GiViTI

Gruppo Italiano per la Valutazione degli Interventi In Terapia Intensiva

---

Report
PROSAFE project

Year 2022

National report for general ICUs (117 ICUs)

ITALY

PROSAFE project - **National report for general ICUs** (117 ICUs)
August 2023

Authors of the report:
Valentina Barbetta, Bergamo - IT
Francesca Dore, Bergamo - IT
Stefano Finazzi, Bergamo - IT
Elena Garbero, Bergamo - IT
Alice Lavetti, Bergamo - IT
Matilde Perego, Bergamo - IT
Giovanni Tricella, Bergamo - IT

Software developers:
Alessandro Esposito, Bergamo - IT
Michele Giardino, Bergamo - IT
Alberto Savoldelli, Bergamo - IT
Michele Zanetti, Bergamo - IT

Steering Committee:
Francesca Baroncelli, Torino - IT
Pietro Caironi, Orbassano - IT
Arturo Chieregato, Milano - IT
Cristiana Cipolla, Milano - IT
Stefano Finazzi, Bergamo - IT
Roberto Fumagalli, Milano - IT
Elena Garbero, Bergamo - IT
Aimone Giugni, Bologna - IT
Martin Langer, Milano - IT
Paolo Malacarne, Pisa - IT
Carlo Olivieri, Novara - IT
Daniele Poole, Belluno - IT
Mario Tavola, Genova - IT
Bruno Viaggi, Firenze - IT
Anna Zamperoni, Treviso - IT

GiViTI Coordinating Center
Daccò Center for Clinical Research on Rare Diseases
Mario Negri Institute for Pharmacological Research
Villa Camozzi - 24020 Ranica (BG), IT
Contatti - tel: +390354535313, email: giviti@marionegri.it
www.giviti.marionegri.it

The PROSAFE/CREACTIVE project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement No. 602714 and DGSANCO Contract No. 2007331. The MUSE project is the winner of a grant under the Italian objective-oriented research call of 2016 (RF-2016-02364584). Agreements are currently in force with the Regions of Piedmont and Tuscany to improve quality of care and resource use within the Intensive Care Units of the Local Health Authorities.

Contents

The project

The PROSAFE project was conceived as an observational project for the continuous electronic collection of data on patients admitted to intensive care units (ICUs). The objectives of the project are to:

- standardize the procedures for collecting data on admitted patients;
- analyse the activity carried out in terms of both clinical results achieved and resources used;
- gather information on the collected case series for research and/or routine clinical management purposes;
- promote comparison among ICUs, on the basis of detailed epidemiological research work, with a view to improving the quality of the care provided.

In addition to these general objectives, the PROSAFE project provides a tool that serves as the operating base for all research projects undertaken by the individual ICUs, both under the umbrella of the GiViTI group and at local level. The PROSAFE program, by virtue of its modular structure, is designed to smoothly integrate the collection of basic data (the PROSAFE 'core') with the collection of specific data for research projects focused on various different topics (the PROSAFE 'petals').

The Petals functioning in 2022 in Italy were:

- the Infections Surveillance Petal, designed to describe the epidemiology of infections in ICUs in Italy, focusing specifically on the identification and study of the main risk and prognostic factors for infections, with a view to comparing the various ICUs in terms of incidence of infections and their severity, prevalent bacterial flora and multiresistant germs;
- the Infections Light Petal, which aim is the description of the epidemiology of infections in ICUs, in order to allow a comparison between the different departments (in terms of incidence/severity/resistance of infections);
- the Full Infections Petal, aiming at the study of the severity of the infections and the use of antibiotics;
- the Colonisation Petal, designed to collect detailed information on active surveillance cultures in individual ICUs and the isolated germs;
- the MUSE Petal, that collects clinical and epidemiological data on patients colonised and/or infected by CRE (carbapenem-resistant Enterobacterales);
- the Cardiosurgical Petal, whose aim is to describe in detail the characteristics of patients admitted to the ICU and subject to cardiosurgical procedures;
- the StART Petal, whose objective is to assess the appropriateness of ICU bed utilization by comparing the level of care required by admitted patients with the level of care that can be provided using available resources;
- the CREACTIVE (Collaborative REsearch on ACute Traumatic brain Injury in intensiVe care medicine in Europe) and CAF (Creactive Ambulatory Follow-up) Petals, that aim to collect relevant information to better characterize patients admitted to the ICU for a traumatic brain injury (european collaborative project FP7-HEALTH-2013-INNOVATION-1);
- the Liver Transplantation Petal, a specialist petal containing variables on the perioperative period, early outcomes and one-year survival in patients who have undergone liver transplantation.

The information currently collected in the program 'core' refers to personal patient data, information on origin, reason for admission and whatever else GiViTI has, over the years, determined to be needed to best describe patients admitted to intensive care.

Data collection

The PROSAFE software is distributed free of charge to all ICUs taking part in the project. To date 227 ICUs collected data during 2022, 215 Italian and 12 foreign ICUs, for a total of 73246 patients registered in PROSAFE. Only the ICUs that collected valid data (165) for a period of over 4 months were included in the aggregate analyses. On the whole, therefore, the assessment was based on a total of 62334 patients admitted to intensive care during 2022.

The reports

The GiViTI Coordinating Centre produces the following reports (only for subgroups composed of at least 4 ICUs):

1. The (Italian) national report on the general (medical/surgical) ICUs. This first report includes the logistic regression model to assess performance in the various ICUs taking part in the project. The statistics for the most representative regions can be downloaded from the GiViTI website (www.giviti.marionegri.it).
2. The (Italian) national report on the surgical ICUs.
3. The personalized report for each individual centre, in Italian or English, which has different sections according to type of ICU and a similar structure to the national report, is designed to foster precise but user-friendly interpretation of the various values for predicting hospital mortality.

All reports (except for the personalized reports, sent to the project Contact person and the Director of the ICU) can be downloaded from the PROSAFE Project section of the GiViTI website (www.giviti.marionegri.it). The participating ICUs can access an online tool, the Analyzer (http://givitiweb.marionegri.it/Analyzer/), to perform analyses both on their own data and on the whole national dataset.

Description of the statistics

Project participation and location of Italian partecipating ICUs

The table on page 17 summarizes the participation in the project of the 165 ICUs which collected valid data in 2022 for a period of at least 4 months.
The map on page 19 shows the geographical location of the italian ICUs assessed in the report.

Description of the hospitals and ICUs

This section presents the organizational-structural features of the ICUs included in the report. The information (except for the information shown on page 23, which is the result of joint analysis of structural data and those collected during the year via the software) is taken from the 'Structural Data' form (available on the GiViTI portal at https://givitiweb.marionegri.it/). Absolute numbers, percentages and the number of missing data are reported for the categorical variables; the mean, standard deviation, median and Q1 (first quartile: the value below which lie 25% of the population) and Q3 (third quartile: the value below which lie 75% of the population) serve as indicators for the continuous variables. Below are a few tips on how to correctly interpret the statistics.

Number of accredited beds Number of beds officially accredited.

Number of available beds Number of beds actually available in ICU. This number is the sum of the beds declared in each single room ('Structural Data' form, section 'Icu rooms'). This number is used for computing utilization indicators.

ICU Structure We define as 'OPEN-SPACE' a ward where each room can be 'monitored' from any other. A room can be 'monitored' from another room when all the beds located in the other room can be visually and instrumentally controlled.

Available beds per physician (average) e **Available beds per nurse (average)** The mean is computed taking into account the differences between daily shifts of personnel.

Indicators of utilization Data on the number of available beds, total admissions in 2022 and ICU stay days were used to calculate indicators of utilization, i.e. indicators able to measure utilization levels and healthcare facility activity levels.

- The bed **occupation rate** expresses bed occupancy as a percentage value, by dividing total ICU stay days recorded at a given time by the total number of days in the period in question multiplied by the number of staffed beds. The product corresponds to the ICU's total availability for admissions (daily number of available beds); the closer total ICU stay days are to total availability, the more the occupation rate tends towards 100%. Occupation rate can even exceed 100% when a new patient is admitted to a bed that became vacant on the same day.

$$\text{Occupation rate} \;=\; \frac{\text{ICU stay days}}{\text{Days} \times \text{Number of beds}} \tag{1}$$

- The **rotation index** expresses the mean number of patients 'staying' in a bed in one year. It is calculated by dividing the number of admissions by the number of beds. Data collected for less than one year have to be extrapolated.

$$\text{Rotation index} \;=\; \frac{\text{Number of patients}}{\text{Number of beds}} \tag{2}$$

- The **turnover interval** expresses the period of time in which a bed remains vacant between two consecutive patients. It is calculated by dividing the number of days with vacant beds by the number of patients admitted during the period in question, giving mean unoccupied time per bed. It is calculated by dividing the number of days with unoccupied beds by the number of patients admitted in the period in question. This gives the mean unoccupied time per bed. This indicator is expressed in hours.

$$\text{Turnover} \;=\; 24 \times \;\frac{(\text{Number of beds} \times \text{Days}) - \text{ICU stay days}}{\text{Number of patients}} \tag{3}$$

Occupied beds per physician (average) e **Occupied beds per nurse (average)** The mean is computed taking into account the differences between daily shifts of personnel. Daily occupied beds are considered in the calculations. This number is obtained by multiplying the average number of beds available per operator for the occupation rate (preliminarily divided by 100).

Study flow-chart

The flow chart, or tree diagram, on page 25 presents the various subgroups of analysed patients. PROSAFE has a very accurate indicator of the completeness and validity of the data entered on each patient, i.e. status.
The program envisages 5 status levels:

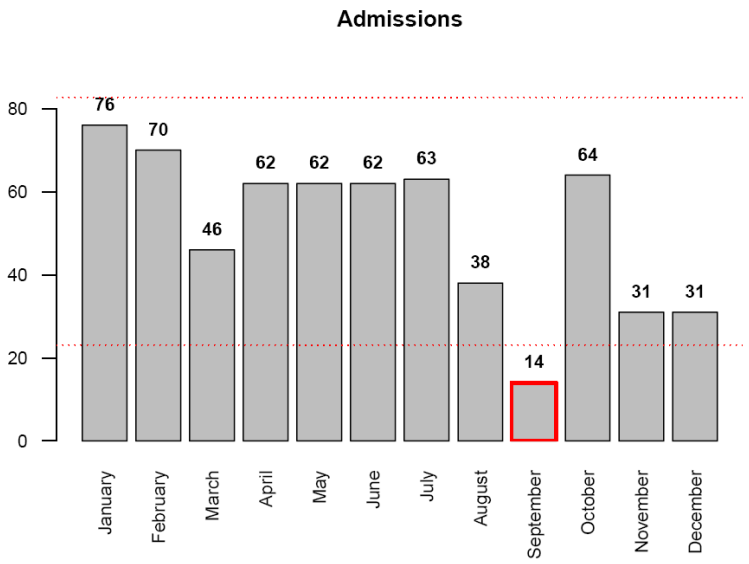
- status 1 - the patient record presents errors or unsolved warnings;
- status 2 - the record is incomplete, there are still missing data;
- status 3 - the patient has been discharged from the ICU, the clinical data are all entered and have undergone congruency checks; only hospital outcome is missing;
- status 4 - record complete and free of errors;
- status 5 - record free of errors but incomplete; the missing data are irretrievable.

Patients with status 1, 2 and 5 data are clearly incomplete.
It would be wrong to omit only patients with incomplete data (in status 1, 2 and 5) from the analyses since this could skew the estimates because of a so-called 'selection bias'. Patients with incomplete data may instead represent a special population subgroup. If only these patients were omitted from the analysed group, the statistics would no longer represent the whole group. It is plausible to assume, for example, that the majority of the patients for whom hospital outcome is missing were discharged alive from hospital, since it is much easier and quicker to retrieve information on hospital outcome when a patient has died. Calculating statistics on hospital mortality in the whole group of patients would result in mortality being incorrectly overestimated.
To address this problem it was decided to omit from each individual ICU's data any patients recruited during months when the validity percentages were below a high threshold (approximately 90%). Another check performed to reduce the risk of selection bias is to analyse the number of patients admitted per month. If the number of patients admitted in one or more months differs significantly from the mean number of monthly admissions (with a threshold arbitrarily set at a mean of +/- 2 trimmed SD), or if the variability in the number of admissions is too high (variation coefficient above 40%), a warning message will appear asking for the entered data to be checked. To correctly participate in the PROSAFE project, all patients consecutively admitted to the ICU must be registered in the software on a continuous basis throughout the year; any marked swings in the number of admissions should suggest that there may be patient registration 'gaps'. It is, however, impossible to distinguish between registration 'gaps' and periods in which there is a real reduction/increase in admissions. Hence our objective is to draw attention to potential problems by asking each individual centre for feedback.
To more clearly illustrate the selection methods used in the choice of valid data, we present an extract from the data validity report of a randomly selected, anonymized ICU.
From January to December, Centre XX000 recruits a total of 619 patients. The first table and the bar graph show the number of monthly admissions to intensive care. In this case, a warning will appear at the bottom of the bar graph asking for confirmation of the entered data.

Centre XX000 - Year 2014
Data validity
Patients admitted: 619

Month	N	%
January	76	12.3
February	70	11.3
March	46	7.4
April	62	10.0
May	62	10.0
June	62	10.0
July	63	10.2
August	38	6.1
September	14	2.3
October	64	10.3
November	31	5.0
December	31	5.0

Admissions	
Mean	51.6
Median	62.0
SD	19.1
VC	37.1

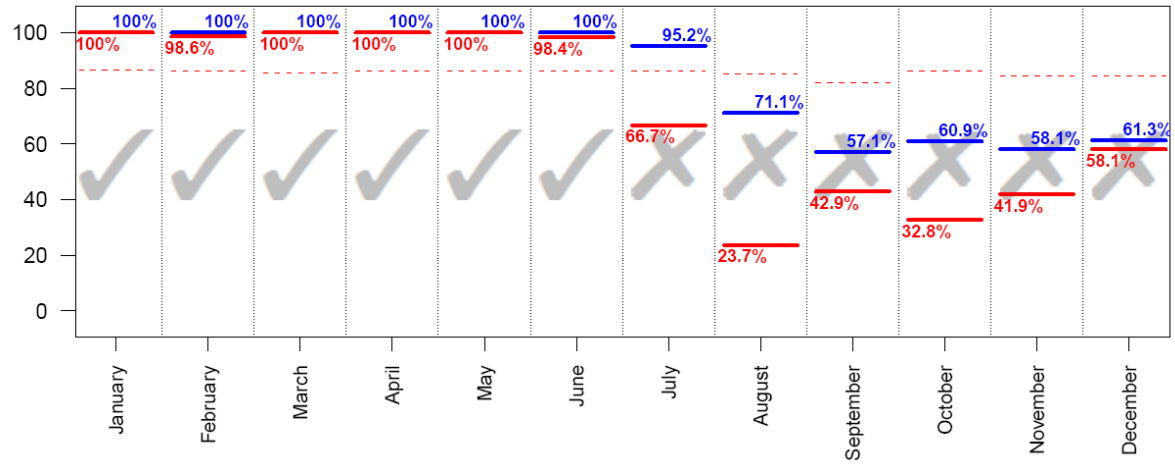


WARNING! The highligthed months have a number of patients quite different from the average. Please verify the correctness of the data and, particularly, that all consecutive patients have been registered in the Prosafe software.

The second table divides the recruited patients by admission month and form completion status. Overall, the ICU in question presents complete data for 485 patients. 134 patients still present incomplete data.

	Status (N)							
Month	**1**	**2**	**3**	**4**	**5**	**Total**	**% Pts. in status 3/4**	**% Pts. in status 4**
January	0	0	0	76	0	76	100.0	100.0
February	0	0	1	69	0	70	100.0	98.6
March	0	0	0	46	0	46	100.0	100.0
April	0	0	0	62	0	62	100.0	100.0
May	0	0	0	62	0	62	100.0	100.0
June	0	0	1	61	0	62	100.0	98.4
July	0	3	18	42	0	63	95.2	66.7
August	0	11	18	9	0	38	71.1	23.7
September	0	6	2	6	0	14	57.1	42.9
October	4	21	18	21	0	64	60.9	32.8
November	0	13	5	13	0	31	58.1	41.9
December	0	12	1	18	0	31	61.3	58.1
Total	4	66	64	485	0	619	88.7	78.4

The final graph shows level of data completeness in the various months. Percentages of patients with records in status 3 or 4 and in status 4 are shown in blue and red respectively.
According to our elimination criterion, the overall analysis will exclude those patients admitted in the months of August, September, October, November and December since they present a validity percentage below the defined threshold (dashed line). Accordingly, 441 patients have valid data for the analysis. Regarding analysis of hospital mortality, patients admitted in July will also be excluded (in that month the % of patients with record not in status 4 is still too hight). Hence, the analysis on hospital outcome will involve 378 patients on 619 admitted.



Patients admitted in months with % of patients in status 3 or 4 over the threshold (drawn in the graph with a dashed line): **441**; patients in status 4: **378**.

Description of patients

These sections of the report present the results of the analyses conducted on the group of patients with valid data. Patients admitted in the months with percentage of admissions in statuses 3 and 4 under the defined threshold are omitted from the analysis group. This part presents patient characteristics at ICU admission and during ICU stay, severity scores, process indicators, and outcomes for the various patient subgroups.

Absolute number, percentage and number of missing data are reported for the categorical data, while mean, standard deviation, median, interquartile range (Q1-Q3) and minimum and maximum range are reported for continuous variables. The acronym 95% CI indicates the 95% confidence interval of the estimate.

Below are a few tips on how to correctly interpret the analyses.

BMI The calculation of Body Mass Index is based on weight and height values, with the following formula:

$$\text{BMI} = \frac{\text{weight (kg)}}{\text{height (m)}^2} \tag{4}$$

The categories of underweight, overweight and obese are determined according to the following criteria: underweight if BMI<20 (males) or BMI<19 (females); normal weight if 20<=BMI<=25 (males) or 19<=BMI<=24 (females); overweight if 25<BMI<=30 (males) or 24<BMI<=29 (females); obese if BMI>30 (males) or BMI>29 (females).

CCI The Charlson Comorbidities Index is calculated according to the Quan formula.

Stay before ICU Days spent between admission to hospital and admission to ICU.

Reason for transfer from other ICU The reported items refer to the following reasons:

- Specialist expertise -> specialist expertise within the hospital;
- Step-up care -> management of high complexity critical patient;
- Logistical/organizational reasons -> continuation of treatment in stabilized patient (transfer for logistic/ organizational reasons);
- Step-down care-> continuation of treatment in a non-specialist environment.

Surgical interventions on admission (top 10) This lists the top 10 surgical interventions, divided by elective surgery and emergency surgery patients, operated between 7 days prior to and one day after admission to the ICU. Each single intervention (even more than one per patient) is counted.

Timing of surgical interventions on admission The timing of sorgical interventions on admissions is specified. Each single intervention (even more than one per patient) is counted. It may happen that the percentages exceed the threshold of 100 % if patients underwent more than one intervention in the specified time periods.

Multiple trauma The category multiple trauma is defined by the presence of trauma in two or more regions.

SAPSII The score cannot be calculated if GCS (first 24 hours) is unassessable.

The SAPSII score for individual patients can become the probability of dying in hospital. This is performed by the following formula:

$$\text{Predicted hospital mortality} \;=\; \frac{\mathrm{e}^{\text{Logit}}}{1+\mathrm{e}^{\text{Logit}}} \tag{5}$$

where

$$\text{Logit} \;=\; -7.763 + 0.074 \times SAPSII + 0.997 \times \ln\left(\text{SAPSII}+1\right) \tag{6}$$

PELOD The PELOD score for individual pediatric patients can become the probability of dying in ICU. This is performed by the following formula:

$$\text{Predicted ICU mortality} \;=\; \frac{1}{1+\mathrm{e}^{7.64-0.30\times\text{PELOD}}} \tag{7}$$

PIM 2/PIM 3 The PIM score for individual pediatric patients can become the probability of dying in ICU. This is performed by the following formula:

$$\text{Predicted ICU mortality} \;=\; \frac{\mathrm{e}^{\text{PIM}}}{1+\mathrm{e}^{\text{PIM}}} \tag{8}$$

Severity evolution (of infections) The severity of infection on admission is shown in the rows. Maximum severity reached during ICU stay is indicated in the columns. The table reports the absolute numbers and row percentages by which to assess the evolution of infection severity. For example, in the case below, the severity of the infection did not worsen during ICU stay in 15 out of the 17 patients admitted with SEPSIS (15/17=88.2%). Conversely, the condition of SEPSIS developed into SEPTIC SHOCK in 2 patients (2/17=11.8%).

Severity evolution		During the stay				
	N (R %)	None	Infection without SEPSIS	SEPSIS	SEPTIC SHOCK	TOT
Admission	None	173 (93.0%)	9 (4.8%)	1 (0.5%)	3 (1.6%)	186
	Infection without SEPSIS	-	19 (95.0%)	0 (0.0%)	1 (5.0%)	20
	SEPSIS	-	-	15 (88.2%)	2 (11.8%)	17
	SEPTIC SHOCK	-	-	-	36 (100.0%)	36
	TOT	173	28	16	42	259

VAP Forms of pneumonia associated with invasive ventilation are defined as VAP (pneumonia onsetting after the 2nd day of ventilation and developing within 2 days of the end of ventilation).

Incidence of VAP Two different incidence rates are presented:

$$\text{Incidence of VAP} = \frac{\text{Number of patients with VAP during stay}}{\text{Mechanical ventilation days pre VAP}} \times 1000 \tag{9}$$

where the variable *mechanical ventilation days pre-VAP* corresponds to the total number of mechanical ventilation days pre-VAP of all patients admitted to the ICU. It is equal to the total duration of mechanical ventilation for patients who do not develop VAP and to the difference between the date of onset of VAP and the start date of mechanical ventilation for infected patients. The mechanical ventilation days in patients who were discharged or died within 2 days of the start of ventilation are excluded from the denominator.

$$\text{Incidence of VAP} = \frac{\text{Number of patients with VAP during stay}}{(\text{Mechanical ventilation days pre VAP})/8} \times 100 \tag{10}$$

The second rate is only a reworking of the previous one, to simplify interpretation of the data. It answers the question: 'Out of 100 patients ventilated for 8 days in the ICU, how many develop VAP?'. The 8-day cut off has been set by convention. The rates are accompanied by 95% confidence intervals.

Incidence of CR-BSI Just like VAP, two incidence rates are presented for catheter-related blood stream infections:

$$\text{Incidence of CRBSI} = \frac{\text{Number of patients with CRBSI during stay}}{\text{CVC days pre CRBSI}} \times 1000 \tag{11}$$

$$\text{Incidence of CRBSI} = \frac{\text{Number of patients with CRBSI during stay}}{(\text{CVC days pre CRBSI})/12} \times 100 \tag{12}$$

The second one responds to the question 'Out of 100 theoretical patients catheterized for 12 days in the ICU, how many will develop catheter-related blood stream infections?'.

Incidence of catheter-related UTI Just like VAP and CR-BSI, two incidence rates are presented for catheter-related urinary tract infections:

$$\text{Incidence of catheter related UTI} = \frac{\text{Number of patients with catheter related UTI during stay}}{\text{Urinary catheter days pre UTI}} \times 1000 \tag{13}$$

$$\text{Incidence of catheter related UTI} = \frac{\text{Number of patients with catheter related UTI during stay}}{(\text{Urinary catheter days pre UTI})/12} \times 100 \tag{14}$$

The second one responds to the question 'Out of 100 theoretical patients catheterized for 12 days in the ICU, how many will develop catheter-related urinary tract infections?'.

Invasive ventilation (approach) The reported items refer to the following scenarios:

- Due to pulmonary failure -> invasive ventilation in a patient with hypoxic and/or hypercapnic respiratory failure;
- For airway mainteinance -> invasive ventilation in a patient without respiratory failure, to support airways (e.g. coma patient);
- In weaning -> final part of invasive ventilation in a patient admitted for weaning from ventilation.

Non invasive ventilation (approach) The reported items refer to the following scenarios:

- Non invasive ventilation only -> non-invasive ventilation as the only ventilatory approach to the patient;
- Non invasive ventilation failed -> non-invasive ventilation immediately followed by patient intubation;
- For weaning -> non-invasive ventilation started within one day of the end of invasive ventilation.

Surgical interventions during stay (top 10) The surgical interventions performed from the second day of stay.

Reason of transfer to other ICU See the item 'Reason of transfer from other ICU'.

Hospital mortality Statistics on hospital outcome (indicated with an asterisk, where necessary) involve the subgroup of patients with valid data for this variable or patients admitted during the months when over a defined % of patients were in status 4, after excluding readmissions from another hospital ward.

Last hospital mortality For patients transferred to other ICU or to rehabilitation/high dependency care unit in other hospital, is the outcome at the last hospital discharge.

Readmissions Only readmissions from other hospital wards are considered.

ICU stay (days) Length of pre-ICU, post-ICU and hospital stay are simply calculated as the difference between dates. Calculation of ICU stay can be optimized by using time of patient admission and discharge. The difference between the discharge date and the admission date is calculated. 1 is added if the patient is admitted before 12:00 and discharged after this time. Conversely, 1 is subtracted if the patient is admitted after midday and discharged before midday. If the length of stay in the ICU is equal to 0, length of stay is entered as 1.

