
Patients who are currently being treated in the ICU *	3	138.3 (16.5)
Discharged to nursing ward in same or different hospital	520	7.2 (10.2)
Other discharge destination	74	5 (8.1)
Died in the ICU	151	11.6 (12.2)
TOTAL	**748**	**8.4 (13.4)**
Period May-June 2022		
Patients who are currently being treated in the ICU *	2	56.5 (2.1)

	Number of episodes	Mean length of ICU stay (SD)
Discharged to nursing ward in same or different hospital	144	6.2 (6.8)
Other discharge destination	14	6.4 (5.5)
Died in the ICU	52	9.6 (8.4)
TOTAL	**212**	**7.5 (8.7)**
Period July-August 2022		
Patients who are currently being treated in the ICU *	35	18.4 (14.4)
Discharged to nursing ward in same or different hospital	153	5.4 (5.7)
Other discharge destination	36	4.2 (4.5)
Died in the ICU	37	5.5 (5.6)
TOTAL	**261**	**7 (8.6)**

**N.B. For the COVID-19 episodes of which the patient is currently admitted, it concerns the ICU length of stay up till the moment that this report was generated and not the final total length of stay.*

The figure below shows an initial estimate per period of the percentage of COVID-19 episodes (the vertical axis) of which the patient survived hospitalization, including admission to the ICU, until a certain moment (the horizontal axis) after the start of the ICU admission.
These estimates must be interpreted with caution, because the patients who are currently being treated have also been included and the outcome of them is therefore not yet known.



Number of episodes at risk

March-Apr 2020	2672	2187	1490	950	616	383	227
May-Jun 2020	202	145	95	61	36	23	14
Jul-Aug 2020	125	96	44	33	24	17	12
Sep-Oct 2020	1419	1153	644	357	241	170	112
Nov-Dec 2020	2200	1735	1012	594	400	270	173
Jan-Feb 2021	2026	1609	929	551	359	236	159
March-Apr 2021	2963	2399	1303	771	479	310	195
May-Jun 2021	1109	880	477	289	175	124	81
Jul-Aug 2021	723	559	292	177	103	70	44
Sep-Oct 2021	733	580	333	185	96	62	44
Nov-Dec 2021	2387	1796	1003	553	329	208	132
Jan-Feb 2022	883	578	325	188	105	72	44
March-Apr 2022	748	396	208	119	81	63	49
May-Jun 2022	212	128	66	35	25	23	13
Jul-Aug 2022	261	140	78	40	16	0	0

The table below shows the (univariate) Odds Ratio (OR) of the two monthly periods. An OR shows approximately how much the risk of dying is increased in relation to the reference group, i.e. the months March and April. The 95% confidence interval of the OR indicates whether the relationship found between the period and mortality is significant (confidence interval includes 1 NOT) or not significant (confidence interval includes 1 DO). Note this is a univariate analysis meaning that no adjustment has been made for differences in patient characteristics over time. It is also important to realize that a large proportion of patients from the episodes of the more recent periods are still hospitalized. These are included in the calculations as survivors, while a part may still die, so that the odds ratio can still rise (considerably).

	Odds ratio (CI)
March-April 2020	Reference
May-June 2020	0.51 (0.35-0.73)
July-August 2020	0.71 (0.47-1.08)
Sept-Oct 2020	1.12 (0.97-1.28)
Nov-Dec 2020	1.09 (0.97-1.24)
Jan-Feb 2021	0.87 (0.77-0.99)
March-April 2021	0.76 (0.68-0.86)
May-June 2021	0.57 (0.48-0.68)
July-August 2021	0.55 (0.45-0.67)
Sept-Oct 2021	0.90 (0.75-1.08)
Nov-Dec 2021	0.91 (0.80-1.02)
Jan-Feb 2022	0.80 (0.68-0.95)
March-April 2022	0.71 (0.59-0.86)
May-June 2022	0.91 (0.67-1.24)
July-August 2022	0.46 (0.33-0.64)

COVID-19 and SOFA

For this report, the data of the COVID-19 episodes are also linked to the information about organ failure that is supplied to NICE in the Sequential Organ Failure Assessment (SOFA) registration module. About half of the ICUs in the Netherlands register this SOFA data. In the table below, in addition to the number of COVID-19 episodes that could be linked to the clinical information, the number of COVID-19 episodes that could be linked to the SOFA data is shown.

	Number of COVID-19 episodes
Linked to clinical (MDS) data	17696
Linked to organ failure (SOFA) data	9320

The table below shows in how many COVID-19 episodes and how many SARI patients received treatment with different types of organ support. For the patients receiving the particular organ support it is also shown how many calendar days they received this support on average during the ICU admission. Finally, the average number of calendar days on which the measured platelet was <50 is shown.

	COVID-19 episodes N (%)	**Mean number of days (SE)**	**SARI patients N (%)**	**Mean number of days (SE)**
Basic respiratory support	6690 (71.8)	10.4 (11.6)	5117 (59.1)	6.5 (8.5)
Advanced respiratory support	44 (0.5)	3.9 (7.7)	169 (2)	3.7 (6.7)
Artificial liver support	1 (0)	1 (-)	0 (0)	-
Cardiac support using cardiac assist device	34 (0.4)	7.1 (13.9)	57 (0.7)	10.4 (14.3)
Renal support using renal replacement therapy	707 (7.6)	10 (10.2)	565 (6.5)	8.1 (9.4)
Measured platelets value <50	451 (4.8)	2.6 (3.5)	515 (5.9)	4.8 (5.6)