Analysis of mortality: This section presents indicators or graphs useful for a detailed analysis of mortality. The diagram lists the reference models used for the calculation of expected mortality according to the type of patients evaluated. All the predictive models involve the subgroup of patients admitted during the months when over a defined % of patients were in status 4. Analyses involving adult patients exclude cardiac surgery patients, patients admitted for diagnosis of death/organ donation and readmissions.

Patients	Model	Mortality
Adults NON-CS	GiViTI 2022	Last hospital mortality
Adults NON-CS, NON-COVID	GiViTI 2021	Last hospital mortality
Adults NON-CS, COVID	GiViTI 2020 COVID	Last hospital mortality
Pediatric	PIM 2	ICU mortality
	PIM 3	ICU mortality
	PELOD	ICU mortality

Analysis of mortality: forest plot The graph shows the various O/E scores of the ICUs involved in the project. The O/E score is given by the ratio between the total number of observed deaths and the total number of expected deaths (according to the indicated reference model). The dotted line, in correspondence to the value of 1, separates the ICUs with lower or higher mortality than predicted by the model. Each estimate is accompanied by a 95% confidence interval.

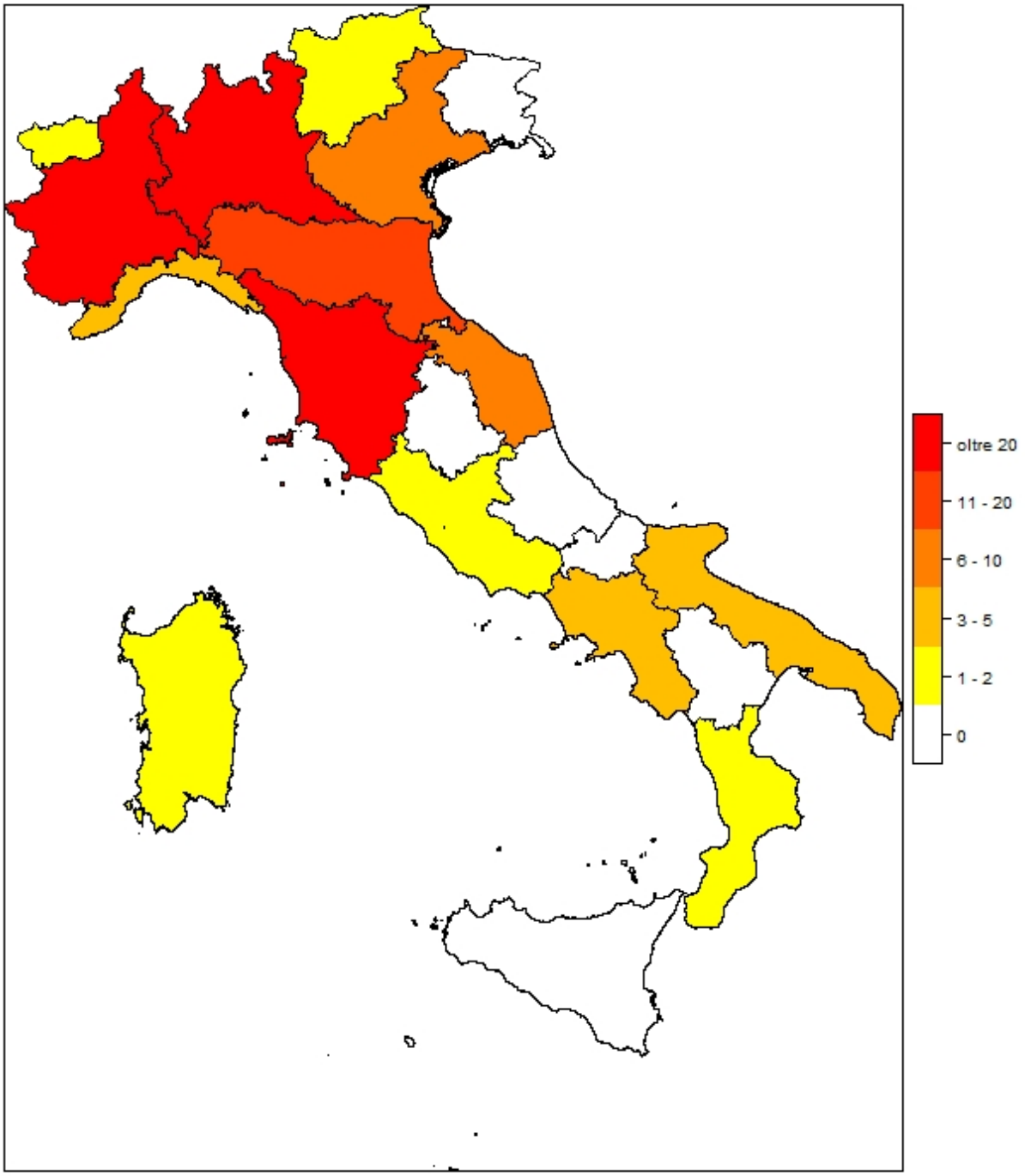
Statistics

National report for general ICUs - Year 2022
Project participation*

	TYPE							
Nation	General	Cardiosurgical	Surgical	Neurosurgical	Pediatrics	HDC	Other	**Total**
Greece	1 ICUs 576 patients				1 ICUs 177 patients			**2 ICUs** **753 patients**
Hungary				1 ICUs 253 patients				**1 ICUs** **253 patients**
Italy	**117 ICUs** **39854 patients**	14 ICUs 8357 patients	6 ICUs 1630 patients	7 ICUs 3101 patients	3 ICUs 1092 patients	2 ICUs 1210 patients	8 ICUs 4317 patients	**157 ICUs** **59561 patients**
Slovenia	1 ICUs 337 patients		3 ICUs 975 patients				1 ICUs 262 patients	**5 ICUs** **1574 patients**
Total	**119 ICUs** **40767 patients**	**14 ICUs** **8357 patients**	**9 ICUs** **2605 patients**	**8 ICUs** **3354 patients**	**4 ICUs** **1269 patients**	**2 ICUs** **1210 patients**	**9 ICUs** **4579 patients**	**165 ICUs** **62141 patients**

*Are considered as adhering the ICUs with at least 4 months of valid compilation.

Location of Italian participating ICUs (N=117)
ICUs per region



Region	N	%
Abruzzo	0	0
Basilicata	0	0
Calabria	1	0.9
Campania	3	2.6
Emilia Romagna	13	11.1
Friuli Venezia Giulia	0	0
Lazio	2	1.7
Liguria	3	2.6
Lombardia	27	23.1
Marche	6	5.1
Molise	0	0
Piemonte	21	17.9
Puglia	5	4.3
Sardegna	1	0.9
Sicilia	0	0
Toscana	24	20.5
Trentino Alto Adige	1	0.9
Umbria	0	0
Valle d'Aosta	1	0.9
Veneto	9	7.7

Geographical area	N	%
Northern Italy	75	64.1
Central Italy	32	27.4
Southern Italy	10	8.5

Description of hospitals (N=117) - **Year 2022**

Number of beds in hospital	N	%
< 300 beds	47	42.3
300 - 800 beds	55	49.5
> 800 beds	9	8.1
Missing	6	

Type of ICUs present in hospital	N	%
General	110	94.0
Medical	0	0.0
Surgical	6	5.1
Neurological/neurosurgical	10	8.5
Cardiosurgical	19	16.2
Burns	5	4.3
Post-transplantations	3	2.6
Other	27	23.1

Type of subICUs present in hospital	N	%
General	22	18.8
Surgical	4	3.4
Cardiological	83	70.9
Respiratory	26	22.2
Neurological (stroke unit)	55	47.0
Other	17	14.5

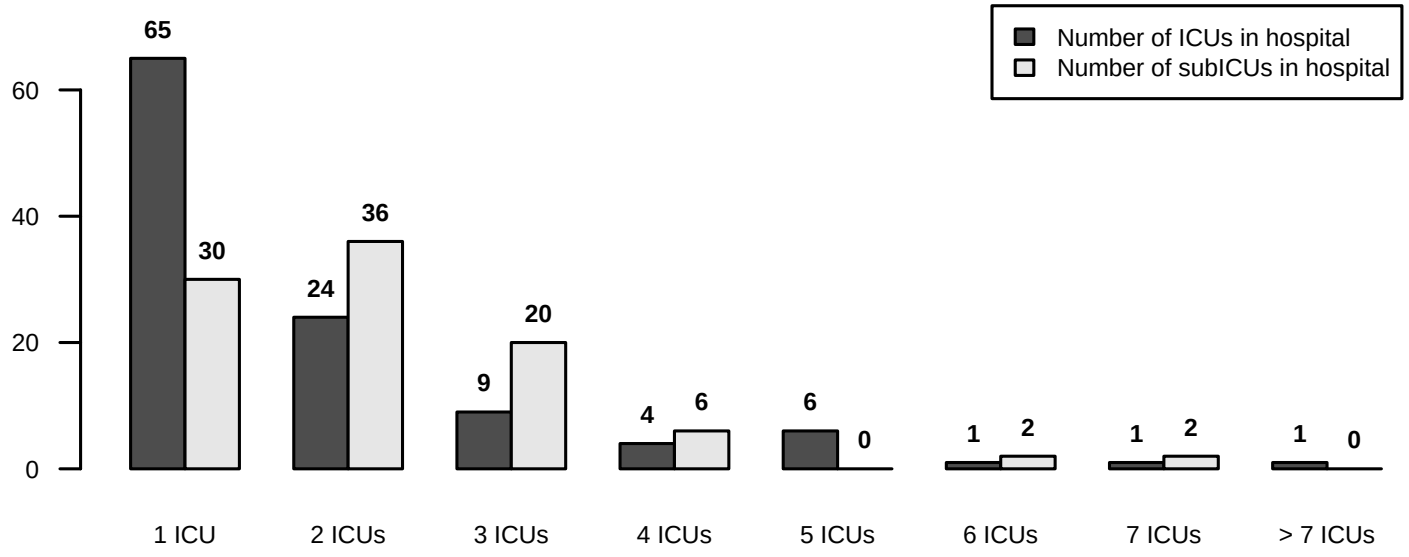
Non surgical specialties	N	%
Cardiology	106	95.5
Pulmonology	62	55.9
Nephrology	90	81.1
Infection disease	44	39.6
Pediatric	86	77.5
Neonatology	63	56.8
Neurology	82	73.9
Haematology	45	40.5
Emergency room	111	100.0
Traumatology	80	72.1
Emergency medical	67	60.4

Surgical specialties (independent ward)	N	%
Neurosurgery	34	29.1
Cardiosurgery	22	18.8
Major vascular surgery	50	42.7
Thoracic surgery	36	30.8
Pediatric surgery	18	15.4
Transplantation activities	9	7.7

Surgical specialties (procedures only)	N	%
Neurosurgery	9	7.7
Cardiosurgery	3	2.6
Major vascular surgery	16	13.7
Thoracic surgery	24	20.5
Pediatric surgery	22	18.8
Transplantation activities	15	12.8

Services/activities available in H (h24)	N	%
Neuroradiology	47	40.2
Interventional neuroradiology	33	28.2
Interventional vascular radiology	42	35.9
CT scan	111	94.9
MRI	57	48.7
Interventional hemodynamic	68	58.1
Endoscopy	73	62.4
Bronchoscopy	40	34.2
Hyperbaric chamber	6	5.1

Services/activities available in H (rep.)	N	%
Neuroradiology	7	6.0
Interventional neuroradiology	4	3.4
Interventional vascular radiology	22	18.8
CT scan	0	0.0
MRI	45	38.5
Interventional hemodynamic	7	6.0
Endoscopy	38	32.5
Bronchoscopy	47	40.2
Hyperbaric chamber	0	0.0



Description of ICUs (N=117) - **Year 2022**

Number of activable beds	
Mean (SD)	10.3 (6.2)
Median (Q1−Q3)	9.5 (6−12)
Missing	7

Number of beds declared to hospital	
Mean (SD)	9.1 (4.5)
Median (Q1−Q3)	8 (6−12)
Missing	6

University affiliation	N	%
Yes	47	42.3
No	64	57.7
Missing	6	

Square meter per bed	
Mean (SD)	16.2 (23.3)
Median (Q1−Q3)	12.5 (9.5−17.8)
Missing	6

Clinical psychologist	N	%
No	76	68.5
For relatives	34	30.6
For patients	31	27.9
For personnel	22	19.8

ICU Structure	N	%
NON OPEN-SPACE	57	51.4
OPEN-SPACE (or alike)	54	48.6
Missing	6	

Physicians	N	%
Dedicated to ICU only	15	13.5
Dedicated to ICU on a rotation basis	16	14.4
Dedicated to ICU only and on a rotation basis	80	72.1
Missing	6	

Declared beds per physician (average)	
Mean (SD)	4.5 (1.6)
Median (Q1−Q3)	4.5 (3.3−5.7)
Missing	6

Nurses	N	%
Dedicated to ICU only	67	60.4
Dedicated to ICU on a rotation basis	4	3.6
Dedicated to ICU only and on a rotation basis	40	36.0
Missing	6	

Declared beds per nurse (average)	
Mean (SD)	2.0 (0.4)
Median (Q1−Q3)	2 (1.8−2.2)
Missing	6

Number of hours conceeded for relatives' visits	N	%
0-1	32	28.8
2	18	16.2
3-4	17	15.3
5-12	39	35.1
13-20	1	0.9
>20	4	3.6
Missing	6	

Maximum number of visitors per patient	N	%
One	74	66.7
Two	36	32.4
Three or more	1	0.9
Missing	6	

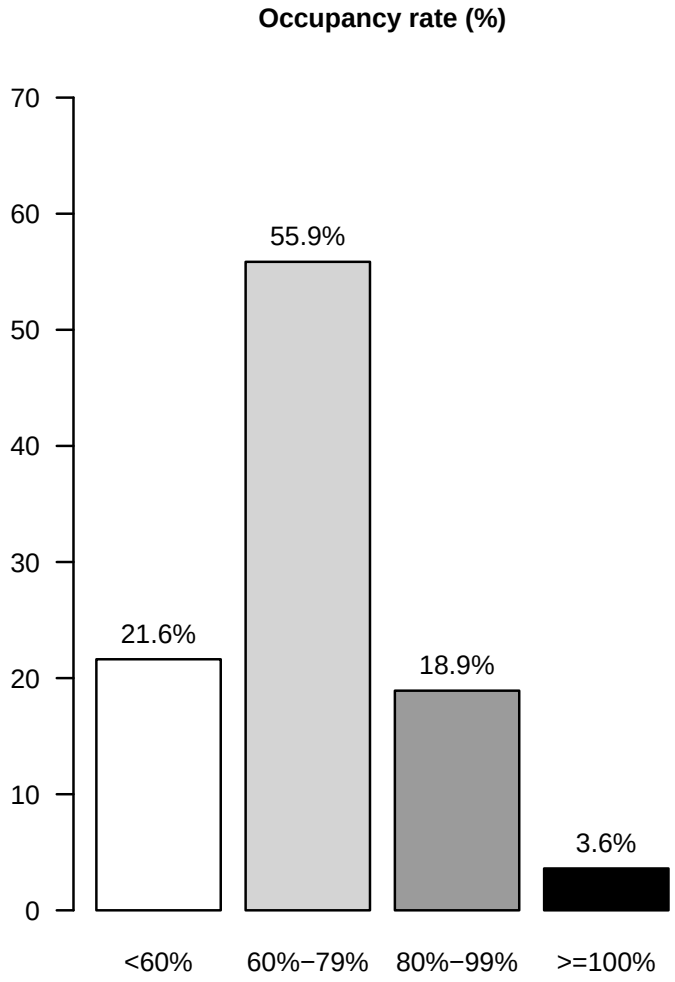
Biomedical devices per declared bed	Median	Q1-Q3	<5 Years (mean %)
Total available monitors (excluding those dedicated to transport)	1.3	1.1−1.6	67.9
of which only for basic monitoring (without transducers detection of invasive pressure, pic, pvc, ...)	0.0	0.0−0.0	68.9
Invasive monitoring of cardiac output (Swan-Ganz)	0.1	0.0−0.2	72.1
Invasive monitoring of cardiac output (PiCCO)	0.2	0.1−0.3	73.9
Invasive monitoring of cardiac output (Vigileo)	0.1	0.0−0.2	75.2
Non-invasive monitoring of cardiac output (impedentiometry)	0.0	0.0−0.1	87.1
Defibrillators	0.3	0.2−0.4	76.0
Both invasive and non invasive ventilators	1.4	1.2−1.8	76.7
Non invasive ventilators	0.0	0.0−0.3	74.1
Syringe pumps	6.0	4.0−8.0	80.9
Peristaltic pumps	2.4	1.6−3.6	82.8

Biomedical equipment in ICU	N	%
Transoesophageal echo	43	38.7
Basic ultrasounds	111	100.0
Advanced ultrasounds	103	92.8
Blood-gas analyzer	111	100.0
Haemodialysis - Haemofiltration	100	90.1
Transport ventilator	109	98.2
Fiberscope	111	100.0
Extracorporeal circulation system	26	23.4

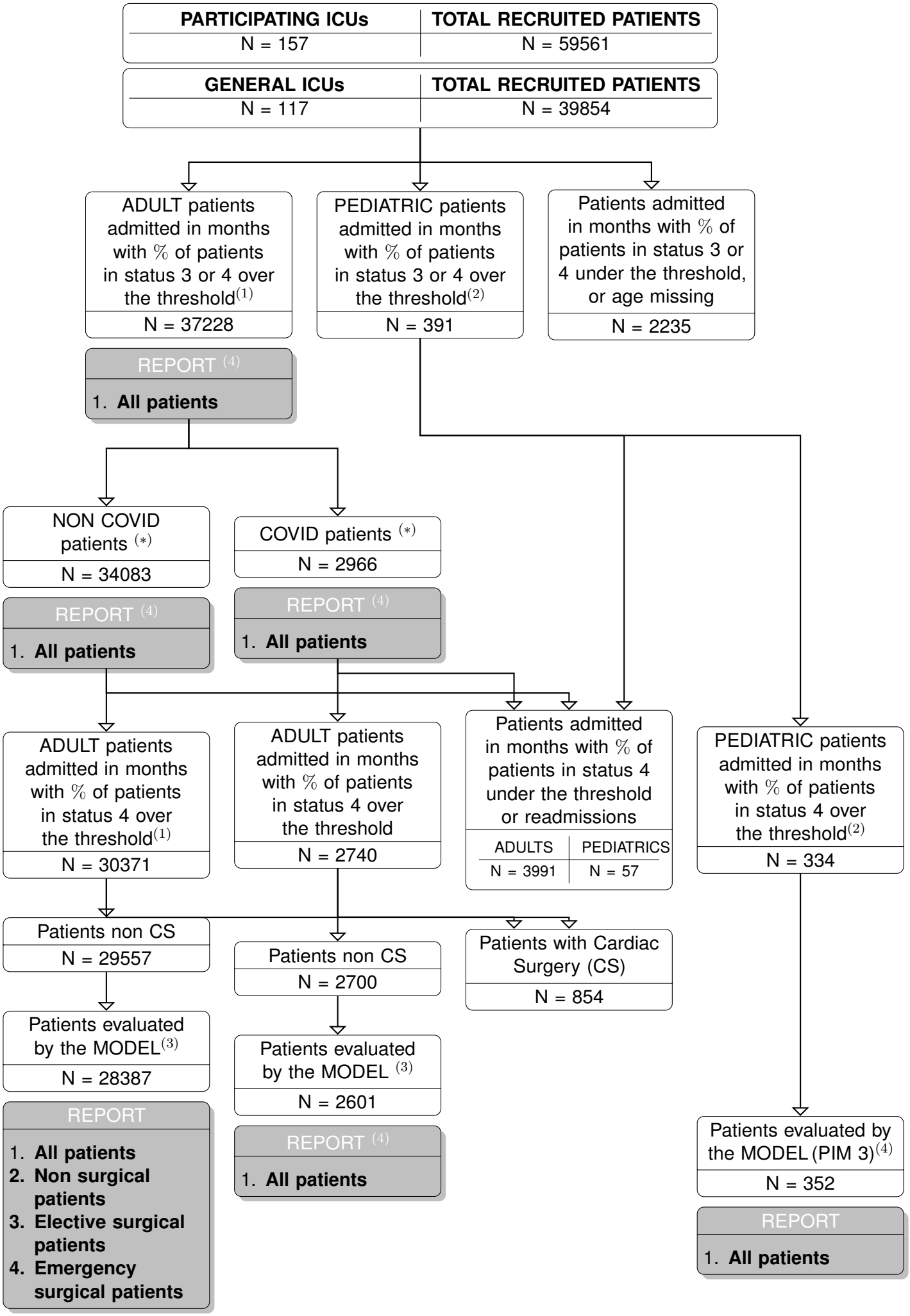
Routine microbiological surveillance cultures	N	%
Yes	108	97.3
No	3	2.7
Missing	6	

Description of ICUs (N=117) - **Year 2022**

Patients admitted	
Mean (SD)	349.0 (221.1)
Median	288.6
Q1−Q3	189.3−408.5
Missing	2
Occupancy rate (%)	
Mean (SD)	70.7 (13.4)
Median	69.6
Q1−Q3	62.5−77.9
Missing	8
Rotation index (patients/bed)	
Mean (SD)	38.9 (12.3)
Median	38
Q1−Q3	29−46.5
Missing	8
Turnover (hours)	
Mean (SD)	75.2 (48.3)
Median	66.4
Q1−Q3	43.1−97.4
Missing	8
Occupied beds per physician (average)	
Mean (SD)	3.1 (1.2)
Median	3.2
Q1−Q3	2.1−3.9
Missing	6
Occupied beds per nurse (average)	
Mean (SD)	1.4 (0.3)
Median	1.3
Q1−Q3	1.2−1.6
Missing	6



National report for general ICUs (117 ICUs) - **Year 2022**
Study flow-chart


PARTICIPATING ICUs
N = 157
TOTAL RECRUITED PATIENTS
N = 59561
GENERAL ICUs
N = 117
TOTAL RECRUITED PATIENTS
N = 39854
ADULT patients admitted in months with % of patients in status 3 or 4 over the threshold(1)
N = 37228
PEDIATRIC patients admitted in months with % of patients in status 3 or 4 over the threshold(2)
N = 391
Patients admitted in months with % of patients in status 3 or 4 under the threshold, or age missing
N = 2235
REPORT (4)
1. All patients
NON COVID patients (*)
N = 34083
COVID patients (*)
N = 2966
REPORT (4)
1. All patients
REPORT (4)
1. All patients
ADULT patients admitted in months with % of patients in status 4 over the threshold(1)
N = 30371
ADULT patients admitted in months with % of patients in status 4 over the threshold
N = 2740
Patients admitted in months with % of patients in status 4 under the threshold or readmissions
ADULTS
N = 3991
PEDIATRICS
N = 57
PEDIATRIC patients admitted in months with % of patients in status 4 over the threshold(2)
N = 334
Patients non CS
N = 29557
Patients non CS
N = 2700
Patients with Cardiac Surgery (CS)
N = 854
Patients evaluated by the MODEL(3)
N = 28387
Patients evaluated by the MODEL (3)
N = 2601
Patients evaluated by the MODEL (PIM 3)(4)
N = 352
REPORT
1. All patients
2. Non surgical patients
3. Elective surgical patients
4. Emergency surgical patients
REPORT (4)
1. All patients
REPORT
1. All patients

(1) Patients older than 17 years are considered ADULT patients.
(2) Patients under 17 years of age are considered PEDIATRIC patients.
(3) Patients evaluated by the GiViTI model of hospital mortality are those with all the variables of the model completed, including the hospital outcome. Patients admitted for diagnosis of death/organ donation and readmissions are excluded.
(4) Statistics produced for groups with more than 20 patients (bold).
(5) Patients transferred to other ICU are excluded.
(*) Patients for whom COVID-related information is missing are excluded from the analysis.

National report for general ICUs - **Year 2022**
Characteristics on admission - Adult patients

Patients (N): 37228

Sex	N	%
Male	22671	61.1
Female	14427	38.9
Missing	130	

Age (years)	N	%
17-45	4283	11.5
46-65	11056	29.7
66-75	10321	27.7
>75	11568	31.1
Missing	0	
Mean	65.9	
SD	15.9	
Median	69	
Q1−Q3	57−78	
Min−Max	17−122	

Body mass Index (BMI)	N	%
Underweight	2041	5.6
Normal	16150	44.1
Overweight	11264	30.7
Obese	7197	19.6
Missing	576	

Pregnancy status **Females** (N=14427)	N	%
Not fertile	7268	50.5
Not pregnant/Unknown	6801	47.2
Currently pregnant	46	0.3
Post partum	287	2.0
Missing	25	

Comorbidities	N	%
No	5505	14.8
Yes	31566	85.2
Missing	157	

Comorbidities (top 10)	N	%
Hypertension	19944	53.8
Arrhythmia	5893	15.9
Diabetes Type II without insulin tr.	5088	13.7
Moderate COPD	4544	12.3
Myocardial infarction	4402	11.9
Any tumour without metastasis	4065	11.0
NYHA class II-III	3544	9.6
Peripheral vascular disease	3479	9.4
Cerebrovascular disease	3391	9.1
Moderate or severe renal disease	3128	8.4
Missing	157	

Stay before ICU (days)	
Mean	4.5
SD	11.5
Median	1
Q1−Q3	0−4
Missing	182

Source of admission	N	%
Same hospital	32587	87.8
Other hospital	4358	11.7
Long-term chronic care hospital	158	0.4
Directly from the community	2	0.0
Missing	123	

Ward of admission **Hospital** (N=36945)	N	%
Medical ward	5644	15.3
Surgical ward	14428	39.1
Emergency room	13556	36.7
Other ICU	2249	6.1
High dependency care unit	1066	2.9
Missing	2	

Reason for transfer from **Other ICU** (N=2249)	N	%
Specialist expertise	542	24.1
Step-up care	278	12.4
Logistical/organizational reasons	1322	58.8
Step-down care	105	4.7
Missing	2	

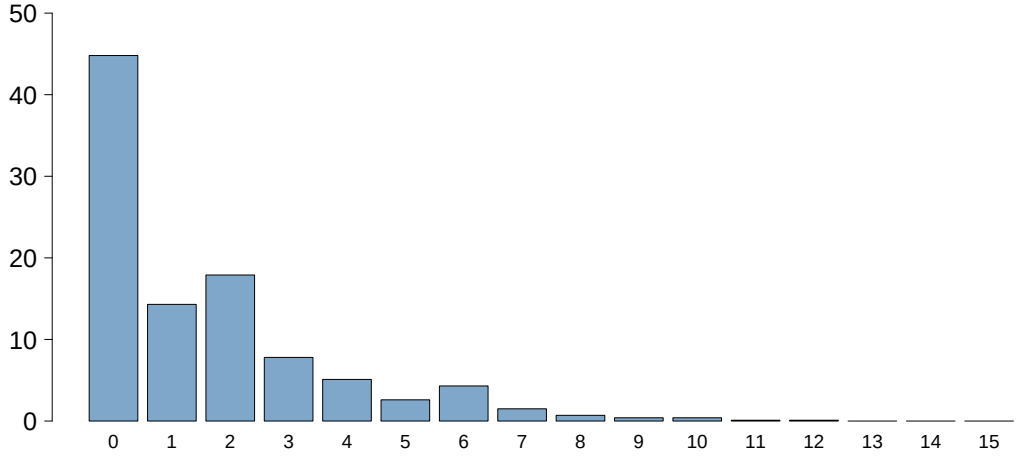
Ward of admission **Same hospital** (N=32587)	N	%
Medical ward	5074	15.6
Surgical ward	14206	43.6
Emergency room	11762	36.1
Other ICU	577	1.8
High dependency care unit	966	3.0
Missing	2	

Ward of admission **Other hospital** (N=4358)	N	%
Medical ward	570	13.1
Surgical ward	222	5.1
Emergency room	1794	41.2
Other ICU	1672	38.4
High dependency care unit	100	2.3
Missing	0	

Scheduled admission	N	%
No	30184	81.4
Yes	6882	18.6
Missing	162	

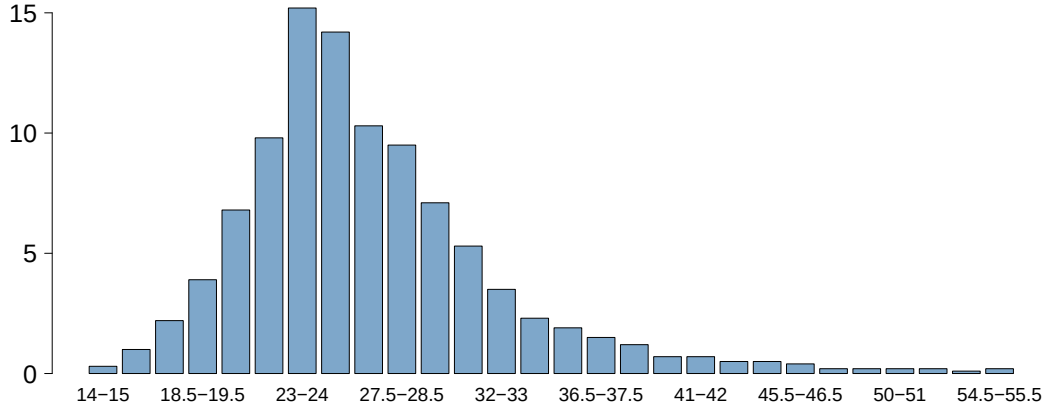
National report for general ICUs - **Year 2022**
Characteristics on admission - Adult patients

Charlson score (%)



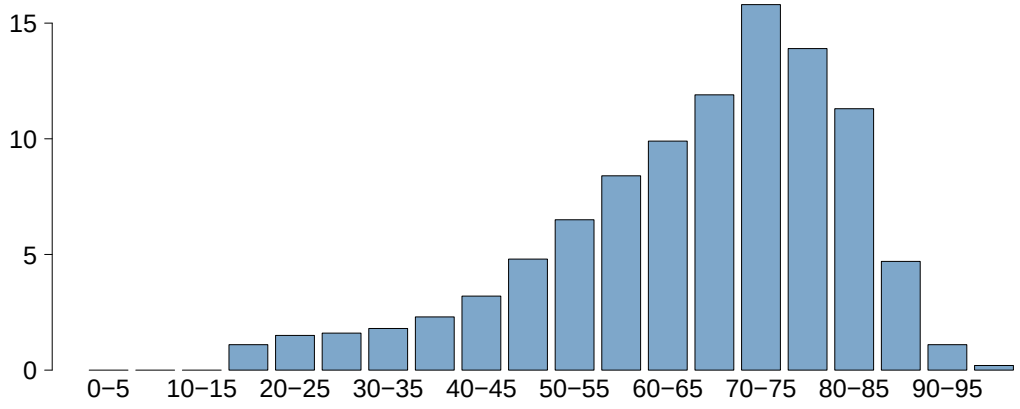
Charlson score	
Mean	1.6
SD	2.1
Median	1
Q1−Q3	0−2
Missing	165

BMI (%)



BMI	
Mean	27.0
SD	6.6
Median	25.7
Q1−Q3	23.1−29.4
Missing	590

Age (%)



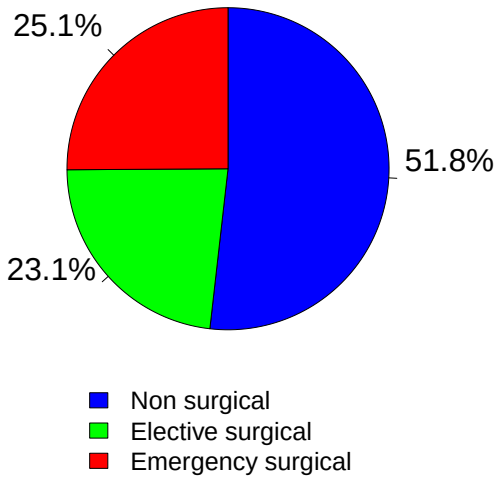
Age	
Mean	65.9
SD	15.9
Median	69
Q1−Q3	57−78
Missing	0

National report for general ICUs - Year 2022
Characteristics on admission - Adult patients

Trauma	N	%
No	32433	87.5
Yes	4638	12.5
Multiple trauma	2121	5.7
Missing	157	

Surgical status	N	%
Non surgical	19210	51.8
Elective surgical	8557	23.1
Emergency surgical	9303	25.1
Missing	158	

Surgical status



Source of admission **Surgical pt.** (N=17860)	N	%
Operating theatre of surgical ward	12491	70.1
Operating theatre of emergency room	2275	12.8
Surgical ward	766	4.3
Other	2284	12.8
Missing	44	

Surgical interventions (top 10) **Elective surgical** (N=8557)	N	%
Gastrointestinal surgery	2290	26.8
Neurosurgery	1009	11.8
Nephro/Urological surgery	897	10.5
Orthopaedic surgery	827	9.7
Thoracic surgery	492	5.7
ENT surgery	486	5.7
Gynaecological surgery	381	4.5
Acquired valv. heart dis. surgery	376	4.4
Hepatic surgery	355	4.1
Abdominal vascular surgery	336	3.9
Missing	1108	

Timing **Elective surgical** (N=8557)	N	%
From -7 to -3 days	138	1.6
From -2 to -1 days	312	3.6
On ICU admission day	8780	102.6
The day after ICU admission	92	1.1
Missing	18	

Surgical interventions (top 10) **Emergency surgical** (N=9303)	N	%
Gastrointestinal surgery	4134	44.4
Neurosurgery	1192	12.8
Orthopaedic surgery	1096	11.8
Nephro/Urological surgery	564	6.1
Abdominal vascular surgery	335	3.6
Peripheral vascular surgery	311	3.3
ENT surgery	273	2.9
Biliary tract surgery	265	2.8
Thoracic surgery	236	2.5
Organ/s transplantation	201	2.2
Missing	696	

Timing **Emergency surgical** (N=9303)	N	%
From -7 to -3 days	201	2.2
From -2 to -1 days	1096	11.8
On ICU admission day	8268	88.9
The day after ICU admission	409	4.4
Missing	41	

Non surgical interventions	N	%
None	33649	90.8
Elective	542	1.5
Emergency	2876	7.8
Missing	161	

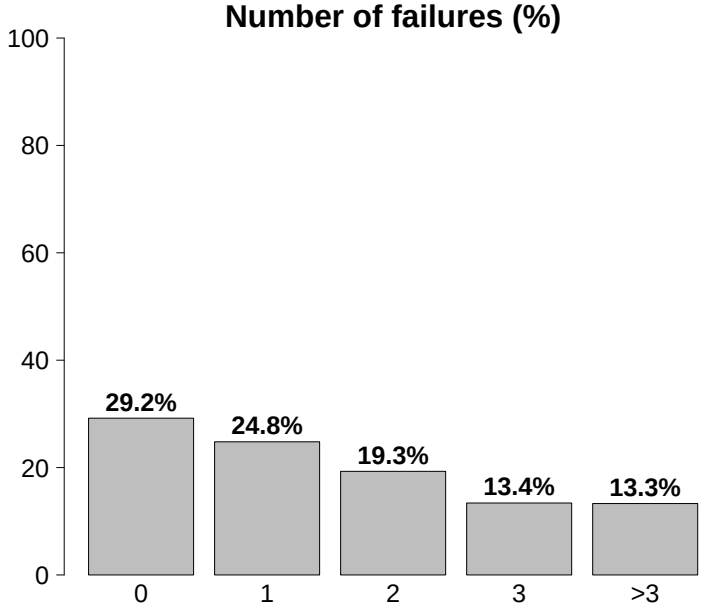
Non surgical interventions **Elective** (N=542)	N	%
Interventional endoscopy	142	26.2
Interventional cardiology	132	24.4
Interventional neuroradiology	92	17.0
Interventional radiology	86	15.9
Missing	90	

Non surgical interventions **Emergency** (N=2876)	N	%
Interventional cardiology	1070	37.2
Interventional radiology	713	24.8
Interventional endoscopy	595	20.7
Interventional neuroradiology	488	17.0
Missing	10	

National report for general ICUs - **Year 2022**
Characteristics on admission - Adult patients

Reason for admission	N	%
Monitoring/Weaning	14423	38.9
Post surgical weaning	4805	13.0
Surgical monitoring	5318	14.4
Post interventional weaning	147	0.4
Interventional monitoring	769	2.1
Non surgical monitoring	3191	8.7
Missing	193	
Intensive Treatment	22292	60.2
Only ventilatory support	10829	29.2
Only cardiovascular support	2005	5.4
Ventilatory and cardiovascular support	9453	25.5
Missing	5	
Palliative Sedation	175	0.5
Diagnosis of death/Organ donation	150	0.4
Missing	188	

Number of failures (%)



Failures on admission	N	%
No	10869	29.2
Yes	26358	70.8
A: Respiratory failure	20280	54.5
B: Cardiovascular failure	11458	30.8
C: Neurological failure	4398	11.8
D: Hepatic failure	299	0.8
E: Renal failure	12867	34.6
F: Acute skin failure	23	0.1
G: Metabolic failure	9962	26.8
H: Coagulation failure	410	1.1
Missing	1	

Failures on admission (top 10)	N	%
A	5769	15.5
ABEG	2920	7.8
AB	2060	5.5
E	1904	5.1
AE	1539	4.1
ABE	1303	3.5
AC	1273	3.4
ABCEG	936	2.5
EG	908	2.4
AEG	838	2.3
Missing	1	

Respiratory failure	N	%
None	16946	45.5
Only hypoxic failure	6999	18.8
Only hypercapnic failure	838	2.3
Hypoxic-hypercapnic failure	1908	5.1
Intubation for airway maint.	10535	28.3
Missing	2	

Cardiovascular failure	N	%
None	25770	69.2
Without shock	2513	6.8
Cardiogenic shock	1783	4.8
Septic shock	3345	9.0
Haemorrhagic/hypovolemic shock	1451	3.9
Hypovolemic shock	700	1.9
Anaphylactic shock	30	0.1
Neurogenic shock	362	1.0
Other shock	576	1.5
Mixed shock	696	1.9
Missing	2	

Neurologic failure	N	%
None	25529	85.3
Cerebral coma	2300	7.7
Metabolic coma	881	2.9
Postanoxic coma	1010	3.4
Toxic coma	204	0.7
Missing or not evaluable	7304	

Renal failure (AKIN)	N	%
None	24091	65.2
Mild	5983	16.2
Moderate	2974	8.0
Severe	3910	10.6
Missing	270	

Metabolic failure	N	%
None	26997	73.0
pH <= 7.3, PaCO2 < 45 mmHg	2354	6.4
Base deficit >= 5 mmol/L, lactate >1.5x	7608	20.6
Missing	269	

National report for general ICUs - Year 2022
Characteristics on admission - Adult patients

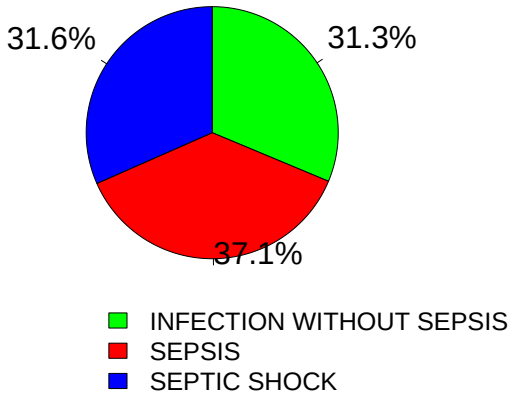
Clinical conditions on admission	N	%
Respiratory	6791	18.3
Pleural effusion	1181	3.2
Acute exacerbation of COPD	1118	3.0
Moderate ARDS	746	2.0
Aspiration pneumonia	739	2.0
Severe ARDS	703	1.9
Cardiovascular	7001	18.9
Cardiac arrest	1613	4.4
Left heart failure with pulm. edema	1099	3.0
Acute severe arrhythmia: tachycardias	781	2.1
Left heart failure without pulm. edema	757	2.0
Acute myocardial infarction	688	1.9
Neurological	5296	14.3
Spontaneous Intraparenchymal bleeding	1061	2.9
Cerebral artery stroke	883	2.4
Brain tumour	881	2.4
Seizures	838	2.3
Spontaneous Subarachnoid haemorrhage	561	1.5
Gastrointestinal and hepatic	7402	20.0
Digestive tract malignancy	1807	4.9
Gastrointestinal perforation	1339	3.6
Intestinal occlusion	1120	3.0
Bowel ischaemia	579	1.6
Gastrointestinal bleeding: upper tract	525	1.4
Trauma (anatomical districts)	4635	12.5
Pelvis/bone/joint & muscle	1980	5.3
Head	1974	5.3
Chest	1950	5.3
Spine	1110	3.0
Abdomen	932	2.5
Major vessels injury	214	0.6
Miscellaneous	86	0.2
Other	8148	22.0
Metabolic disorder	1852	5.0
Other disease	1804	4.9
Nephrourologic disease	1688	4.6
Acute intoxication	754	2.0
ENT/maxillofacial disease	631	1.7
Post transplantation	390	1.1
Liver transplantation	209	0.6
Renal transplantation	112	0.3
Infections	12539	33.8
Pneumonia	4245	11.5
COVID-19	2966	8.0
NON-surgical secondary peritonitis	1107	3.0
NON-catheter-related UTI	758	2.0
L.R.T.I. other than pneumonia	714	1.9
Post-surgical peritonitis	679	1.8
Primary bacteraemia of unknown origin	640	1.7
Cholecystitis/cholangitis	484	1.3
NON-surgical skin/soft tissue infection	478	1.3
Catheter-related UTI	441	1.2
Missing	179	

Trauma (anatomical districts)	N	%
Head	1974	5.3
Traumatic subarachnoid haemorrhage	807	2.2
Traumatic Subdural haematoma	689	1.9
Maxillofacial fracture	670	1.8
Cerebral contusion/laceration	637	1.7
Skull fracture	530	1.4
Spine	1110	3.0
Vertebral fracture, without deficit	895	2.4
Cervical injury, incomplete deficit	78	0.2
Paraplegia	54	0.1
Chest	1950	5.3
Other injuries of the chest	1136	3.1
Traum. haemothorax/pneumothorax	826	2.2
Severe lung contusion/laceration	397	1.1
Abdomen	932	2.5
Minor injuries of the abdomen	288	0.8
Spleen: Moderate-Severe laceration	260	0.7
Liver: Moderate-Severe laceration	206	0.6
Pelvis/bone/joint & muscle	1980	5.3
Long bone fracture	1609	4.3
Multiple fracture of the pelvis	538	1.5
Very severe or open fracture of the pelvis	88	0.2
Major vessels injury	214	0.6
Neck vessels: dissection/transection	73	0.2
Proximal limbs vessels: transection	54	0.1
Aorta: rupture/dissection	48	0.1
Miscellaneous	86	0.2
Burns (>30% BSA)	69	0.2
Inhalation injury	19	0.1
Missing	179	

Infection severity on admission	N	%
None	24510	66.2
INFECTION WITHOUT SEPSIS	3923	10.6
SEPSIS	4651	12.6
SEPTIC SHOCK	3962	10.7
Missing	182	

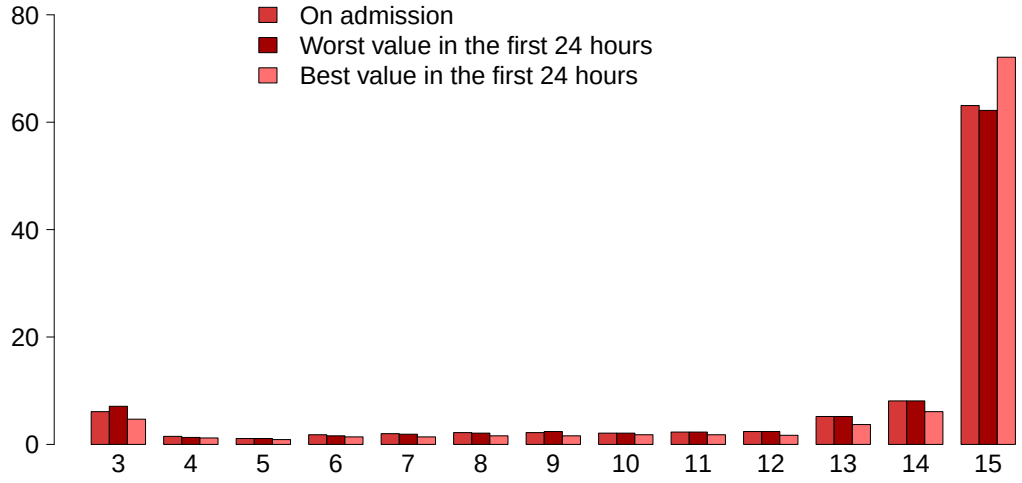
Infection severity on admission

Patients infected (N=12536)



National report for general ICUs - **Year 2022**
Severity scores - Adult patients

Glasgow Coma Scale (%)

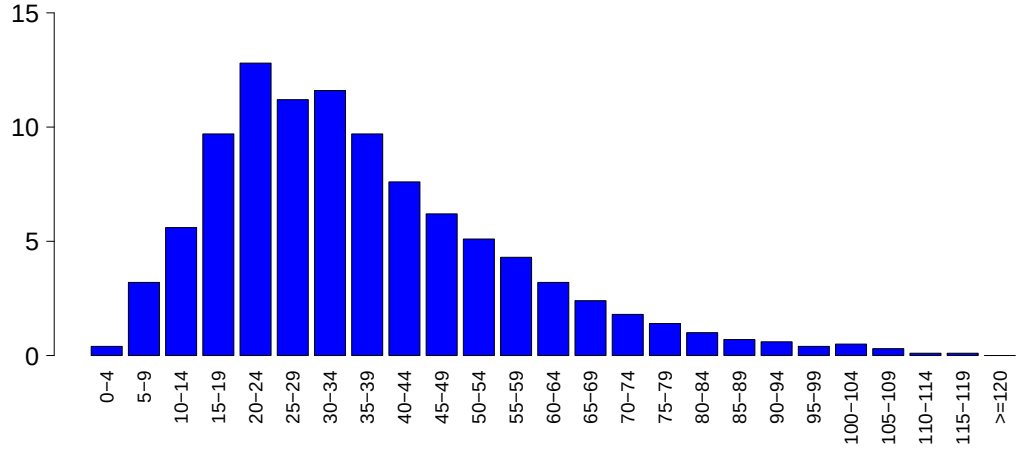


GCS (admission)	
Median	15
Q1–Q3	13–15
Not evaluable	7104
Missing	200

GCS (worst in first 24 hours)	
Median	15
Q1–Q3	13–15
Not evaluable	8029
Missing	260

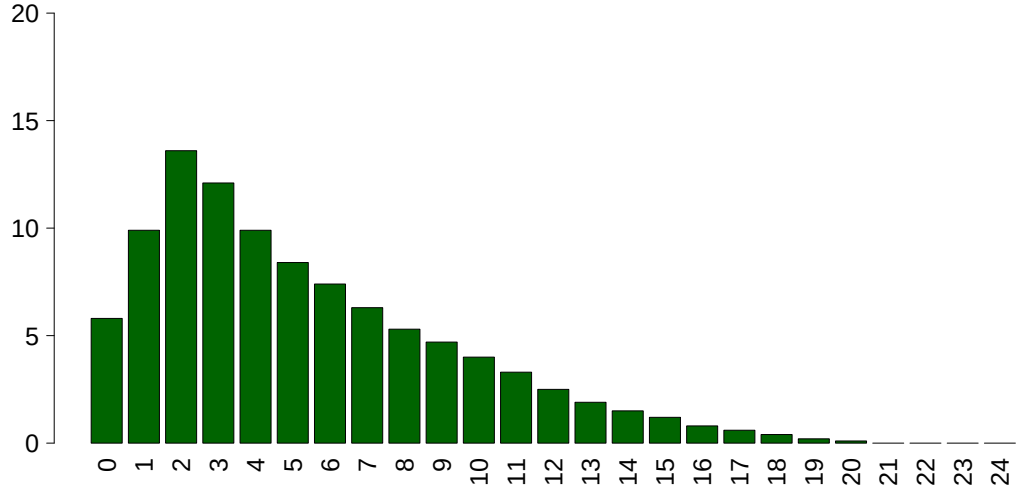
GCS (best in first 24 hours)	
Median	15
Q1–Q3	14–15
Not evaluable	6848
Missing	550

SAPS II (%)



SAPSII	
Mean	36.4
SD	19.8
Median	32
Q1–Q3	22–47
Not evaluable	8029
Missing	269

SOFA (%)



SOFA	
Mean	5.4
SD	4.1
Median	4
Q1–Q3	2–8
Not evaluable	8029
Missing	268

National report for general ICUs - **Year 2022**
Characteristics during the stay - Adult patients

Complications during the stay	N	%
No	24759	67.0
Yes	12215	33.0
Missing	254	

Failures during the stay	N	%
No	31480	84.6
Yes	5747	15.4
A: Respiratory failure	2883	7.7
B: Cardiovascular failure	2612	7.0
C: Neurological failure	438	1.2
D: Hepatic failure	167	0.4
E: Renal failure (AKIN)	1561	4.2
F: Acute skin failure	15	0.0
G: Metabolic failure	443	1.2
H: Coagulation failure	184	0.5
Missing	1	

Failures during the stay (top 10)	N	%
A	1561	4.2
B	1227	3.3
AB	617	1.7
E	585	1.6
G	259	0.7
BE	258	0.7
ABE	208	0.6
AE	186	0.5
C	129	0.3
AC	92	0.2
Missing	1	

Respiratory failure occured	N	%
None	34091	92.2
Intubation for airway maint.	919	2.5
Hypoxic failure	1967	5.3
Hypercapnic failure	481	1.3
Missing	254	

Cardiovascular failure occured	N	%
None	34362	92.9
Cardiogenic shock	637	1.7
Hypovolemic shock	167	0.5
Haemorrhagic/hypovolemic shock	233	0.6
Septic shock	1340	3.6
Anaphylactic shock	1	0.0
Neurogenic shock	103	0.3
Other shock	290	0.8
Missing	254	

Neurological failure occured	N	%
None	36536	98.8
Cerebral coma	263	0.7
Metabolic coma	105	0.3
Postanoxic coma	73	0.2
Missing	254	

Renal failure occured (AKIN)	N	%
None	35413	95.8
Mild	193	0.5
Moderate	222	0.6
Severe	1146	3.1
Missing	254	

Complications during the stay	N	%
Respiratory	2178	5.9
Pleural effusion	772	2.1
Atelectasis	468	1.3
Severe ARDS	407	1.1
Pneumothorax/Pneumomediastinum	283	0.8
Pulmonary embolism	169	0.5
Cardiovascular	2721	7.4
Acute severe arrhythmia: tachycardias	1169	3.2
Cardiac arrest	881	2.4
Acute severe arrhythmia: bradycardias	181	0.5
Deep venous thrombosis	179	0.5
Left heart failure w/o pulm. edema	168	0.5
Neurological	2433	6.6
Drowsiness/agitation/delirium	1216	3.3
Brain edema	405	1.1
Intracranial hypertension	387	1.0
Seizures	359	1.0
New ischaemic stroke	144	0.4
Gastrointestinal and hepatic	1058	2.9
Gastrointestinal bleeding: upper tract	184	0.5
Bowel ischaemia	161	0.4
Gastrointestinal bleeding: lower tract	141	0.4
Paralytic Ileus	137	0.4
Gastrointestinal perforation	125	0.3
Other	1033	2.8
Metabolic disorder	443	1.2
Other disease	228	0.6
Nephrourologic disease	227	0.6
Category/Stage II: Partial Thickness Skin Loss	61	0.2
Other skin and/or soft tissue pathology	60	0.2
F.U.O. fever of unknown origin	31	0.1
Category/Stage III: Full Thickness Skin Loss	29	0.1
Infections	4387	11.9
Pneumonia	1794	4.9
L.R.T.I. other than pneumonia	936	2.5
Catheter-related UTI	613	1.7
Primary bacteraemia of unknown origin	530	1.4
Catheter-related bacteremia (CR-BSI)	478	1.3
Post-surgical peritonitis	146	0.4
Clinical sepsis	135	0.4
COVID-19	122	0.3
Post-surgical skin/soft tissue infection	118	0.3
Upper respiratory tract infection	109	0.3
Missing	254	

National report for general ICUs - **Year 2022**
Characteristics during the stay - Adult patients

Infections	N	%
None	21990	59.5
Only on admission	10593	28.7
On admission and during ICU stay	1923	5.2
Only during ICU stay	2461	6.7
Missing	261	

Maximum severity of infection	N	%
None	21990	59.5
INFECTION WITHOUT SEPSIS	4608	12.5
SEPSIS	5522	14.9
SEPTIC SHOCK	4853	13.1
Missing	255	

Severity evolution

		During the stay				
	N (R %)	None	INFECTION WITHOUT SEPSIS	SEPSIS	SEPTIC SHOCK	TOT
Admission	None	21990 (89.9%)	1215 (5.0%)	886 (3.6%)	360 (1.5%)	24451
	INFECTION WITHOUT SEPSIS	-	3391 (86.6%)	400 (10.2%)	125 (3.2%)	3916
	SEPSIS	-	-	4233 (91.1%)	412 (8.9%)	4646
	SEPTIC SHOCK	-	-	-	3955 (99.9%)	3957
	TOT	21990	4607	5521	4852	36970

Ventil. Associat. Pneumonia (VAP)	N	%
No	35603	95.8
Yes	1560	4.2
Missing	65	

Catheter Bacteraemia (CR-BSI)	N	%
No	36496	98.7
Yes	478	1.3
Missing	254	

Incidence of VAP
(Pts. with VAP/1000 days of VM pre-VAP)

Estimate	13.4
CI (95%)	12.8−14.1

Incidence of CR-BSI
(Pts. with CR-BSI/1000 days of CVC pre-CR-BSI)

Estimate	2.4
CI (95%)	2.2−2.6

Incidence of VAP
(Pts. with VAP/pts. ventilated for 8 days)

Estimate	10.8%
CI (95%)	10.2−11.3

Incidence of CR-BSI
(Pts. with CR-BSI/pts. catheterized for 12 days)

Estimate	2.9%
CI (95%)	2.6−3.1

Catheter-related urinary tract infection (UTI)	N	%
No	36361	98.3
Yes	613	1.7
Missing	254	

Incidence of catheter-related UTI
(Pts. with catheter-related UTI/1000 days of UC pre-UTI)

Estimate	2.7
CI (95%)	2.5−2.9

Incidence of catheter-related UTI
(Pts. with catheter-related UTI/pts. with UC for 12 days)

Estimate	3.2%
CI (95%)	3.0−3.5

Process indicators - Adult patients	Use		On admission		On discharge		Length (days)			Days from admission		
Procedures and/or treatments (Missing=179)	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	36722	99.1										
Invasive ventilation	24180	65.3	18414	49.7	6064	16.4	2	1–7	70	0	0–0	2
Non invasive ventilation	6682	18.0	2075	5.6	1750	4.7	2	1–4	12	0	0–2	1
Tracheostomy	4245	11.5	1119	3	3485	9.4	12	5–22	29	8	5–13	1
iNO (inhaled nitric oxide)	228	0.6	12	0	71	0.2	3	2–6	2	2	0–6	0
Central Venous Catheter	25828	69.7	13010	35.1	21170	57.1	4	2–10	92	0	0–0	6
PICC	1395	3.8	518	1.4	1240	3.3	3	1–8	5	6	1–19	0
Arterial Catheter	33096	89.3	18061	48.7	10570	28.5	3	1–8	106	0	0–0	7
Vasoactive drugs	14824	40.0	7674	20.7	3692	10	2	1–5	35	0	0–0	2
Antiarrhythmics	2773	7.5	795	2.1	1616	4.4	3	1–7	6	1	0–3	2
IABP	274	0.7	200	0.5	93	0.3	2	1–4	2	0	0–2	0
Invasive monitoring of C.O.	1324	3.6	310	0.8	348	0.9	4	2–7	7	0	0–1	0
Continous monitoring of ScVO2	93	0.3	65	0.2	8	0	1	1–3	2	0	0–1	0
Temporary pacing	219	0.6	167	0.5	123	0.3	2	1–4	0	0	0–1	0
Ventricular assistance	9	0.0	6	0	4	0	1	0–2	0	2	1–4	0
DC-shock	533	1.4								0	0–1	0
CPR	826	2.2								0	0–1	0
Massive blood transfusion	368	1.0								0	0–0	0
ICP monitoring without CSF drainage	250	0.7	118	0.3	33	0.1	7	4–9	0	0	0–1	0
ICP monitoring with CSF drainage	364	1.0	254	0.7	165	0.4	8	3–14	0	0	0–1	0
EVD without ICP monitoring	137	0.4	86	0.2	83	0.2	5	2–11	0	0	0–4	0
Haemofiltration	1533	4.1	129	0.3	407	1.1	3	2–7	6	1	0–2	0
Haemodialysis	1125	3.0	184	0.5	495	1.3	3	1–8	7	1	0–3	0
ECMO	113	0.3	39	0.1	57	0.2	4	1–14	0	1	0–5	0
Hepatic clearance techniques	5	0.0										
Clearance techniques during sepsis	310	0.8	15	0	63	0.2	3	1–4	1	0	0–1	0
IAP (intra-abdominal pressure)	464	1.3										
Hypothermia	212	0.6	59	0.2	24	0.1	1	1–2	0	0	0–0	0
Enteral nutrition	13083	35.3	2712	7.3	9404	25.4	7	3–15	43	1	0–2	8
Parenteral nutrition	5882	15.9	897	2.4	3439	9.3	4	2–9	21	1	0–2	6
SDD (Topical, Topical and systemic)	42	0.1										
Patient restraint	540	1.5										
Peridural catheter	1065	2.9	951	2.6	831	2.2	1	1–2	3	1	0–2	0
Electrical cardioversion	286	0.8								2	0–4	0
Vacuum therapy	234	0.6										
Urinary catheter	35607	96.1	30046	81.1	32217	87	3	1–8	125	0	0–0	10
Pronation	1046	2.8	99	0.3	103	0.3	3	1–6	3	0	0–2	1
Antivirals	732	2.0	308	0.8	426	1.1	5	3–10	1	1	0–5	0

Procedures and/or treatments (Missing=179)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Antibiotics	23461	63.3										
Antibiotic prophylaxis	8493	22.9	6499	17.5	3619	9.8	1	1–2	17	0	0–0	2
Empirical antibiotic therapy (infection diagnosis confirmed)	7440	20.1	3537	9.5	2726	7.4	3	2–6	6	0	0–2	0
Empirical antibiotic therapy (infection diagnosis unconfirmed)	5665	15.3	2790	7.5	3738	10.1	3	1–6	7	0	0–1	0
Targeted antibiotic therapy	6683	18.0	1313	3.5	3823	10.3	6	3–10	19	4	2–8	5
Antifungal in empirical therapy	1360	3.7	455	1.2	693	1.9	5	2–9	1	1	0–6	0
Antifungal in targeted therapy	1004	2.7	161	0.4	577	1.6	9	4–15	5	7	3–14	1
Pre-emptive antifungal	308	0.8	99	0.3	202	0.5	5	3–10	1	0	0–3	0

Antibiotic therapy

Pt. infected in ICU only (N=2461)	N	%
No therapy	304	12.4
Only empirical	503	20.4
Only targeted	634	25.8
Targeted after empirical	739	30.0
Other	281	11.4
Missing	0	

Antifungal therapy

Pt. infected in ICU only (N=2461)	N	%
No therapy	2183	88.7
Only empirical	114	4.6
Only targeted	140	5.7
Targeted after empirical	18	0.7
Other	6	0.2
Missing	0	

National report for general ICUs - **Year 2022**
Process indicators - Adult patients

Invasive ventilation (N=24180)	N	%	Length (days) Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	7477	27.6	9.3	13.2	5	2−12	29
For airway mainteinance	10272	37.9	6.1	9.7	2	1−7	21
In weaning	5064	18.7	0.4	0.5	0	0−1	0
Not evaluable	4314	15.9	4.5	8.7	1	1−4	2972
Reintubation within 48 hours	390	1.4	8.4	9.8	5	2−10	0

Non invasive ventilation (N=6682)	N	%
Non invasive ventilation only	3436	51.4
Non invasive ventilation failed	1179	17.6
For weaning	1817	27.2
Other	250	3.7
Missing	0	

Tracheostomy not present on admission (N=3126)	N	%
Surgical	465	14.9
Percutwist	282	9.0
Ciaglia	544	17.4
Monodil. Ciaglia	1344	43.0
Fantoni	7	0.2
Griggs	350	11.2
Other Kind	74	2.4
Unknown	54	1.7
Missing	6	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=3098)	
Mean	9.4
SD	6.5
Median	8
Q1−Q3	5−13
Missing	1

Invasive monitoring of C.O. (N=1324)	N	%
Swan Ganz	321	24.2
PICCO	795	60.0
LIDCO	0	0.0
Vigileo-PRAM	116	8.8
Other	91	6.9
Missing	1	

SDD (N=42)	N	%
Topical	40	95.2
Topical and systemic	2	4.8
Missing	0	

Surgical interventions	N	%
No	35210	95.1
Yes	1818	4.9
Missing	200	

Number of surgical interventions	N	%
0	35210	95.1
1	1357	3.7
2	298	0.8
3	93	0.3
>3	70	0.2
Missing	200	

Surgical interventions Days from admission	
Mean	10.0
SD	13.0
Median	6
Q1−Q3	3−13
Missing	24

Surgical interventions (top 10)	N	%
Gastrointestinal surgery	929	2.5
Orthopaedic surgery	482	1.3
Neurosurgery	230	0.6
ENT surgery	223	0.6
Other surgery	109	0.3
Thoracic surgery	107	0.3
Nephro/Urological surgery	82	0.2
Maxillo-Facial surgery	77	0.2
Plastic surgery	65	0.2
Organ donation	57	0.2
Missing	200	

Non surgical interventions	N	%
No	36214	97.8
Yes	798	2.2
Missing	216	

Non surgical interventions Days from admission	
Mean	13.7
SD	19.2
Median	8
Q1−Q3	4−17
Missing	18

Non surgical interventions	N	%
Interventional endoscopy	496	1.3
Interventional radiology	240	0.6
Interventional cardiology	151	0.4
Interventional neuroradiology	86	0.2
Missing	216	

National report for general ICUs - **Year 2022**
Outcome indicators - Adult patients

ICU outcome	N	%
Dead	6658	18.0
Transferred to same hospital	26552	71.9
Transferred to other hospital	3283	8.9
Discharged home	296	0.8
Disch. terminally ill	146	0.4
Missing	293	

Transferred to (N=29835)	N	%
Ward	23517	78.8
Other ICU	2215	7.4
High dependency care unit	3076	10.3
Rehabilitation	866	2.9
Day hospital or Long-term care	160	0.5
Missing	1	

Reason of transfer to Other ICU (N=2290)	N	%
Specialist expertise	901	39.4
Step-up care	143	6.2
Logistical/organizational reasons	1216	53.1
Step-down care	29	1.3
Missing	1	

Transferred to Same hospital (N=26552)	N	%
Ward	22745	85.7
Other ICU	746	2.8
High dependency care unit	2860	10.8
Rehabilitation	137	0.5
Day hospital or Long-term care	63	0.2
Missing	1	

Transferred to Other hospital (N=3283)	N	%
Ward	772	23.5
Other ICU	1469	44.7
High dependency care unit	216	6.6
Rehabilitation	729	22.2
Day hospital or Long-term care	97	3.0
Missing	0	

ICU mortality	N	%
Alive	30131	81.6
Dead	6804	18.4
Missing	293	

Timing of ICU mortality (N=6804)	N	%
Daytime (08:00AM - 07:59PM)	4914	72.3
Nighttime (08:00PM - 07:59AM)	1886	27.7
Weekdays (Monday - Friday)	5117	75.2
Weekend (Saturday - Sunday)	1686	24.8
Missing	4	

C.A.M. activation (N=6804)	N	%
Yes, with organ donation	411	6.2
Yes, without organ donation	313	4.7
No, with organ donation	33	0.5
No, without organ donation	5900	88.6
Missing	147	

Tissue removal (N=6804)	N	%
Yes, with C.A.M. activation	217	3.2
Yes, without C.A.M. activation	307	4.5
No	6280	92.3
Missing	0	

Hospital mortality *	N	%
Dead	7596	23.1
Transf. to other acute-care hospital	3373	10.3
Transf. to other type of hosp. stay	5319	16.2
Nursing home	585	1.8
Voluntary discharge	233	0.7
Discharged home	15740	47.9
Missing	391	

To other type of H stay* (N=5319)	N	%
Rehabilitation in the same institute	874	16.4
Rehabilitation in other institute	3209	60.3
DH/long-term care, same inst.	375	7.1
DH/long-term care, other inst.	860	16.2
Missing	1	

Disch. terminally ill* (N=25250)	N	%
Yes	468	1.9
No	24776	98.1
Missing	6	

Hospital mortality *	N	%
Alive	24776	75.4
Dead	8064	24.6
Missing	397	

Timing of hosp. mortality * (N=8064)	N	%
In ICU	6033	74.8
Within 24 hours after ICU	128	1.6
24-47 hours after ICU	120	1.5
48-71 hours after ICU	88	1.1
72-95 hours after ICU	108	1.3
After 95 hours after ICU	1586	19.7
Missing	1	

Timing of hosp. mortality (days from ICU disch.) * Discharged alive from ICU (N=2031)	
Mean	17.7
SD	23.8
Median	11
Q1−Q3	4−22
Missing	0

* Statistics computed on patients admitted in months with % of patients in status 4 over the threshold (readmissions excluded) (N=33237).

National report for general ICUs - **Year 2022**
Outcome indicators - Adult patients

Last hospital mortality *	N	%
Alive	24446	74.6
Dead	8305	25.4
Missing	486	

Readmission from ward	N	%
No	36077	97.1
Yes	1078	2.9
Missing	73	

Number of readmissions (N=1078)	N	%
1	994	92.2
2	73	6.8
>2	11	1.0
Missing	0	

Timing of readmission (N=1078)	N	%
Within 48 hours	229	21.7
48-71 hours	107	10.1
72-95 hours	96	9.1
After 95 hours	623	59.1
Missing	23	

Timing readmission (days)	
N	1078
Mean	10.8
SD	19.5
Median	5
Q1−Q3	2.1−12

ICU stay (days)	
Mean	6.7
SD	10.6
Median	3
Q1−Q3	1−7
Missing	284

ICU stay (days) **Alive** (N=30131)	
Mean	6.4
SD	10.5
Median	2
Q1−Q3	1−7
Missing	3

ICU stay (days) **Dead** (N=6804)	
Mean	7.8
SD	11.1
Median	4
Q1−Q3	1−10
Missing	2

Stay after ICU (days) * **Alive** (N=27001)	
Mean	12.7
SD	16.9
Median	8
Q1−Q3	3−16
Missing	196

Hospital stay (days) *	
Mean	20.0
SD	22.3
Median	13
Q1−Q3	7−25
Missing	399

Hospital stay (days) * **Alive** (N=24776)	
Mean	21.2
SD	22.0
Median	14
Q1−Q3	8−27
Missing	9

Hospital stay (days) * **Dead** (N=8064)	
Mean	16.3
SD	22.8
Median	9
Q1−Q3	3−21
Missing	4

* Statistics computed on patients admitted in months with % of patients in status 4 over the threshold (readmissions excluded) (N=33237).

National report for general ICUs - **Year 2022**
Characteristics on admission - Adult patients evaluated in the GiViTI model

Patients (N): 30988

Sex	N	%
Male	18818	60.7
Female	12169	39.3
Missing	1	

Age (years)	N	%
17-45	3619	11.7
46-65	9178	29.6
66-75	8545	27.6
>75	9646	31.1
Missing	0	
Mean	65.8	
SD	16.0	
Median	69	
Q1−Q3	57−78	
Min−Max	17−102	

Body mass Index (BMI)	N	%
Underweight	1697	5.5
Normal	13714	44.3
Overweight	9517	30.7
Obese	6059	19.6
Missing	1	

Pregnancy status **Females** (N=12169)	N	%
Not fertile	6071	49.9
Not pregnant/Unknown	5819	47.8
Currently pregnant	37	0.3
Post partum	242	2.0
Missing	0	

Comorbidities	N	%
No	4762	15.4
Yes	26226	84.6
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	16547	53.4
Arrhythmia	4890	15.8
Diabetes Type II without insulin tr.	4213	13.6
Moderate COPD	3811	12.3
Myocardial infarction	3668	11.8
Any tumour without metastasis	3441	11.1
Peripheral vascular disease	2919	9.4
Cerebrovascular disease	2821	9.1
NYHA class II-III	2678	8.6
Moderate or severe renal disease	2590	8.4
Missing	0	

Stay before ICU (days)	
Mean	3.9
SD	10.2
Median	1
Q1−Q3	0−3
Missing	0

Source of admission	N	%
Same hospital	27304	88.1
Other hospital	3684	11.9
Long-term chronic care hospital	0	0.0
Directly from the community	0	0.0
Missing	0	

Ward of admission **Hospital** (N=30988)	N	%
Medical ward	4587	14.8
Surgical ward	11812	38.1
Emergency room	11899	38.4
Other ICU	1853	6.0
High dependency care unit	837	2.7
Missing	0	

Reason for transfer from **Other ICU** (N=1853)	N	%
Specialist expertise	417	22.5
Step-up care	229	12.4
Logistical/organizational reasons	1109	59.8
Step-down care	98	5.3
Missing	0	

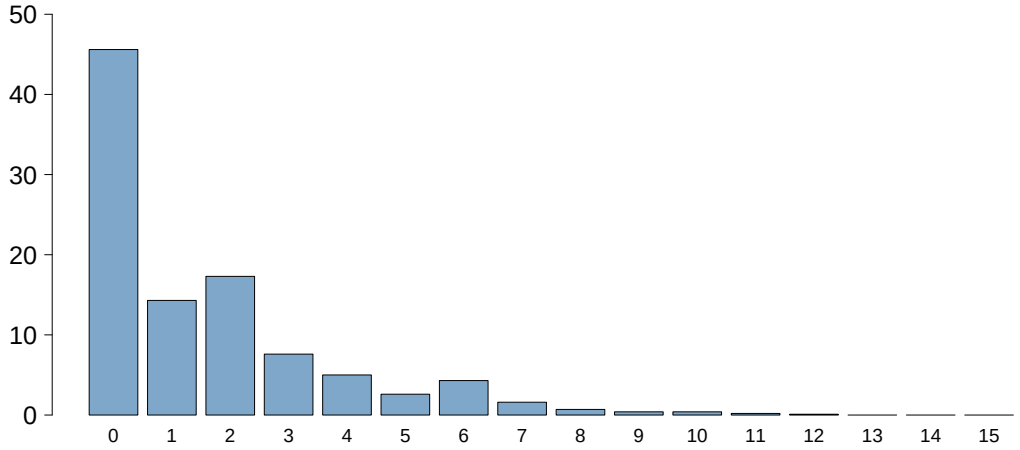
Ward of admission **Same hospital** (N=27304)	N	%
Medical ward	4101	15.0
Surgical ward	11633	42.6
Emergency room	10392	38.1
Other ICU	422	1.5
High dependency care unit	756	2.8
Missing	0	

Ward of admission **Other hospital** (N=3684)	N	%
Medical ward	486	13.2
Surgical ward	179	4.9
Emergency room	1507	40.9
Other ICU	1431	38.8
High dependency care unit	81	2.2
Missing	0	

Scheduled admission	N	%
No	25356	81.8
Yes	5632	18.2
Missing	0	

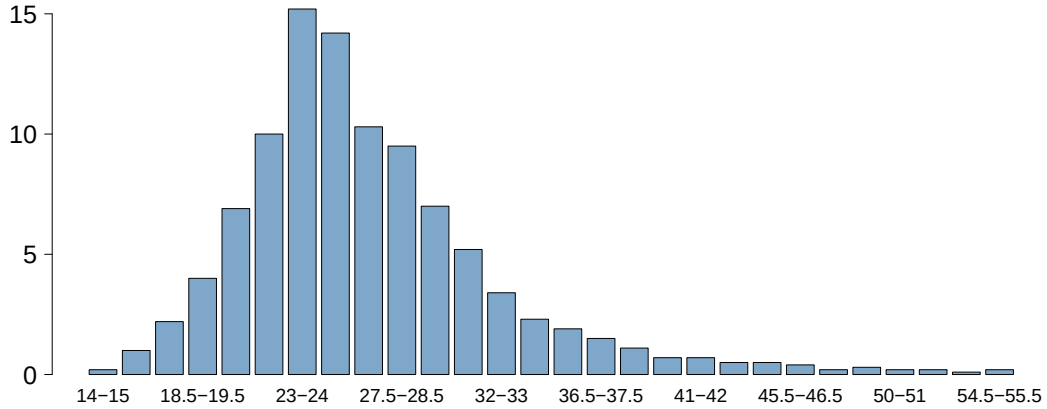
National report for general ICUs - **Year 2022**
Characteristics on admission - Adult patients evaluated in the GiViTI model

Charlson score (%)



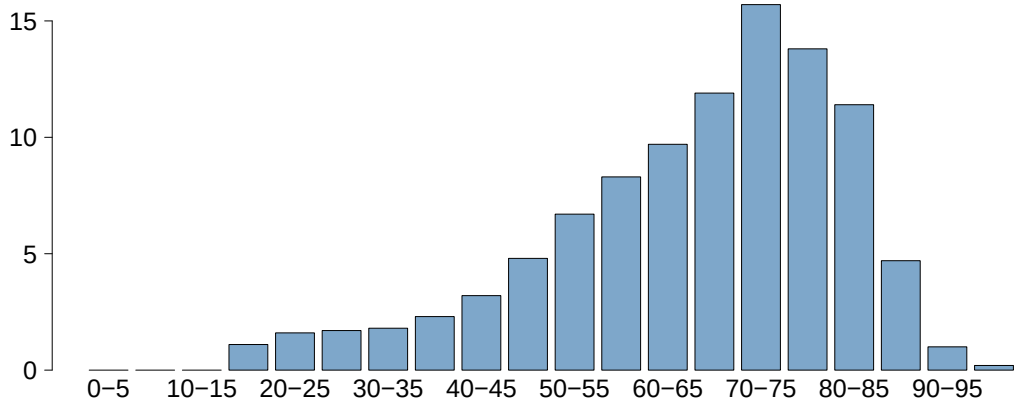
Charlson score	
Mean	1.6
SD	2.1
Median	1
Q1−Q3	0−2
Missing	6

BMI (%)



BMI	
Mean	27.0
SD	6.6
Median	25.7
Q1−Q3	23.1−29.4
Missing	1

Age (%)



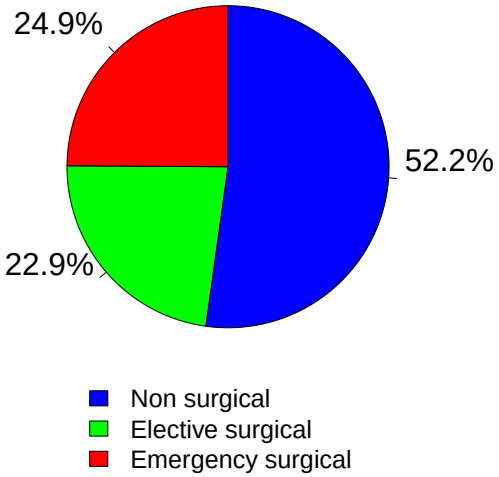
Age	
Mean	65.8
SD	16.0
Median	69
Q1−Q3	57−78
Missing	0

National report for general ICUs - **Year 2022**
Characteristics on admission - Adult patients evaluated in the GiViTI model

Trauma	N	%
No	26951	87.0
Yes	4037	13.0
Multiple trauma	1838	5.9
Missing	0	

Surgical status	N	%
Non surgical	16189	52.2
Elective surgical	7081	22.9
Emergency surgical	7718	24.9
Missing	0	

Surgical status



Source of admission **Surgical pt.** (N=14799)	N	%
Operating theatre of surgical ward	10418	70.4
Operating theatre of emergency room	2037	13.8
Surgical ward	592	4.0
Other	1752	11.8
Missing	0	

Surgical interventions (top 10) **Elective surgical** (N=7081)	N	%
Gastrointestinal surgery	2037	28.8
Neurosurgery	944	13.3
Nephro/Urological surgery	811	11.5
Orthopaedic surgery	699	9.9
Thoracic surgery	461	6.5
ENT surgery	400	5.6
Gynaecological surgery	341	4.8
Hepatic surgery	314	4.4
Abdominal vascular surgery	312	4.4
Pancreatic surgery	275	3.9
Missing	487	

Timing **Elective surgical** (N=7081)	N	%
From -7 to -3 days	89	1.3
From -2 to -1 days	246	3.5
On ICU admission day	7218	101.9
The day after ICU admission	66	0.9
Missing	12	

Surgical interventions (top 10) **Emergency surgical** (N=7718)	N	%
Gastrointestinal surgery	3468	44.9
Neurosurgery	1033	13.4
Orthopaedic surgery	970	12.6
Nephro/Urological surgery	475	6.2
Abdominal vascular surgery	293	3.8
Peripheral vascular surgery	274	3.6
ENT surgery	232	3.0
Biliary tract surgery	230	3.0
Thoracic surgery	196	2.5
Organ/s transplantation	154	2.0
Missing	393	

Timing **Emergency surgical** (N=7718)	N	%
From -7 to -3 days	148	1.9
From -2 to -1 days	893	11.6
On ICU admission day	6881	89.2
The day after ICU admission	318	4.1
Missing	29	

Non surgical interventions	N	%
None	28044	90.5
Elective	458	1.5
Emergency	2486	8.0
Missing	0	

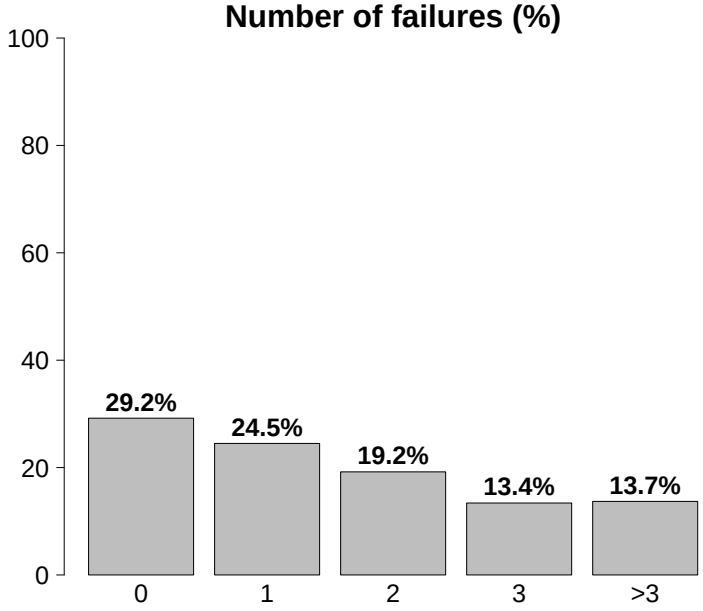
Non surgical interventions **Elective** (N=458)	N	%
Interventional endoscopy	119	26.0
Interventional cardiology	112	24.5
Interventional neuroradiology	87	19.0
Interventional radiology	74	16.2
Missing	66	

Non surgical interventions **Emergency** (N=2486)	N	%
Interventional cardiology	934	37.6
Interventional radiology	607	24.4
Interventional endoscopy	520	20.9
Interventional neuroradiology	423	17.0
Missing	2	

National report for general ICUs - **Year 2022**
Characteristics on admission - Adult patients evaluated in the GiViTI model

Reason for admission	N	%
Monitoring/Weaning	12228	39.5
Post surgical weaning	3948	12.7
Surgical monitoring	4684	15.1
Post interventional weaning	134	0.4
Interventional monitoring	697	2.2
Non surgical monitoring	2765	8.9
Missing	0	
Intensive Treatment	18760	60.5
Only ventilatory support	9090	29.3
Only cardiovascular support	1694	5.5
Ventilatory and cardiovascular support	7976	25.7
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	

Number of failures (%)



Failures on admission	N	%
No	9043	29.2
Yes	21944	70.8
A: Respiratory failure	17066	55.1
B: Cardiovascular failure	9670	31.2
C: Neurological failure	3598	11.6
D: Hepatic failure	252	0.8
E: Renal failure	10854	35.0
F: Acute skin failure	20	0.1
G: Metabolic failure	8304	26.8
H: Coagulation failure	358	1.2
Missing	1	

Failures on admission (top 10)	N	%
A	4851	15.7
ABEG	2478	8.0
AB	1697	5.5
E	1569	5.1
AE	1306	4.2
ABE	1098	3.5
AC	1088	3.5
ABCEG	807	2.6
EG	762	2.5
AEG	701	2.3
Missing	1	

Respiratory failure	N	%
None	13922	44.9
Only hypoxic failure	5984	19.3
Only hypercapnic failure	673	2.2
Hypoxic-hypercapnic failure	1649	5.3
Intubation for airway maint.	8760	28.3
Missing	0	

Cardiovascular failure	N	%
None	21318	68.8
Without shock	2074	6.7
Cardiogenic shock	1497	4.8
Septic shock	2816	9.1
Haemorrhagic/hypovolemic shock	1222	3.9
Hypovolemic shock	612	2.0
Anaphylactic shock	29	0.1
Neurogenic shock	315	1.0
Other shock	510	1.6
Mixed shock	595	1.9
Missing	0	

Neurologic failure	N	%
None	21432	85.6
Cerebral coma	1857	7.4
Metabolic coma	725	2.9
Postanoxic coma	839	3.4
Toxic coma	176	0.7
Missing or not evaluable	5959	

Renal failure (AKIN)	N	%
None	20134	65.0
Mild	5080	16.4
Moderate	2507	8.1
Severe	3267	10.5
Missing	0	

Metabolic failure	N	%
None	22684	73.2
pH <= 7.3, PaCO2 < 45 mmHg	1876	6.1
Base deficit >= 5 mmol/L, lactate >1.5x	6428	20.7
Missing	0	

National report for general ICUs - Year 2022
Characteristics on admission - Adult patients evaluated in the GiViTI model

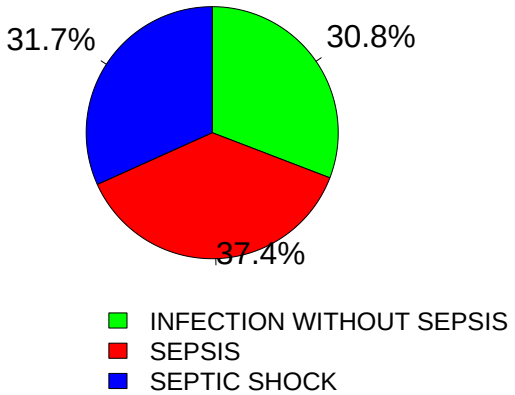
Clinical conditions on admission	N	%
Respiratory	5660	18.3
Pleural effusion	934	3.0
Acute exacerbation of COPD	924	3.0
Moderate ARDS	640	2.1
Aspiration pneumonia	622	2.0
Severe ARDS	608	2.0
Cardiovascular	5368	17.3
Cardiac arrest	1362	4.4
Left heart failure with pulm. edema	923	3.0
Acute severe arrhythmia: tachycardias	661	2.1
Left heart failure without pulm. edema	616	2.0
Acute myocardial infarction	529	1.7
Neurological	4527	14.6
Spontaneous Intraparenchymal bleeding	867	2.8
Brain tumour	833	2.7
Cerebral artery stroke	728	2.3
Seizures	724	2.3
Spontaneous Subarachnoid haemorrhage	475	1.5
Gastrointestinal and hepatic	6293	20.3
Digestive tract malignancy	1608	5.2
Gastrointestinal perforation	1130	3.6
Intestinal occlusion	975	3.1
Bowel ischaemia	487	1.6
Gastrointestinal bleeding: upper tract	446	1.4
Trauma (anatomical districts)	4037	13.0
Pelvis/bone/joint & muscle	1731	5.6
Chest	1714	5.5
Head	1697	5.5
Spine	953	3.1
Abdomen	802	2.6
Major vessels injury	185	0.6
Miscellaneous	68	0.2
Other	7022	22.7
Metabolic disorder	1586	5.1
Other disease	1546	5.0
Nephrourologic disease	1479	4.8
Acute intoxication	652	2.1
ENT/maxillofacial disease	530	1.7
Post transplantation	292	0.9
Liver transplantation	134	0.4
Renal transplantation	96	0.3
Infections	10486	33.8
Pneumonia	3556	11.5
COVID-19	2601	8.4
NON-surgical secondary peritonitis	978	3.2
NON-catheter-related UTI	645	2.1
L.R.T.I. other than pneumonia	609	2.0
Primary bacteraemia of unknown origin	522	1.7
Post-surgical peritonitis	479	1.5
NON-surgical skin/soft tissue infection	417	1.3
Cholecystitis/cholangitis	409	1.3
Clinical sepsis	385	1.2
Missing	0	

Trauma (anatomical districts)	N	%
Head	1697	5.5
Traumatic subarachnoid haemorrhage	697	2.2
Traumatic Subdural haematoma	591	1.9
Maxillofacial fracture	578	1.9
Cerebral contusion/laceration	556	1.8
Skull fracture	452	1.5
Spine	953	3.1
Vertebral fracture, without deficit	769	2.5
Cervical injury, incomplete deficit	70	0.2
Paraplegia	47	0.2
Chest	1714	5.5
Other injuries of the chest	1013	3.3
Traum. haemothorax/pneumothorax	725	2.3
Severe lung contusion/laceration	349	1.1
Abdomen	802	2.6
Minor injuries of the abdomen	244	0.8
Spleen: Moderate-Severe laceration	226	0.7
Liver: Moderate-Severe laceration	177	0.6
Pelvis/bone/joint & muscle	1731	5.6
Long bone fracture	1411	4.6
Multiple fracture of the pelvis	470	1.5
Very severe or open fracture of the pelvis	75	0.2
Major vessels injury	185	0.6
Neck vessels: dissection/transection	67	0.2
Proximal limbs vessels: transection	50	0.2
Aorta: rupture/dissection	34	0.1
Miscellaneous	68	0.2
Burns (>30% BSA)	56	0.2
Inhalation injury	14	0.0
Missing	0	

Infection severity on admission	N	%
None	20502	66.2
INFECTION WITHOUT SEPSIS	3232	10.4
SEPSIS	3926	12.7
SEPTIC SHOCK	3328	10.7
Missing	0	

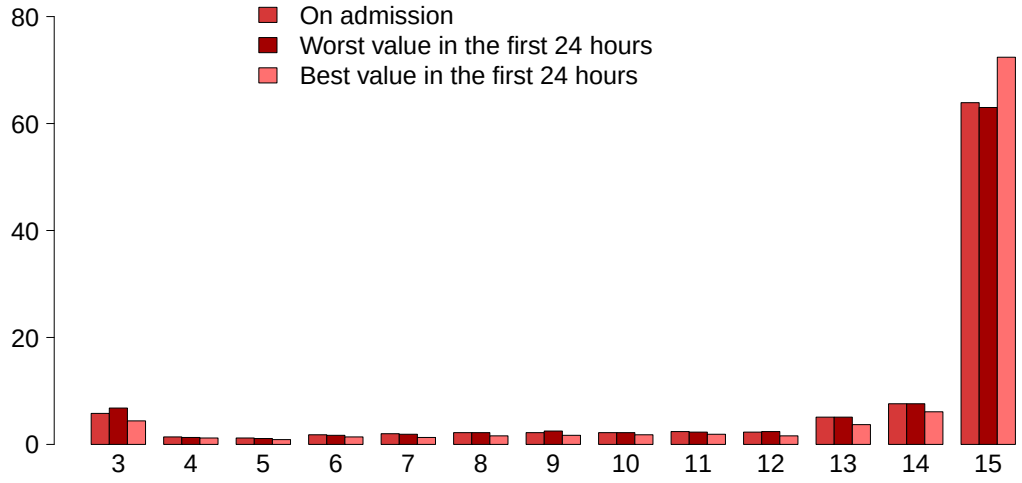
Infection severity on admission

Patients infected (N=10486)



National report for general ICUs - **Year 2022**
Severity scores - Adult patients evaluated in the GiViTI model

Glasgow Coma Scale (%)

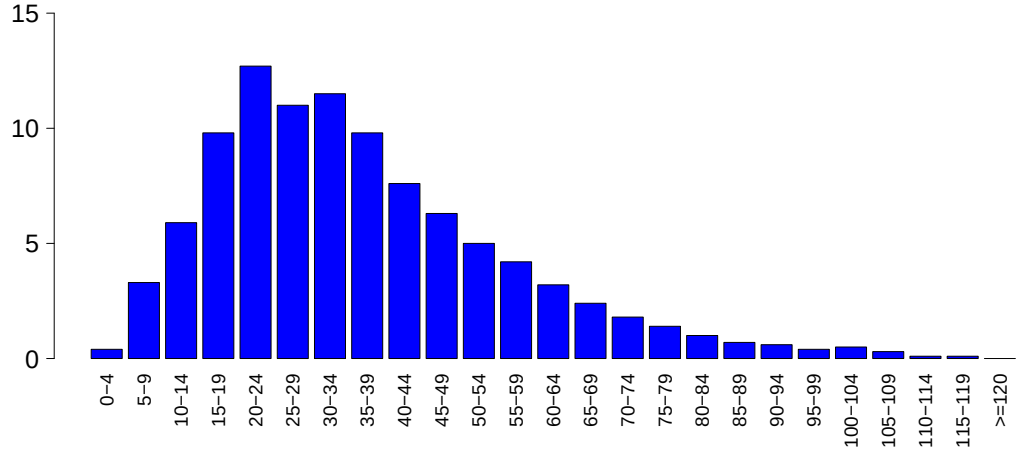


GCS (admission)	
Median	15
Q1–Q3	13–15
Not evaluable	5959
Missing	0

GCS (worst in first 24 hours)	
Median	15
Q1–Q3	13–15
Not evaluable	6746
Missing	0

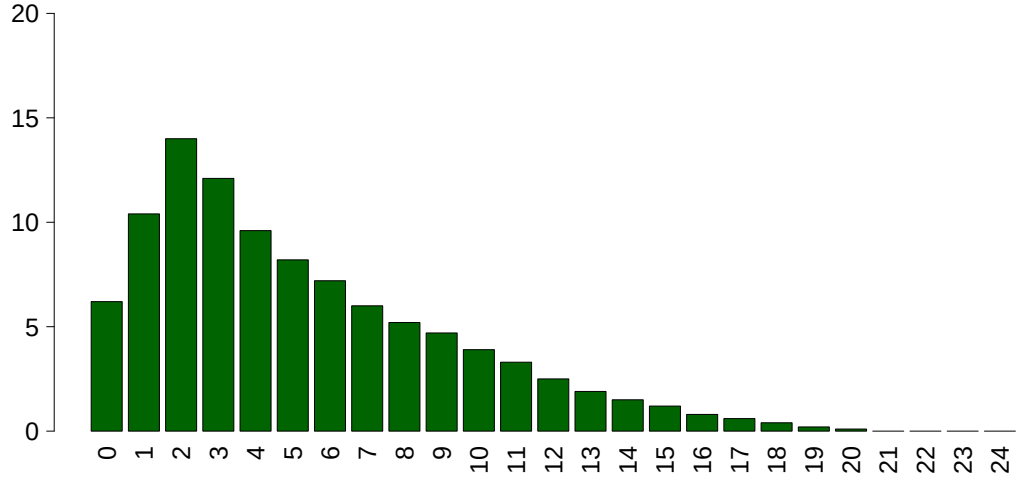
GCS (best in first 24 hours)	
Median	15
Q1–Q3	14–15
Not evaluable	5751
Missing	226

SAPS II (%)



SAPSII	
Mean	36.2
SD	19.9
Median	32
Q1–Q3	22–47
Not evaluable	6746
Missing	1

SOFA (%)



SOFA	
Mean	5.3
SD	4.1
Median	4
Q1–Q3	2–8
Not evaluable	6746
Missing	1

National report for general ICUs - **Year 2022**
Characteristics during the stay - Adult patients evaluated in the GiViTI model

Complications during the stay	N	%
No	20795	67.1
Yes	10189	32.9
Missing	4	

Failures during the stay	N	%
No	26086	84.2
Yes	4901	15.8
A: Respiratory failure	2432	7.8
B: Cardiovascular failure	2263	7.3
C: Neurological failure	372	1.2
D: Hepatic failure	135	0.4
E: Renal failure (AKIN)	1319	4.3
F: Acute skin failure	14	0.0
G: Metabolic failure	384	1.2
H: Coagulation failure	154	0.5
Missing	1	

Failures during the stay (top 10)	N	%
A	1303	4.2
B	1078	3.5
AB	532	1.7
E	484	1.6
BE	226	0.7
G	222	0.7
ABE	172	0.6
AE	160	0.5
C	109	0.4
AC	80	0.3
Missing	1	

Respiratory failure occured	N	%
None	28552	92.2
Intubation for airway maint.	762	2.5
Hypoxic failure	1678	5.4
Hypercapnic failure	415	1.3
Missing	4	

Cardiovascular failure occured	N	%
None	28721	92.7
Cardiogenic shock	555	1.8
Hypovolemic shock	141	0.5
Haemorrhagic/hypovolemic shock	191	0.6
Septic shock	1151	3.7
Anaphylactic shock	1	0.0
Neurogenic shock	91	0.3
Other shock	264	0.9
Missing	4	

Neurological failure occured	N	%
None	30612	98.8
Cerebral coma	227	0.7
Metabolic coma	84	0.3
Postanoxic coma	64	0.2
Missing	4	

Renal failure occured (AKIN)	N	%
None	29665	95.7
Mild	159	0.5
Moderate	192	0.6
Severe	968	3.1
Missing	4	

Complications during the stay	N	%
Respiratory	1783	5.8
Pleural effusion	621	2.0
Atelectasis	382	1.2
Severe ARDS	357	1.2
Pneumothorax/Pneumomediastinum	239	0.8
Pulmonary embolism	143	0.5
Cardiovascular	2144	6.9
Acute severe arrhythmia: tachycardias	905	2.9
Cardiac arrest	687	2.2
Deep venous thrombosis	151	0.5
Acute severe arrhythmia: bradycardias	141	0.5
Left heart failure w/o pulm. edema	137	0.4
Neurological	2056	6.6
Drowsiness/agitation/delirium	1028	3.3
Brain edema	342	1.1
Intracranial hypertension	325	1.0
Seizures	324	1.0
New ischaemic stroke	121	0.4
Gastrointestinal and hepatic	898	2.9
Gastrointestinal bleeding: upper tract	163	0.5
Bowel ischaemia	142	0.5
Paralytic Ileus	119	0.4
Gastrointestinal bleeding: lower tract	115	0.4
Gastrointestinal perforation	103	0.3
Other	877	2.8
Metabolic disorder	384	1.2
Other disease	190	0.6
Nephrourologic disease	189	0.6
Category/Stage II: Partial Thickness Skin Loss	52	0.2
Other skin and/or soft tissue pathology	50	0.2
F.U.O. fever of unknown origin	30	0.1
Category/Stage III: Full Thickness Skin Loss	27	0.1
Infections	3705	12.0
Pneumonia	1516	4.9
L.R.T.I. other than pneumonia	832	2.7
Catheter-related UTI	509	1.6
Primary bacteraemia of unknown origin	450	1.5
Catheter-related bacteremia (CR-BSI)	396	1.3
Clinical sepsis	118	0.4
Post-surgical peritonitis	110	0.4
COVID-19	101	0.3
Post-surgical skin/soft tissue infection	94	0.3
NON-catheter-related UTI	94	0.3
Missing	4	

National report for general ICUs - **Year 2022**
Characteristics during the stay - Adult patients evaluated in the GiViTI model

Infections	N	%
None	18429	59.5
Only on admission	8850	28.6
On admission and during ICU stay	1633	5.3
Only during ICU stay	2072	6.7
Missing	4	

Maximum severity of infection	N	%
None	18429	59.5
INFECTION WITHOUT SEPSIS	3827	12.4
SEPSIS	4637	15.0
SEPTIC SHOCK	4092	13.2
Missing	3	

Severity evolution

		During the stay				
	N (R %)	None	INFECTION WITHOUT SEPSIS	SEPSIS	SEPTIC SHOCK	TOT
Admission	None	18429 (89.9%)	1049 (5.1%)	720 (3.5%)	303 (1.5%)	20501
	INFECTION WITHOUT SEPSIS	-	2778 (86.0%)	340 (10.5%)	113 (3.5%)	3231
	SEPSIS	-	-	3575 (91.1%)	351 (8.9%)	3926
	SEPTIC SHOCK	-	-	-	3325 (99.9%)	3327
	TOT	18429	3827	4637	4092	30985

Ventil. Associat. Pneumonia (VAP)	N	%
No	29640	95.7
Yes	1344	4.3
Missing	4	

Catheter Bacteraemia (CR-BSI)	N	%
No	30588	98.7
Yes	396	1.3
Missing	4	

Incidence of VAP
(Pts. with VAP/1000 days of VM pre-VAP)

Estimate	13.9
CI (95%)	13.2−14.6

Incidence of CR-BSI
(Pts. with CR-BSI/1000 days of CVC pre-CR-BSI)

Estimate	2.4
CI (95%)	2.2−2.6

Incidence of VAP
(Pts. with VAP/pts. ventilated for 8 days)

Estimate	11.1%
CI (95%)	10.5−11.7

Incidence of CR-BSI
(Pts. with CR-BSI/pts. catheterized for 12 days)

Estimate	2.9%
CI (95%)	2.6−3.2

Catheter-related urinary tract infection (UTI)	N	%
No	30475	98.4
Yes	509	1.6
Missing	4	

Incidence of catheter-related UTI
(Pts. with catheter-related UTI/1000 days of UC pre-UTI)

Estimate	2.7
CI (95%)	2.4−2.9

Incidence of catheter-related UTI
(Pts. with catheter-related UTI/pts. with UC for 12 days)

Estimate	3.2%
CI (95%)	2.9−3.5

Process indicators - Adult patients evaluated in the GiViTI model			On admission		On discharge		Length (days)			Days from admission		
Procedures and/or treatments (Missing=0)	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	30725	99.2										
Invasive ventilation	19825	64.0	15074	48.6	5052	16.3	2	1–7	2	0	0–0	1
Non invasive ventilation	5635	18.2	1786	5.8	1490	4.8	2	1–4	1	0	0–2	1
Tracheostomy	3537	11.4	900	2.9	2931	9.5	12	5–22	0	9	5–13	0
iNO (inhaled nitric oxide)	180	0.6	10	0	58	0.2	3	2–6	0	2	0–6	0
Central Venous Catheter	21235	68.5	10220	33	17454	56.3	4	2–10	2	0	0–0	0
PICC	1215	3.9	436	1.4	1092	3.5	3	1–8	0	6	1–19	0
Arterial Catheter	27692	89.4	14937	48.2	8762	28.3	3	1–8	3	0	0–0	0
Vasoactive drugs	12282	39.6	6255	20.2	3088	10	2	1–5	1	0	0–0	0
Antiarrhythmics	2240	7.2	658	2.1	1308	4.2	3	1–7	2	1	0–3	0
IABP	208	0.7	148	0.5	79	0.3	2	1–3	1	0	0–1	0
Invasive monitoring of C.O.	1065	3.4	223	0.7	293	0.9	4	2–7	0	0	0–1	0
Continous monitoring of ScVO2	56	0.2	33	0.1	8	0	2	1–5	0	0	0–1	0
Temporary pacing	113	0.4	71	0.2	57	0.2	1	1–3	0	0	0–1	0
Ventricular assistance	9	0.0	6	0	4	0	1	0–2	0	2	1–4	0
DC-shock	444	1.4								0	0–1	0
CPR	691	2.2								0	0–0	0
Massive blood transfusion	317	1.0								0	0–0	0
ICP monitoring without CSF drainage	218	0.7	108	0.3	28	0.1	7	4–10	0	0	0–1	0
ICP monitoring with CSF drainage	325	1.0	228	0.7	148	0.5	8	3–14	0	0	0–1	0
EVD without ICP monitoring	109	0.4	69	0.2	67	0.2	4	1–8	0	0	0–6	0
Haemofiltration	1288	4.2	100	0.3	330	1.1	3	2–7	0	1	0–2	0
Haemodialysis	936	3.0	150	0.5	419	1.4	3	1–8	0	1	0–3	0
ECMO	97	0.3	32	0.1	47	0.2	5	1–15	0	1	0–5	0
Hepatic clearance techniques	3	0.0										
Clearance techniques during sepsis	276	0.9	14	0	60	0.2	3	1–4	0	0	0–1	0
IAP (intra-abdominal pressure)	355	1.1										
Hypothermia	191	0.6	57	0.2	22	0.1	1	1–2	0	0	0–0	0
Enteral nutrition	11114	35.9	2263	7.3	8062	26	7	3–14	2	1	0–2	0
Parenteral nutrition	4879	15.7	664	2.1	2854	9.2	4	2–9	1	1	0–2	0
SDD (Topical, Topical and systemic)	38	0.1										
Patient restraint	463	1.5										
Peridural catheter	914	2.9	813	2.6	726	2.3	1	1–2	0	1	0–2	0
Electrical cardioversion	226	0.7								1	0–4	0
Vacuum therapy	201	0.6										
Urinary catheter	29799	96.2	25018	80.7	27058	87.3	3	1–8	2	0	0–0	0
Pronation	965	3.1	92	0.3	97	0.3	3	1–6	0	1	0–2	0
Antivirals	605	2.0	260	0.8	358	1.2	5	3–11	0	1	0–5	0

National report for general ICUs - **Year 2022**
Process indicators - Adult patients evaluated in the GiViTI model

Procedures and/or treatments (Missing=0)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Antibiotics	19382	62.5										
Antibiotic prophylaxis	6847	22.1	5083	16.4	3037	9.8	1	1–2	0	0	0–0	0
Empirical antibiotic therapy (infection diagnosis confirmed)	6318	20.4	2948	9.5	2307	7.4	3	2–5	0	0	0–2	0
Empirical antibiotic therapy (infection diagnosis unconfirmed)	4773	15.4	2310	7.5	3189	10.3	3	1–5	0	0	0–1	0
Targeted antibiotic therapy	5538	17.9	986	3.2	3177	10.3	6	3–10	1	4	2–8	1
Antifungal in empirical therapy	1117	3.6	354	1.1	571	1.8	5	2–9	0	1	0–6	0
Antifungal in targeted therapy	779	2.5	114	0.4	447	1.4	9	4–15	0	8	3–14	0
Pre-emptive antifungal	228	0.7	70	0.2	147	0.5	5	3–10	0	0	0–3	0

Antibiotic therapy		
Pt. infected in ICU only (N=2072)	N	%
No therapy	254	12.3
Only empirical	427	20.6
Only targeted	523	25.2
Targeted after empirical	638	30.8
Other	230	11.1
Missing	0	

Antifungal therapy		
Pt. infected in ICU only (N=2072)	N	%
No therapy	1859	89.7
Only empirical	92	4.4
Only targeted	104	5.0
Targeted after empirical	12	0.6
Other	5	0.2
Missing	0	

National report for general ICUs - **Year 2022**
Process indicators - Adult patients evaluated in the GiViTI model

Invasive ventilation (N=19825)	N	%	Length (days) Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	6365	28.5	9.2	13.2	5	1−12	1
For airway mainteinance	8521	38.1	6.1	9.6	2	1−7	1
In weaning	4046	18.1	0.4	0.5	0	0−1	0
Not evaluable	3413	15.3	4.9	8.8	1	0−5	2525
Reintubation within 48 hours	343	1.5	8.4	9.9	5	2−10	0

Non invasive ventilation (N=5635)	N	%
Non invasive ventilation only	2931	52.0
Non invasive ventilation failed	1014	18.0
For weaning	1489	26.4
Other	201	3.6
Missing	0	

Tracheostomy not present on admission (N=2637)	N	%
Surgical	399	15.1
Percutwist	250	9.5
Ciaglia	459	17.4
Monodil. Ciaglia	1167	44.3
Fantoni	7	0.3
Griggs	242	9.2
Other Kind	67	2.5
Unknown	46	1.7
Missing	0	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=2614)	
Mean	9.4
SD	6.4
Median	8
Q1−Q3	5−13
Missing	1

Invasive monitoring of C.O. (N=1065)	N	%
Swan Ganz	226	21.2
PICCO	658	61.8
LIDCO	0	0.0
Vigileo-PRAM	102	9.6
Other	79	7.4
Missing	0	

SDD (N=38)	N	%
Topical	38	100.0
Topical and systemic	0	0.0
Missing	0	

Surgical interventions	N	%
No	29509	95.2
Yes	1479	4.8
Missing	0	

Number of surgical interventions	N	%
0	29509	95.2
1	1129	3.6
2	229	0.7
3	70	0.2
>3	51	0.2
Missing	0	

Surgical interventions Days from admission	
Mean	9.6
SD	10.3
Median	6
Q1−Q3	3−12
Missing	19

Surgical interventions (top 10)	N	%
Gastrointestinal surgery	763	2.5
Orthopaedic surgery	395	1.3
Neurosurgery	183	0.6
ENT surgery	170	0.5
Other surgery	93	0.3
Thoracic surgery	89	0.3
Nephro/Urological surgery	65	0.2
Maxillo-Facial surgery	59	0.2
Plastic surgery	51	0.2
Organ donation	35	0.1
Missing	0	

Non surgical interventions	N	%
No	30332	97.9
Yes	656	2.1
Missing	0	

Non surgical interventions Days from admission	
Mean	12.7
SD	12.5
Median	8
Q1−Q3	4−17
Missing	16

Non surgical interventions	N	%
Interventional endoscopy	408	1.3
Interventional radiology	192	0.6
Interventional cardiology	125	0.4
Interventional neuroradiology	68	0.2
Missing	0	

National report for general ICUs - **Year 2022**
Outcome indicators - Adult patients evaluated in the GiViTI model

ICU outcome	N	%
Dead	5488	17.7
Transferred to same hospital	22328	72.1
Transferred to other hospital	2781	9.0
Discharged home	268	0.9
Disch. terminally ill	123	0.4
Missing	0	

Transferred to (N=25109)	N	%
Ward	20036	79.8
Other ICU	1865	7.4
High dependency care unit	2339	9.3
Rehabilitation	740	2.9
Day hospital or Long-term care	128	0.5
Missing	1	

Reason of transfer to Other ICU (N=1934)	N	%
Specialist expertise	770	39.8
Step-up care	123	6.4
Logistical/organizational reasons	1019	52.7
Step-down care	22	1.1
Missing	0	

Transferred to Same hospital (N=22328)	N	%
Ward	19359	86.7
Other ICU	641	2.9
High dependency care unit	2165	9.7
Rehabilitation	109	0.5
Day hospital or Long-term care	53	0.2
Missing	1	

Transferred to Other hospital (N=2781)	N	%
Ward	677	24.3
Other ICU	1224	44.0
High dependency care unit	174	6.3
Rehabilitation	631	22.7
Day hospital or Long-term care	75	2.7
Missing	0	

ICU mortality	N	%
Alive	25377	81.9
Dead	5611	18.1
Missing	0	

Timing of ICU mortality (N=5611)	N	%
Daytime (08:00AM - 07:59PM)	4031	71.9
Nighttime (08:00PM - 07:59AM)	1578	28.1
Weekdays (Monday - Friday)	4223	75.3
Weekend (Saturday - Sunday)	1388	24.7
Missing	2	

C.A.M. activation (N=5611)	N	%
Yes, with organ donation	299	5.4
Yes, without organ donation	244	4.4
No, with organ donation	27	0.5
No, without organ donation	4918	89.6
Missing	123	

Tissue removal (N=5611)	N	%
Yes, with C.A.M. activation	166	3.0
Yes, without C.A.M. activation	259	4.6
No	5186	92.4
Missing	0	

Hospital mortality	N	%
Dead	7132	23.0
Transf. to other acute-care hospital	3133	10.1
Transf. to other type of hosp. stay	4635	15.0
Nursing home	568	1.8
Voluntary discharge	218	0.7
Discharged home	15302	49.4
Missing	0	

To other type of H stay (N=4635)	N	%
Rehabilitation in the same institute	607	13.1
Rehabilitation in other institute	2858	61.7
DH/long-term care, same inst.	352	7.6
DH/long-term care, other inst.	817	17.6
Missing	1	

Disch. terminally ill (N=23856)	N	%
Yes	446	1.9
No	23410	98.1
Missing	0	

Hospital mortality	N	%
Alive	23410	75.5
Dead	7578	24.5
Missing	0	

Timing of hosp. mortality (N=7578)	N	%
In ICU	5609	74.0
Within 24 hours after ICU	122	1.6
24-47 hours after ICU	118	1.6
48-71 hours after ICU	85	1.1
72-95 hours after ICU	104	1.4
After 95 hours after ICU	1540	20.3
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=1969)	
Mean	17.6
SD	23.6
Median	11
Q1−Q3	4−22
Missing	0

National report for general ICUs - **Year 2022**
Outcome indicators - Adult patients evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	23177	74.8
Dead	7811	25.2
Missing	0	

ICU stay (days)	
Mean	6.6
SD	10.5
Median	3
Q1−Q3	1−7
Missing	1

ICU stay (days) **Alive** (N=25377)	
Mean	6.3
SD	10.3
Median	2
Q1−Q3	1−7
Missing	0

ICU stay (days) **Dead** (N=5611)	
Mean	8.0
SD	11.1
Median	4
Q1−Q3	1−10
Missing	1

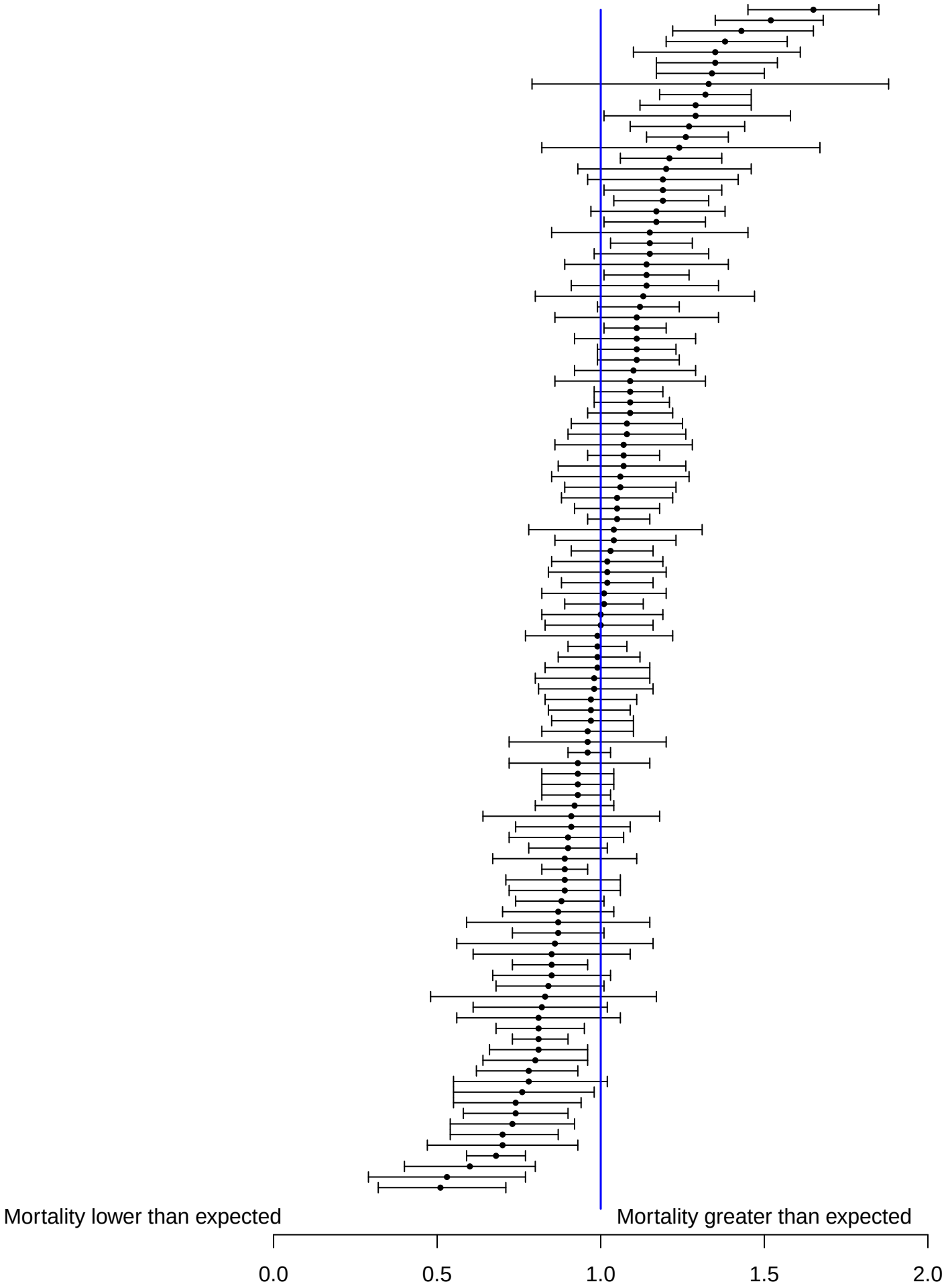
Stay after ICU (days) **Alive** (N=25377)	
Mean	12.9
SD	17.0
Median	8
Q1−Q3	3−16
Missing	8

Hospital stay (days)	
Mean	20.1
SD	22.0
Median	14
Q1−Q3	7−26
Missing	2

Hospital stay (days) **Alive** (N=23410)	
Mean	21.3
SD	21.9
Median	15
Q1−Q3	8−27
Missing	2

Hospital stay (days) **Dead** (N=7578)	
Mean	16.6
SD	22.0
Median	10
Q1−Q3	3−22
Missing	0

National report for general ICUs - **Year 2022**
Analysis of hospital mortality - Adult patients evaluated in the GiViTI model
Predictive model: **GiViTI 2022**



National report for general ICUs - **Year 2022**
Characteristics on admission - Adult non surgical NON-COVID pts. eval. in the GiViTI model

Patients (N): 13867

Sex	N	%
Male	8598	62.0
Female	5268	38.0
Missing	1	

Age (years)	N	%
17-45	1780	12.8
46-65	4307	31.1
66-75	3725	26.9
>75	4055	29.2
Missing	0	
Mean	64.7	
SD	16.4	
Median	68	
Q1−Q3	55−77	
Min−Max	17−100	

Body mass Index (BMI)	N	%
Underweight	761	5.5
Normal	6128	44.2
Overweight	4309	31.1
Obese	2668	19.2
Missing	1	

Pregnancy status **Females** (N=5268)	N	%
Not fertile	2564	48.7
Not pregnant/Unknown	2643	50.2
Currently pregnant	20	0.4
Post partum	41	0.8
Missing	0	

Comorbidities	N	%
No	2122	15.3
Yes	11745	84.7
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	7054	50.9
Arrhythmia	2247	16.2
Diabetes Type II without insulin tr.	1978	14.3
Moderate COPD	1670	12.0
Myocardial infarction	1597	11.5
Cerebrovascular disease	1467	10.6
NYHA class II-III	1343	9.7
Moderate or severe renal disease	1290	9.3
Peripheral vascular disease	1157	8.3
Antiplatelet therapy	1102	7.9
Missing	0	

Stay before ICU (days)	
Mean	4.1
SD	11.1
Median	0
Q1−Q3	0−2
Missing	0

Source of admission	N	%
Same hospital	11381	82.1
Other hospital	2486	17.9
Long-term chronic care hospital	0	0.0
Directly from the community	0	0.0
Missing	0	

Ward of admission **Hospital** (N=13867)	N	%
Medical ward	2934	21.2
Surgical ward	766	5.5
Emergency room	8223	59.3
Other ICU	1442	10.4
High dependency care unit	502	3.6
Missing	0	

Reason for transfer from **Other ICU** (N=1442)	N	%
Specialist expertise	278	19.3
Step-up care	144	10.0
Logistical/organizational reasons	930	64.5
Step-down care	90	6.2
Missing	0	

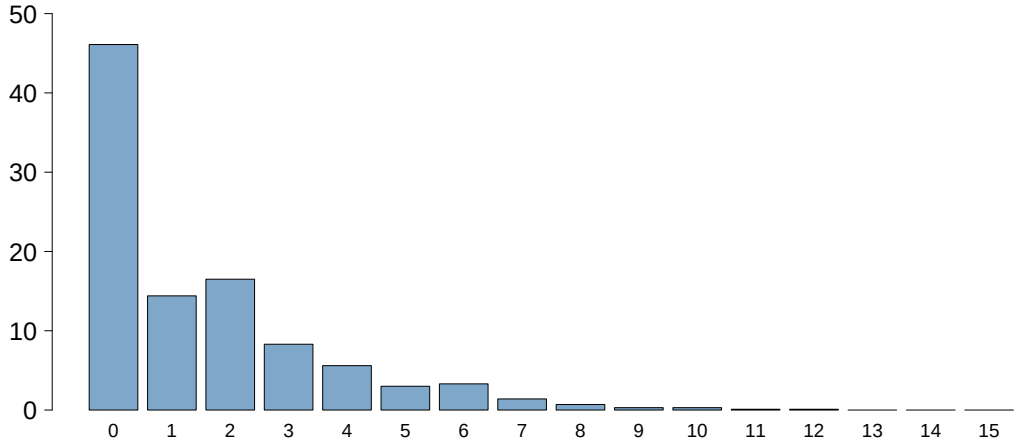
Ward of admission **Same hospital** (N=11381)	N	%
Medical ward	2657	23.3
Surgical ward	701	6.2
Emergency room	7295	64.1
Other ICU	272	2.4
High dependency care unit	456	4.0
Missing	0	

Ward of admission **Other hospital** (N=2486)	N	%
Medical ward	277	11.1
Surgical ward	65	2.6
Emergency room	928	37.3
Other ICU	1170	47.1
High dependency care unit	46	1.9
Missing	0	

Scheduled admission	N	%
No	13739	99.1
Yes	128	0.9
Missing	0	

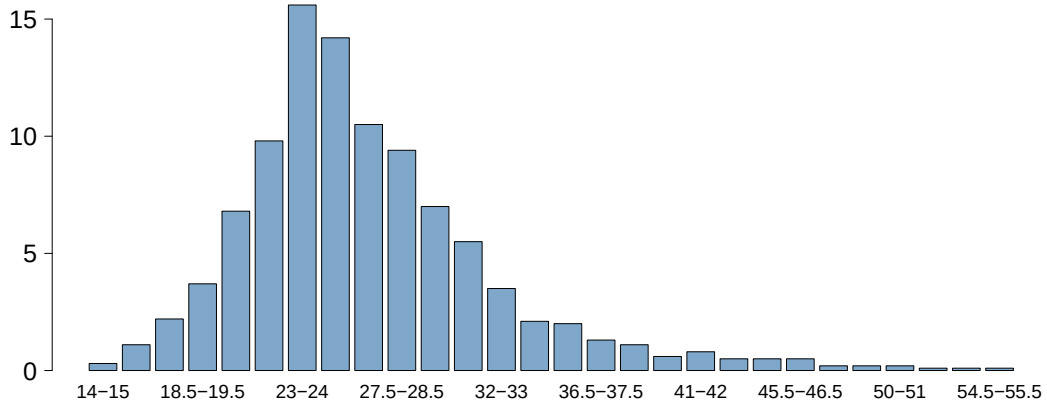
National report for general ICUs - **Year 2022**
Characteristics on admission - Adult non surgical NON-COVID pts. eval. in the GiViTI model

Charlson score (%)



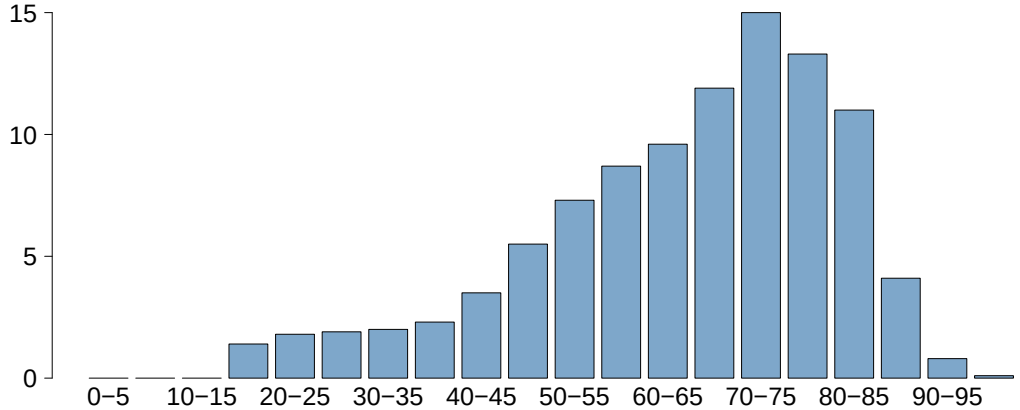
Charlson score	
Mean	1.5
SD	2.0
Median	1
Q1−Q3	0−2
Missing	1

BMI (%)



BMI	
Mean	26.9
SD	6.5
Median	25.7
Q1−Q3	23.1−29.3
Missing	1

Age (%)



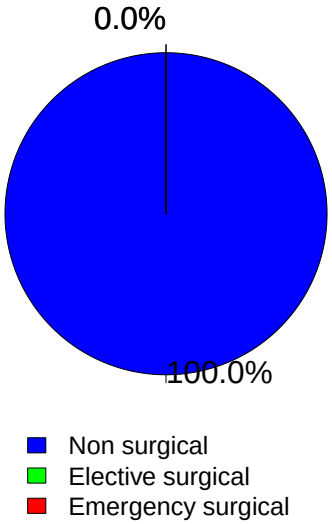
Age	
Mean	64.7
SD	16.4
Median	68
Q1−Q3	55−77
Missing	0

National report for general ICUs - **Year 2022**
Characteristics on admission - Adult non surgical NON-COVID pts. eval. in the GiViTI model

Trauma	N	%
No	11878	85.7
Yes	1989	14.3
Multiple trauma	952	6.9
Missing	0	

Surgical status	N	%
Non surgical	13867	100.0
Elective surgical	0	0.0
Emergency surgical	0	0.0
Missing	0	

Surgical status



Source of admission **Surgical pt.** (N=0)	N	%
Operating theatre of surgical ward	0	0.0
Operating theatre of emergency room	0	0.0
Surgical ward	0	0.0
Other	0	0.0
Missing	0	

Surgical interventions (top 10) **Elective surgical** (N=0)	N	%
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Timing **Elective surgical** (N=0)	N	%
From -7 to -3 days	0	0.0
From -2 to -1 days	0	0.0
On ICU admission day	0	0.0
The day after ICU admission	0	0.0
Missing	0	

Surgical interventions (top 10) **Emergency surgical** (N=0)	N	%
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Timing **Emergency surgical** (N=0)	N	%
From -7 to -3 days	0	0.0
From -2 to -1 days	0	0.0
On ICU admission day	0	0.0
The day after ICU admission	0	0.0
Missing	0	

Non surgical interventions	N	%
None	11754	84.8
Elective	277	2.0
Emergency	1836	13.2
Missing	0	

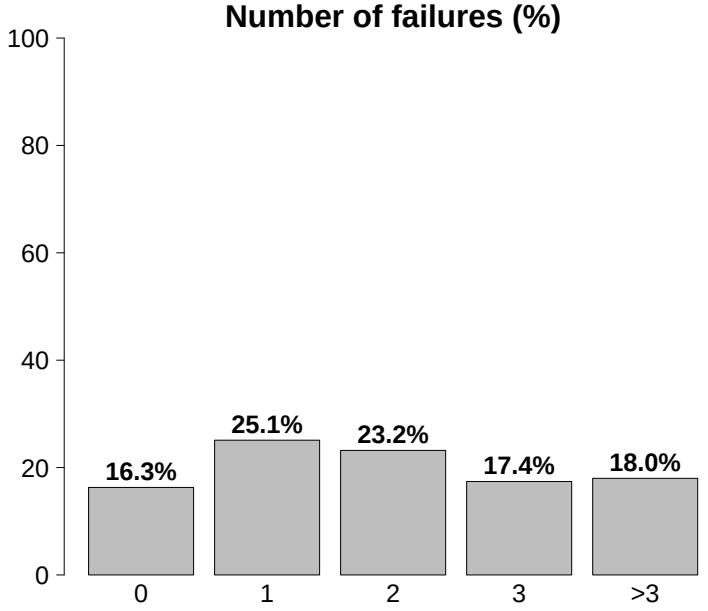
Non surgical interventions **Elective** (N=277)	N	%
Interventional cardiology	91	32.9
Interventional endoscopy	82	29.6
Interventional neuroradiology	67	24.2
Interventional radiology	40	14.4
Missing	0	

Non surgical interventions **Emergency** (N=1836)	N	%
Interventional cardiology	783	42.6
Interventional endoscopy	406	22.1
Interventional radiology	392	21.4
Interventional neuroradiology	288	15.7
Missing	0	

National report for general ICUs - **Year 2022**
Characteristics on admission - Adult non surgical NON-COVID pts. eval. in the GiViTI model

Reason for admission	N	%
Monitoring/Weaning	3206	23.1
Post surgical weaning	0	0.0
Surgical monitoring	0	0.0
Post interventional weaning	119	0.9
Interventional monitoring	569	4.1
Non surgical monitoring	2518	18.2
Missing	0	
Intensive Treatment	10661	76.9
Only ventilatory support	5530	39.9
Only cardiovascular support	976	7.0
Ventilatory and cardiovascular support	4155	30.0
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	

Number of failures (%)



Failures on admission	N	%
No	2262	16.3
Yes	11604	83.7
A: Respiratory failure	9685	69.8
B: Cardiovascular failure	5131	37.0
C: Neurological failure	2764	19.9
D: Hepatic failure	197	1.4
E: Renal failure	5589	40.3
F: Acute skin failure	16	0.1
G: Metabolic failure	4381	31.6
H: Coagulation failure	197	1.4
Missing	1	

Failures on admission (top 10)	N	%
A	2684	19.4
ABEG	1172	8.5
AC	866	6.2
AE	759	5.5
AB	730	5.3
ABCEG	576	4.2
ABE	488	3.5
BEG	441	3.2
AEG	415	3.0
E	404	2.9
Missing	1	

Respiratory failure	N	%
None	4182	30.2
Only hypoxic failure	3344	24.1
Only hypercapnic failure	547	3.9
Hypoxic-hypercapnic failure	1250	9.0
Intubation for airway maint.	4544	32.8
Missing	0	

Cardiovascular failure	N	%
None	8736	63.0
Without shock	1114	8.0
Cardiogenic shock	1252	9.0
Septic shock	1333	9.6
Haemorrhagic/hypovolemic shock	343	2.5
Hypovolemic shock	268	1.9
Anaphylactic shock	23	0.2
Neurogenic shock	164	1.2
Other shock	315	2.3
Mixed shock	319	2.3
Missing	0	

Neurologic failure	N	%
None	8764	76.0
Cerebral coma	1332	11.6
Metabolic coma	522	4.5
Postanoxic coma	747	6.5
Toxic coma	162	1.4
Missing or not evaluable	2340	

Renal failure (AKIN)	N	%
None	8278	59.7
Mild	2302	16.6
Moderate	1272	9.2
Severe	2015	14.5
Missing	0	

Metabolic failure	N	%
None	9486	68.4
pH <= 7.3, PaCO2 < 45 mmHg	954	6.9
Base deficit >= 5 mmol/L, lactate >1.5x	3427	24.7
Missing	0	

National report for general ICUs - Year 2022
Characteristics on admission - Adult non surgical NON-COVID pts. eval. in the GiViTI model

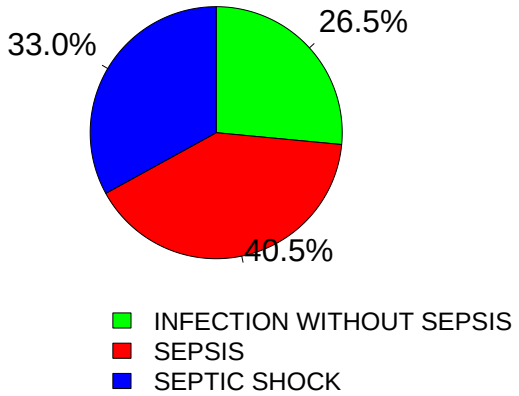
Clinical conditions on admission	N	%
Respiratory	3417	24.6
Acute exacerbation of COPD	824	5.9
Pleural effusion	654	4.7
Aspiration pneumonia	474	3.4
Atelectasis	359	2.6
Moderate ARDS	300	2.2
Cardiovascular	3455	24.9
Cardiac arrest	1166	8.4
Left heart failure with pulm. edema	770	5.6
Left heart failure without pulm. edema	460	3.3
Acute myocardial infarction	442	3.2
Acute severe arrhythmia: tachycardias	428	3.1
Neurological	2777	20.0
Seizures	614	4.4
Spontaneous Intraparenchymal bleeding	589	4.2
Cerebral artery stroke	578	4.2
Metabolic/postanoxic encephalopathy	416	3.0
Spontaneous Subarachnoid haemorrhage	278	2.0
Gastrointestinal and hepatic	1132	8.2
Gastrointestinal bleeding: upper tract	300	2.2
Acute pancreatitis	174	1.3
Liver Dysfunction Syndrome	135	1.0
Ascites	95	0.7
Acute bile-duct disease	86	0.6
Trauma (anatomical districts)	1989	14.3
Chest	1038	7.5
Head	1018	7.3
Pelvis/bone/joint & muscle	534	3.9
Spine	484	3.5
Abdomen	340	2.5
Miscellaneous	50	0.4
Major vessels injury	47	0.3
Other	2869	20.7
Metabolic disorder	1158	8.4
Acute intoxication	608	4.4
Other disease	489	3.5
Nephrourologic disease	456	3.3
Coagulation disorder	197	1.4
Post transplantation	59	0.4
Bone marrow transplantation	23	0.2
Renal transplantation	18	0.1
Infections	4840	34.9
Pneumonia	2209	15.9
L.R.T.I. other than pneumonia	460	3.3
Primary bacteraemia of unknown origin	402	2.9
NON-catheter-related UTI	363	2.6
Clinical sepsis	319	2.3
Catheter-related UTI	223	1.6
NON-surgical skin/soft tissue infection	198	1.4
Cholecystitis/cholangitis	193	1.4
NON-surgical CNS infection	188	1.4
Catheter-related bacteremia (CR-BSI)	133	1.0
Missing	0	

Trauma (anatomical districts)	N	%
Head	1018	7.3
Traumatic subarachnoid haemorrhage	461	3.3
Cerebral contusion/laceration	353	2.5
Traumatic Subdural haematoma	332	2.4
Maxillofacial fracture	305	2.2
Skull fracture	268	1.9
Spine	484	3.5
Vertebral fracture, without deficit	421	3.0
Cervical injury, incomplete deficit	22	0.2
Tetraplegia	18	0.1
Chest	1038	7.5
Other injuries of the chest	627	4.5
Traum. haemothorax/pneumothorax	420	3.0
Severe lung contusion/laceration	217	1.6
Abdomen	340	2.5
Spleen: Moderate-Severe laceration	113	0.8
Minor injuries of the abdomen	110	0.8
Liver: Moderate-Severe laceration	92	0.7
Pelvis/bone/joint & muscle	534	3.9
Long bone fracture	380	2.7
Multiple fracture of the pelvis	231	1.7
Very severe or open fracture of the pelvis	22	0.2
Major vessels injury	47	0.3
Neck vessels: dissection/transection	23	0.2
Aorta: rupture/dissection	12	0.1
Major abdominal vessels: transection	5	0.0
Miscellaneous	50	0.4
Burns (>30% BSA)	39	0.3
Inhalation injury	12	0.1
Missing	0	

Infection severity on admission	N	%
None	9027	65.1
INFECTION WITHOUT SEPSIS	1282	9.2
SEPSIS	1961	14.1
SEPTIC SHOCK	1597	11.5
Missing	0	

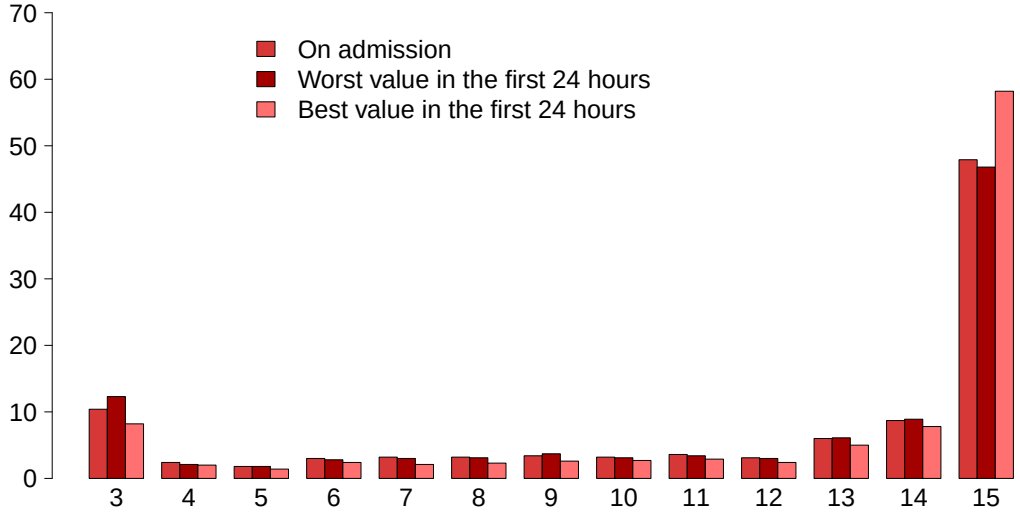
Infection severity on admission

Patients infected (N=4840)



National report for general ICUs - **Year 2022**
Severity scores - Adult non surgical NON-COVID pts. eval. in the GiViTI model

Glasgow Coma Scale (%)

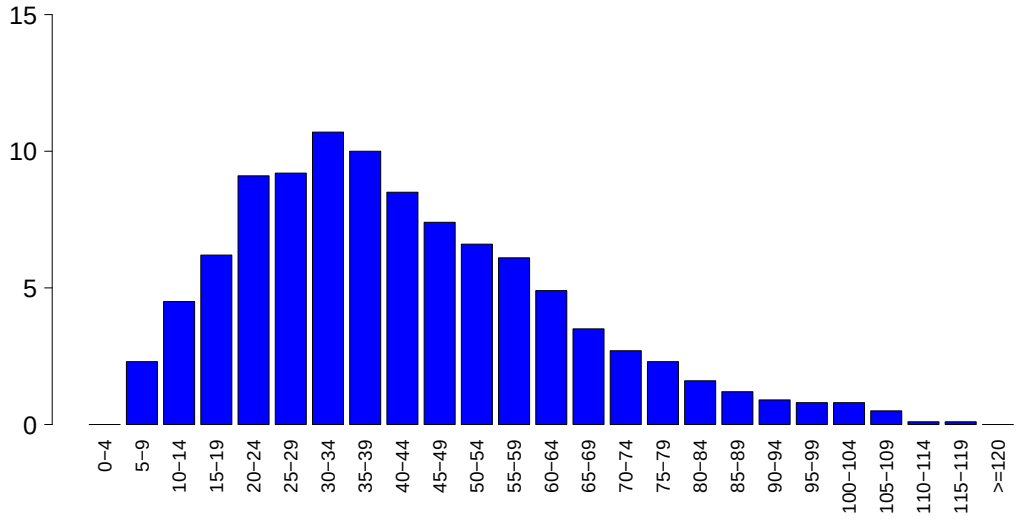


GCS (admission)	
Median	14
Q1−Q3	9−15
Not evaluable	2340
Missing	0

GCS (worst in first 24 hours)	
Median	14
Q1−Q3	8−15
Not evaluable	3293
Missing	0

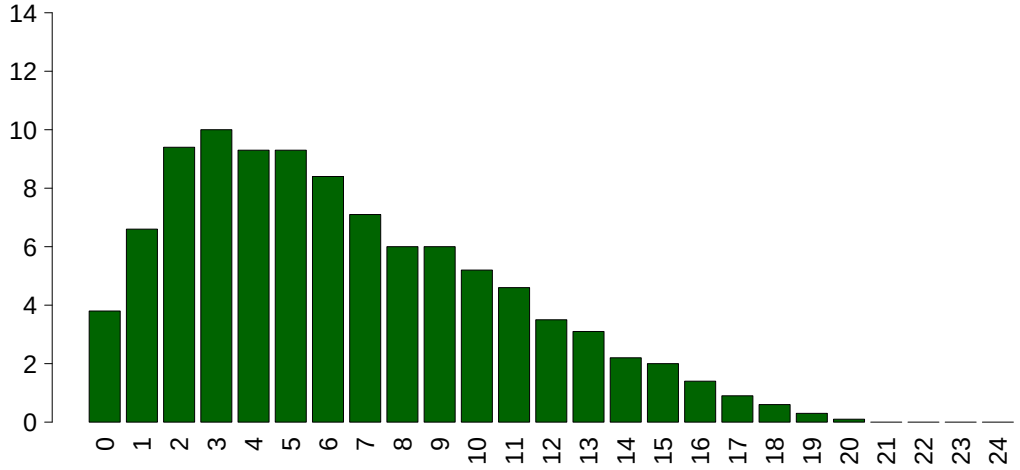
GCS (best in first 24 hours)	
Median	15
Q1−Q3	11−15
Not evaluable	3009
Missing	95

SAPS II (%)



SAPSII	
Mean	42.0
SD	21.2
Median	39
Q1−Q3	26−55
Not evaluable	3293
Missing	1

SOFA (%)



SOFA	
Mean	6.5
SD	4.3
Median	6
Q1−Q3	3−9
Not evaluable	3293
Missing	1

National report for general ICUs - Year 2022
Characteristics during the stay - Adult non surgical NON-COVID pts. eval. in the GiViTI model

Complications during the stay	N	%
No	8252	59.5
Yes	5614	40.5
Missing	1	

Failures during the stay	N	%
No	11234	81.0
Yes	2632	19.0
A: Respiratory failure	1286	9.3
B: Cardiovascular failure	1205	8.7
C: Neurological failure	242	1.7
D: Hepatic failure	82	0.6
E: Renal failure (AKIN)	708	5.1
F: Acute skin failure	7	0.1
G: Metabolic failure	217	1.6
H: Coagulation failure	88	0.6
Missing	1	

Failures during the stay (top 10)	N	%
A	686	4.9
B	584	4.2
AB	256	1.8
E	243	1.8
BE	120	0.9
G	115	0.8
ABE	90	0.6
AE	86	0.6
C	79	0.6
AC	47	0.3
Missing	1	

Respiratory failure occured	N	%
None	12580	90.7
Intubation for airway maint.	383	2.8
Hypoxic failure	902	6.5
Hypercapnic failure	254	1.8
Missing	1	

Cardiovascular failure occured	N	%
None	12661	91.3
Cardiogenic shock	372	2.7
Hypovolemic shock	71	0.5
Haemorrhagic/hypovolemic shock	80	0.6
Septic shock	536	3.9
Anaphylactic shock	1	0.0
Neurogenic shock	70	0.5
Other shock	143	1.0
Missing	1	

Neurological failure occured	N	%
None	13624	98.3
Cerebral coma	136	1.0
Metabolic coma	55	0.4
Postanoxic coma	53	0.4
Missing	1	

Renal failure occured (AKIN)	N	%
None	13158	94.9
Mild	83	0.6
Moderate	91	0.7
Severe	534	3.9
Missing	1	

Complications during the stay	N	%
Respiratory	907	6.5
Pleural effusion	336	2.4
Atelectasis	205	1.5
Severe ARDS	150	1.1
Pneumothorax/Pneumomediastinum	98	0.7
Pulmonary embolism	62	0.4
Cardiovascular	1227	8.8
Cardiac arrest	481	3.5
Acute severe arrhythmia: tachycardias	464	3.3
Pulmonary edema	84	0.6
Acute severe arrhythmia: bradycardias	78	0.6
Left heart failure w/o pulm. edema	76	0.5
Neurological	1246	9.0
Drowsiness/agitation/delirium	578	4.2
Brain edema	247	1.8
Seizures	221	1.6
Intracranial hypertension	211	1.5
New ischaemic stroke	67	0.5
Gastrointestinal and hepatic	373	2.7
Gastrointestinal bleeding: upper tract	107	0.8
Liver Dysfunction Syndrome	56	0.4
Gastrointestinal bleeding: lower tract	49	0.4
Paralytic Ileus	44	0.3
Bowel ischaemia	43	0.3
Other	444	3.2
Metabolic disorder	217	1.6
Nephrourologic disease	90	0.6
Other disease	90	0.6
Category/Stage II: Partial Thickness Skin Loss	34	0.2
F.U.O. fever of unknown origin	16	0.1
Category/Stage III: Full Thickness Skin Loss	15	0.1
Other skin and/or soft tissue pathology	12	0.1
Infections	1929	13.9
Pneumonia	760	5.5
L.R.T.I. other than pneumonia	477	3.4
Catheter-related UTI	282	2.0
Primary bacteraemia of unknown origin	237	1.7
Catheter-related bacteremia (CR-BSI)	207	1.5
NON-catheter-related UTI	62	0.4
Upper respiratory tract infection	57	0.4
Clinical sepsis	56	0.4
NON-surgical skin/soft tissue infection	46	0.3
Other fungal infections	40	0.3
Missing	1	

National report for general ICUs - **Year 2022**
Characteristics during the stay - Adult non surgical NON-COVID pts. eval. in the GiViTI model

Infections	N	%
None	7804	56.3
Only on admission	4133	29.8
On admission and during ICU stay	707	5.1
Only during ICU stay	1222	8.8
Missing	1	

Maximum severity of infection	N	%
None	7804	56.3
INFECTION WITHOUT SEPSIS	1762	12.7
SEPSIS	2338	16.9
SEPTIC SHOCK	1962	14.1
Missing	1	

Severity evolution

		During the stay				
	N (R %)	None	INFECTION WITHOUT SEPSIS	SEPSIS	SEPTIC SHOCK	TOT
Admission	None	7804 (86.5%)	641 (7.1%)	416 (4.6%)	165 (1.8%)	9026
	INFECTION WITHOUT SEPSIS	-	1121 (87.4%)	121 (9.4%)	40 (3.1%)	1282
	SEPSIS	-	-	1799 (91.7%)	162 (8.3%)	1961
	SEPTIC SHOCK	-	-	-	1595 (99.9%)	1597
	TOT	7804	1762	2338	1962	13866

Ventil. Associat. Pneumonia (VAP)	N	%
No	13196	95.2
Yes	669	4.8
Missing	2	

Catheter Bacteraemia (CR-BSI)	N	%
No	13659	98.5
Yes	207	1.5
Missing	1	

Incidence of VAP
(Pts. with VAP/1000 days of VM pre-VAP)

Estimate	12.1
CI (95%)	11.2−13.0

Incidence of CR-BSI
(Pts. with CR-BSI/1000 days of CVC pre-CR-BSI)

Estimate	2.3
CI (95%)	2.0−2.6

Incidence of VAP
(Pts. with VAP/pts. ventilated for 8 days)

Estimate	9.7%
CI (95%)	8.9−10.4

Incidence of CR-BSI
(Pts. with CR-BSI/pts. catheterized for 12 days)

Estimate	2.8%
CI (95%)	2.4−3.2

Catheter-related urinary tract infection (UTI)	N	%
No	13584	98.0
Yes	282	2.0
Missing	1	

Incidence of catheter-related UTI
(Pts. with catheter-related UTI/1000 days of UC pre-UTI)

Estimate	2.8
CI (95%)	2.4−3.1

Incidence of catheter-related UTI
(Pts. with catheter-related UTI/pts. with UC for 12 days)

Estimate	3.3%
CI (95%)	2.9−3.7

Process indicators - Adult non surgical NON-COVID pts eval. in the GiViTI model	On admission		On discharge		Length (days)			Days from admission		
Procedures and/or treatments (Missing=0)	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	13729	99.0								
Invasive ventilation	8638	62.3	5628	40.6	3097	22.3	3	1–9	2	0	0–0	1
Non invasive ventilation	3171	22.9	1018	7.3	793	5.7	2	1–4	1	0	0–2	1
Tracheostomy	1977	14.3	572	4.1	1659	12	13	6–22	0	8	5–13	0
iNO (inhaled nitric oxide)	81	0.6	6	0	19	0.1	3	1–5	0	1	0–3	0
Central Venous Catheter	10673	77.0	3882	28	8460	61	5	2–11	1	0	0–0	0
PICC	618	4.5	159	1.1	535	3.9	5	2–11	0	5	1–18	0
Arterial Catheter	12539	90.4	4377	31.6	4950	35.7	4	2–10	1	0	0–0	0
Vasoactive drugs	6135	44.2	2573	18.6	1806	13	2	1–5	1	0	0–0	0
Antiarrhythmics	1254	9.0	401	2.9	748	5.4	3	1–8	2	1	0–2	0
IABP	186	1.3	135	1	73	0.5	2	1–3	1	0	0–1	0
Invasive monitoring of C.O.	518	3.7	49	0.4	159	1.1	4	2–8	0	0	0–1	0
Continous monitoring of ScVO2	20	0.1	3	0	5	0	5	2–8	0	0	0–1	0
Temporary pacing	87	0.6	60	0.4	44	0.3	1	1–3	0	0	0–1	0
Ventricular assistance	9	0.1	6	0	4	0	1	0–2	0	2	1–4	0
DC-shock	343	2.5								0	0–0	0
CPR	529	3.8								0	0–0	0
Massive blood transfusion	100	0.7								0	0–1	0
ICP monitoring without CSF drainage	74	0.5	20	0.1	9	0.1	7	5–10	0	0	0–1	0
ICP monitoring with CSF drainage	42	0.3	23	0.2	20	0.1	7	3–11	0	1	0–2	0
EVD without ICP monitoring	16	0.1	6	0	7	0.1	8	6–11	0	6	2–14	0
Haemofiltration	824	5.9	71	0.5	205	1.5	3	2–7	0	0	0–2	0
Haemodialysis	587	4.2	97	0.7	245	1.8	3	1–8	0	0	0–2	0
ECMO	73	0.5	26	0.2	35	0.3	4	1–10	0	1	0–2	0
Hepatic clearance techniques	3	0.0										
Clearance techniques during sepsis	125	0.9	4	0	30	0.2	3	1–5	0	0	0–1	0
IAP (intra-abdominal pressure)	110	0.8										
Hypothermia	172	1.2	50	0.4	20	0.1	1	1–1	0	0	0–0	0
Enteral nutrition	6687	48.2	1561	11.3	4813	34.7	7	3–14	1	1	0–2	0
Parenteral nutrition	1944	14.0	272	2	994	7.2	5	2–9	0	1	0–2	0
SDD (Topical, Topical and systemic)	12	0.1										
Patient restraint	269	1.9										
Peridural catheter	57	0.4	9	0.1	30	0.2	4	2–8	0	0	0–2	0
Electrical cardioversion	120	0.9								1	0–3	0
Vacuum therapy	22	0.2										
Urinary catheter	13273	95.7	10200	73.6	11742	84.7	4	2–10	2	0	0–0	0
Pronation	283	2.0	23	0.2	20	0.1	2	1–5	0	1	0–3	0
Antivirals	329	2.4	130	0.9	192	1.4	6	3–11	0	1	0–4	0

National report for general ICUs - **Year 2022**
Process indicators - Adult non surgical NON-COVID pts. eval. in the GiViTI model

Procedures and/or treatments (Missing=0)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Antibiotics	8157	58.8										
Antibiotic prophylaxis	1268	9.1	459	3.3	568	4.1	2	1–4	0	0	0–0	0
Empirical antibiotic therapy (infection diagnosis confirmed)	3120	22.5	1262	9.1	972	7	3	2–5	0	0	0–2	0
Empirical antibiotic therapy (infection diagnosis unconfirmed)	2618	18.9	1080	7.8	1593	11.5	3	2–6	0	0	0–0	0
Targeted antibiotic therapy	3226	23.3	652	4.7	1794	12.9	6	3–10	0	3	2–7	0
Antifungal in empirical therapy	410	3.0	118	0.9	196	1.4	5	2–9	0	1	0–5	0
Antifungal in targeted therapy	404	2.9	84	0.6	235	1.7	8	4–14	0	7	3–14	0
Pre-emptive antifungal	86	0.6	29	0.2	52	0.4	6	3–12	0	2	0–8	0

Antibiotic therapy		
Pt. infected in ICU only (N=1222)	N	%
No therapy	145	11.9
Only empirical	245	20.0
Only targeted	319	26.1
Targeted after empirical	367	30.0
Other	146	11.9
Missing	0	

Antifungal therapy		
Pt. infected in ICU only (N=1222)	N	%
No therapy	1117	91.4
Only empirical	36	2.9
Only targeted	61	5.0
Targeted after empirical	6	0.5
Other	2	0.2
Missing	0	

National report for general ICUs - **Year 2022**
Process indicators - Adult non surgical NON-COVID pts. eval. in the GiViTI model

			Length (days)				
Invasive ventilation (N=8638)	N	%	Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	3842	38.9	8.6	11.4	4	1−11	1
For airway mainteinance	4415	44.7	6.4	9.2	3	1−8	1
In weaning	137	1.4	0.4	0.5	0	0−1	0
Not evaluable	1487	15.0	8.1	10.4	4	1−12	1243
Reintubation within 48 hours	160	1.6	8.4	9.5	5	2−10.25	0

Non invasive ventilation (N=3171)	N	%
Non invasive ventilation only	1813	57.2
Non invasive ventilation failed	573	18.1
For weaning	678	21.4
Other	107	3.4
Missing	0	

Tracheostomy not present on admission (N=1405)	N	%
Surgical	223	15.9
Percutwist	132	9.4
Ciaglia	246	17.5
Monodil. Ciaglia	615	43.8
Fantoni	3	0.2
Griggs	119	8.5
Other Kind	42	3.0
Unknown	25	1.8
Missing	0	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=1391)	
Mean	9.0
SD	6.2
Median	8
Q1−Q3	5−12
Missing	1

Invasive monitoring of C.O. (N=518)	N	%
Swan Ganz	98	18.9
PICCO	333	64.3
LIDCO	0	0.0
Vigileo-PRAM	42	8.1
Other	45	8.7
Missing	0	

SDD (N=12)	N	%
Topical	12	100.0
Topical and systemic	0	0.0
Missing	0	

Surgical interventions	N	%
No	13259	95.6
Yes	608	4.4
Missing	0	

Number of surgical interventions	N	%
0	13259	95.6
1	516	3.7
2	70	0.5
3	11	0.1
>3	11	0.1
Missing	0	

Surgical interventions Days from admission	
Mean	9.6
SD	9.8
Median	6
Q1−Q3	3−12
Missing	16

Surgical interventions (top 10)	N	%
Orthopaedic surgery	179	1.3
Gastrointestinal surgery	127	0.9
ENT surgery	109	0.8
Neurosurgery	81	0.6
Thoracic surgery	48	0.3
Other surgery	39	0.3
Organ donation	32	0.2
Maxillo-Facial surgery	30	0.2
Nephro/Urological surgery	29	0.2
Peripheral vascular surgery	14	0.1
Missing	0	

Non surgical interventions	N	%
No	13434	96.9
Yes	433	3.1
Missing	0	

Non surgical interventions Days from admission	
Mean	12.0
SD	11.6
Median	8
Q1−Q3	4−16
Missing	15

Non surgical interventions	N	%
Interventional endoscopy	291	2.1
Interventional radiology	102	0.7
Interventional cardiology	92	0.7
Interventional neuroradiology	23	0.2
Missing	0	

National report for general ICUs - **Year 2022**
Outcome indicators - Adult non surgical NON-COVID pts. eval. in the GiViTI model

ICU outcome	N	%
Dead	3364	24.3
Transferred to same hospital	8343	60.2
Transferred to other hospital	1915	13.8
Discharged home	152	1.1
Disch. terminally ill	93	0.7
Missing	0	

Transferred to (N=10258)	N	%
Ward	6949	67.7
Other ICU	1263	12.3
High dependency care unit	1452	14.2
Rehabilitation	492	4.8
Day hospital or Long-term care	102	1.0
Missing	0	

Reason of transfer to Other ICU (N=1316)	N	%
Specialist expertise	593	45.1
Step-up care	91	6.9
Logistical/organizational reasons	618	47.0
Step-down care	14	1.1
Missing	0	

Transferred to Same hospital (N=8343)	N	%
Ward	6458	77.4
Other ICU	460	5.5
High dependency care unit	1324	15.9
Rehabilitation	61	0.7
Day hospital or Long-term care	40	0.5
Missing	0	

Transferred to Other hospital (N=1915)	N	%
Ward	491	25.6
Other ICU	803	41.9
High dependency care unit	128	6.7
Rehabilitation	431	22.5
Day hospital or Long-term care	62	3.2
Missing	0	

ICU mortality	N	%
Alive	10410	75.1
Dead	3457	24.9
Missing	0	

Timing of ICU mortality (N=3457)	N	%
Daytime (08:00AM - 07:59PM)	2503	72.4
Nighttime (08:00PM - 07:59AM)	952	27.6
Weekdays (Monday - Friday)	2622	75.8
Weekend (Saturday - Sunday)	835	24.2
Missing	2	

C.A.M. activation (N=3457)	N	%
Yes, with organ donation	235	7.0
Yes, without organ donation	189	5.6
No, with organ donation	23	0.7
No, without organ donation	2917	86.7
Missing	93	

Tissue removal (N=3457)	N	%
Yes, with C.A.M. activation	126	3.6
Yes, without C.A.M. activation	188	5.4
No	3143	90.9
Missing	0	

Hospital mortality	N	%
Dead	4129	29.8
Transf. to other acute-care hospital	1986	14.3
Transf. to other type of hosp. stay	2448	17.7
Nursing home	272	2.0
Voluntary discharge	127	0.9
Discharged home	4905	35.4
Missing	0	

To other type of H stay (N=2448)	N	%
Rehabilitation in the same institute	307	12.5
Rehabilitation in other institute	1528	62.4
DH/long-term care, same inst.	188	7.7
DH/long-term care, other inst.	424	17.3
Missing	1	

Disch. terminally ill (N=9738)	N	%
Yes	249	2.6
No	9489	97.4
Missing	0	

Hospital mortality	N	%
Alive	9489	68.4
Dead	4378	31.6
Missing	0	

Timing of hosp. mortality (N=4378)	N	%
In ICU	3455	78.9
Within 24 hours after ICU	57	1.3
24-47 hours after ICU	68	1.6
48-71 hours after ICU	46	1.1
72-95 hours after ICU	48	1.1
After 95 hours after ICU	704	16.1
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=923)	
Mean	16.6
SD	21.2
Median	10
Q1−Q3	4−22
Missing	0

National report for general ICUs - **Year 2022**
Outcome indicators - Adult non surgical NON-COVID pts. eval. in the GiViTI model

Last hospital mortality	N	%
Alive	9329	67.3
Dead	4538	32.7
Missing	0	

ICU stay (days)	
Mean	8.0
SD	10.9
Median	4
Q1−Q3	2−10
Missing	0

ICU stay (days) **Alive** (N=10410)	
Mean	8.3
SD	11.2
Median	4
Q1−Q3	2−10
Missing	0

ICU stay (days) **Dead** (N=3457)	
Mean	7.1
SD	9.7
Median	3
Q1−Q3	1−9
Missing	0

Stay after ICU (days) **Alive** (N=10410)	
Mean	12.5
SD	16.6
Median	8
Q1−Q3	2−17
Missing	4

Hospital stay (days)	
Mean	19.7
SD	21.5
Median	14
Q1−Q3	6−26
Missing	2

Hospital stay (days) **Alive** (N=9489)	
Mean	22.1
SD	21.8
Median	16
Q1−Q3	8−29
Missing	2

Hospital stay (days) **Dead** (N=4378)	
Mean	14.5
SD	20.1
Median	8
Q1−Q3	2−18.8
Missing	0

National report for general ICUs - **Year 2022**
Characteristics on admission - Adult elect. surg. NON-COVID pts. eval. in the GiViTI model

Patients (N): 7035

Sex	N	%
Male	4110	58.4
Female	2925	41.6
Missing	0	

Age (years)	N	%
17-45	570	8.1
46-65	2030	28.9
66-75	2208	31.4
>75	2227	31.7
Missing	0	
Mean	67.4	
SD	14.1	
Median	71	
Q1−Q3	59−78	
Min−Max	17−99	

Body mass Index (BMI)	N	%
Underweight	367	5.2
Normal	3068	43.6
Overweight	2072	29.5
Obese	1528	21.7
Missing	0	

Pregnancy status **Females** (N=2925)	N	%
Not fertile	1394	47.7
Not pregnant/Unknown	1513	51.7
Currently pregnant	1	0.0
Post partum	17	0.6
Missing	0	

Comorbidities	N	%
No	731	10.4
Yes	6304	89.6
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	4267	60.7
Any tumour without metastasis	1543	21.9
Arrhythmia	1079	15.3
Moderate COPD	1034	14.7
Diabetes Type II without insulin tr.	1000	14.2
Myocardial infarction	964	13.7
Peripheral vascular disease	748	10.6
Metastatic cancer	645	9.2
Antiplatelet therapy	630	9.0
NYHA class II-III	531	7.5
Missing	0	

Stay before ICU (days)	
Mean	3.6
SD	9.4
Median	1
Q1−Q3	0−3
Missing	0

Source of admission	N	%
Same hospital	6963	99.0
Other hospital	72	1.0
Long-term chronic care hospital	0	0.0
Directly from the community	0	0.0
Missing	0	

Ward of admission **Hospital** (N=7035)	N	%
Medical ward	143	2.0
Surgical ward	6787	96.5
Emergency room	36	0.5
Other ICU	56	0.8
High dependency care unit	13	0.2
Missing	0	

Reason for transfer from **Other ICU** (N=56)	N	%
Specialist expertise	17	30.4
Step-up care	10	17.9
Logistical/organizational reasons	28	50.0
Step-down care	1	1.8
Missing	0	

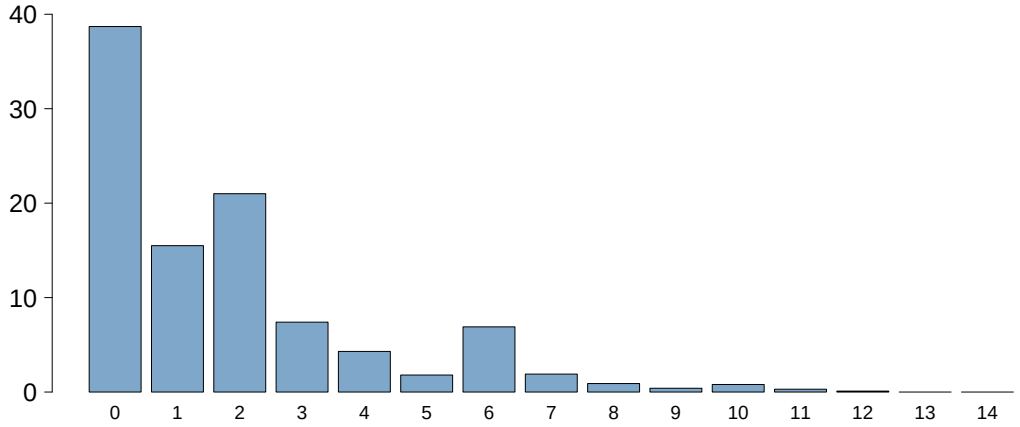
Ward of admission **Same hospital** (N=6963)	N	%
Medical ward	139	2.0
Surgical ward	6751	97.0
Emergency room	28	0.4
Other ICU	33	0.5
High dependency care unit	12	0.2
Missing	0	

Ward of admission **Other hospital** (N=72)	N	%
Medical ward	4	5.6
Surgical ward	36	50.0
Emergency room	8	11.1
Other ICU	23	31.9
High dependency care unit	1	1.4
Missing	0	

Scheduled admission	N	%
No	1588	22.6
Yes	5447	77.4
Missing	0	

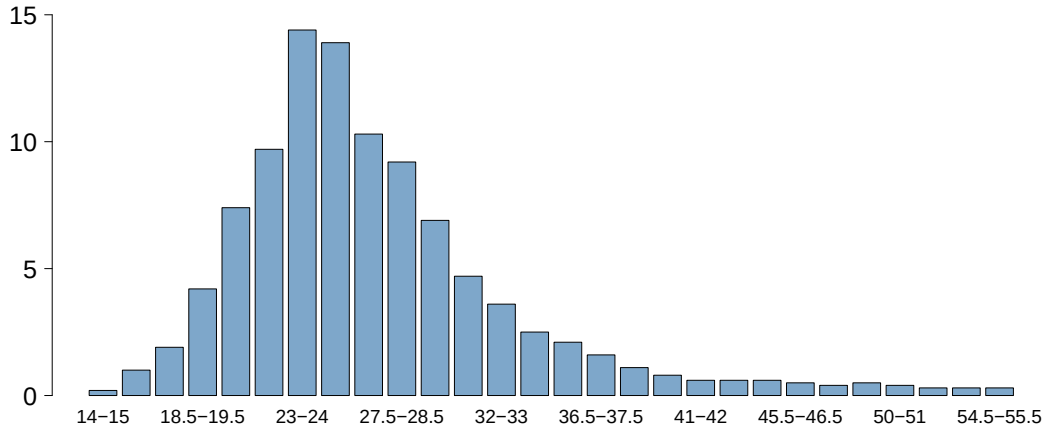
National report for general ICUs - **Year 2022**
Characteristics on admission - Adult elect. surg. NON-COVID pts. eval. in the GiViTI model

Charlson score (%)



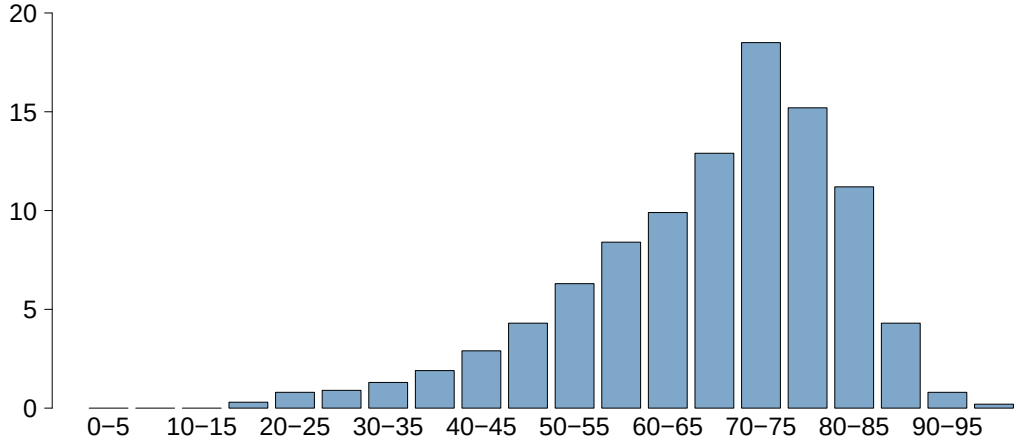
Charlson score	
Mean	1.8
SD	2.2
Median	1
Q1−Q3	0−2
Missing	0

BMI (%)



BMI	
Mean	27.5
SD	7.6
Median	25.8
Q1−Q3	23.1−29.6
Missing	0

Age (%)



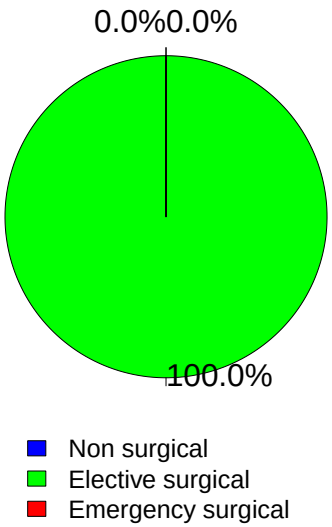
Age	
Mean	67.4
SD	14.1
Median	71
Q1−Q3	59−78
Missing	0

National report for general ICUs - **Year 2022**
Characteristics on admission - Adult elect. surg. NON-COVID pts. eval. in the GiViTI model

Trauma	N	%
No	6768	96.2
Yes	267	3.8
Multiple trauma	43	0.6
Missing	0	

Surgical status	N	%
Non surgical	0	0.0
Elective surgical	7035	100.0
Emergency surgical	0	0.0
Missing	0	

Surgical status



Source of admission **Surgical pt.** (N=7035)	N	%
Operating theatre of surgical ward	6515	92.6
Operating theatre of emergency room	13	0.2
Surgical ward	272	3.9
Other	235	3.3
Missing	0	

Surgical interventions (top 10) **Elective surgical** (N=7035)	N	%
Gastrointestinal surgery	2028	28.8
Neurosurgery	930	13.2
Nephro/Urological surgery	811	11.5
Orthopaedic surgery	691	9.8
Thoracic surgery	457	6.5
ENT surgery	397	5.6
Gynaecological surgery	340	4.8
Hepatic surgery	313	4.4
Abdominal vascular surgery	311	4.4
Pancreatic surgery	275	3.9
Missing	482	

Timing **Elective surgical** (N=7035)	N	%
From -7 to -3 days	84	1.2
From -2 to -1 days	243	3.5
On ICU admission day	7183	102.1
The day after ICU admission	63	0.9
Missing	12	

Surgical interventions (top 10) **Emergency surgical** (N=0)	N	%
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Timing **Emergency surgical** (N=0)	N	%
From -7 to -3 days	0	0.0
From -2 to -1 days	0	0.0
On ICU admission day	0	0.0
The day after ICU admission	0	0.0
Missing	0	

Non surgical interventions	N	%
None	6872	97.7
Elective	102	1.4
Emergency	61	0.9
Missing	0	

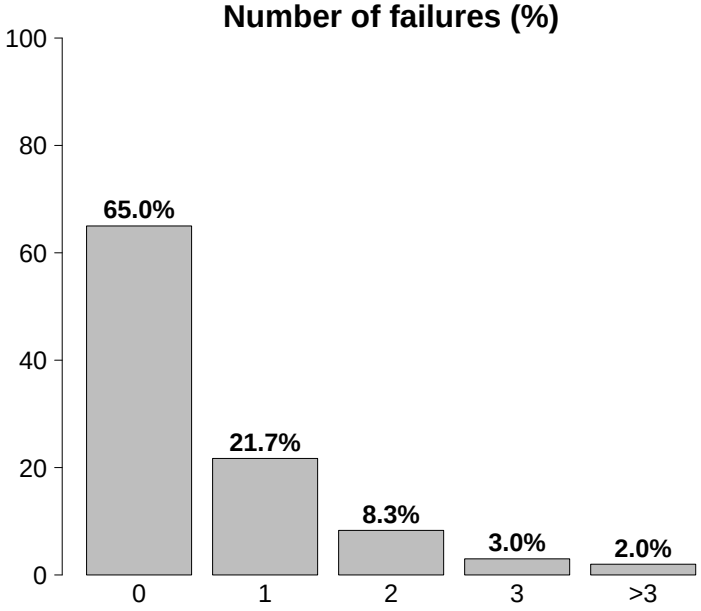
Non surgical interventions **Elective** (N=102)	N	%
Interventional radiology	20	19.6
Interventional endoscopy	15	14.7
Interventional neuroradiology	11	10.8
Interventional cardiology	5	4.9
Missing	51	

Non surgical interventions **Emergency** (N=61)	N	%
Interventional radiology	24	39.3
Interventional cardiology	18	29.5
Interventional endoscopy	10	16.4
Interventional neuroradiology	3	4.9
Missing	6	

National report for general ICUs - **Year 2022**
Characteristics on admission - Adult elect. surg. NON-COVID pts. eval. in the GiViTI model

Reason for admission	N	%
Monitoring/Weaning	5780	82.2
Post surgical weaning	2559	36.4
Surgical monitoring	3212	45.7
Post interventional weaning	4	0.1
Interventional monitoring	5	0.1
Non surgical monitoring	0	0.0
Missing	0	
Intensive Treatment	1255	17.8
Only ventilatory support	680	9.7
Only cardiovascular support	188	2.7
Ventilatory and cardiovascular support	387	5.5
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	

Number of failures (%)



Failures on admission	N	%
No	4572	65.0
Yes	2463	35.0
A: Respiratory failure	1067	15.2
B: Cardiovascular failure	575	8.2
C: Neurological failure	64	0.9
D: Hepatic failure	9	0.1
E: Renal failure	1290	18.3
F: Acute skin failure	2	0.0
G: Metabolic failure	878	12.5
H: Coagulation failure	31	0.4
Missing	0	

Failures on admission (top 10)	N	%
E	664	9.4
A	458	6.5
G	307	4.4
EG	207	2.9
AB	125	1.8
ABEG	103	1.5
AE	93	1.3
B	77	1.1
ABE	65	0.9
AG	64	0.9
Missing	0	

Respiratory failure	N	%
None	5968	84.8
Only hypoxic failure	226	3.2
Only hypercapnic failure	23	0.3
Hypoxic-hypercapnic failure	25	0.4
Intubation for airway maint.	793	11.3
Missing	0	

Cardiovascular failure	N	%
None	6460	91.8
Without shock	160	2.3
Cardiogenic shock	57	0.8
Septic shock	69	1.0
Haemorrhagic/hypovolemic shock	145	2.1
Hypovolemic shock	76	1.1
Anaphylactic shock	5	0.1
Neurogenic shock	5	0.1
Other shock	35	0.5
Mixed shock	23	0.3
Missing	0	

Neurologic failure	N	%
None	5740	98.9
Cerebral coma	28	0.5
Metabolic coma	18	0.3
Postanoxic coma	16	0.3
Toxic coma	2	0.0
Missing or not evaluable	1231	

Renal failure (AKIN)	N	%
None	5745	81.7
Mild	882	12.5
Moderate	215	3.1
Severe	193	2.7
Missing	0	

Metabolic failure	N	%
None	6157	87.5
pH <= 7.3, PaCO2 < 45 mmHg	224	3.2
Base deficit >= 5 mmol/L, lactate >1.5x	654	9.3
Missing	0	

National report for general ICUs - Year 2022
Characteristics on admission - Adult elect. surg. NON-COVID pts. eval. in the GiViTI model

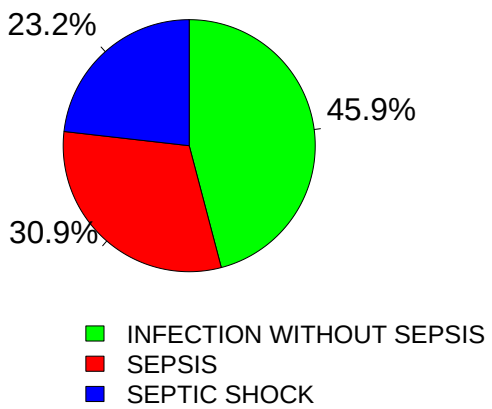
Clinical conditions on admission	N	%
Respiratory	763	10.8
Lung cancer	297	4.2
Upper respiratory tract disease	158	2.2
Pleural effusion	74	1.1
Acute asthma/bronchospasm	55	0.8
Pulmonary embolism	47	0.7
Cardiovascular	726	10.3
Non-ruptured aneurysm	284	4.0
Peripheral vascular disease	167	2.4
Acute severe arrhythmia: tachycardias	71	1.0
Cardiac arrest	47	0.7
Left heart failure without pulm. edema	30	0.4
Neurological	871	12.4
Brain tumour	697	9.9
Neuropathy/myopathy	56	0.8
Cerebral Aneurysm	33	0.5
Seizures	28	0.4
Cerebral artery stroke	23	0.3
Gastrointestinal and hepatic	2125	30.2
Digestive tract malignancy	1293	18.4
Hepatic malignancy	266	3.8
Pancreatic malignancy	256	3.6
Acute bile-duct disease	94	1.3
Intestinal occlusion	81	1.2
Trauma (anatomical districts)	267	3.8
Pelvis/bone/joint & muscle	222	3.2
Spine	39	0.6
Chest	31	0.4
Head	25	0.4
Abdomen	9	0.1
Major vessels injury	3	0.0
Miscellaneous	2	0.0
Other	2741	39.0
Other disease	821	11.7
Nephrourologic disease	677	9.6
ENT/maxillofacial disease	385	5.5
Orthopaedic disease	373	5.3
Gynaecological disease	295	4.2
Post transplantation	38	0.5
Liver transplantation	19	0.3
Renal transplantation	14	0.2
Infections	375	5.3
Pneumonia	51	0.7
Post-surgical peritonitis	40	0.6
NON-surgical secondary peritonitis	31	0.4
Orthopaedic prosthesis infection	24	0.3
NON-surgical skin/soft tissue infection	23	0.3
NON-catheter-related UTI	21	0.3
NON-surgical bone and joint infection	19	0.3
Cholecystitis/cholangitis	19	0.3
Catheter-related UTI	19	0.3
Primary bacteraemia of unknown origin	18	0.3
Missing	0	

Trauma (anatomical districts)	N	%
Head	25	0.4
Maxillofacial fracture	14	0.2
Traumatic subarachnoid haemorrhage	8	0.1
Cerebral contusion/laceration	5	0.1
Traumatic intraparenchymal bleeding	3	0.0
Traumatic Subdural haematoma	2	0.0
Spine	39	0.6
Vertebral fracture, without deficit	34	0.5
Cervical injury, incomplete deficit	5	0.1
-	0	0.0
Chest	31	0.4
Other injuries of the chest	17	0.2
Traum. haemothorax/pneumothorax	14	0.2
Flail chest	4	0.1
Abdomen	9	0.1
Liver: Moderate-Severe laceration	3	0.0
Spleen: Moderate-Severe laceration	3	0.0
Minor injuries of the abdomen	3	0.0
Pelvis/bone/joint & muscle	222	3.2
Long bone fracture	211	3.0
Multiple fracture of the pelvis	17	0.2
Very severe or open fracture of the pelvis	2	0.0
Major vessels injury	3	0.0
Proximal limbs vessels: transection	2	0.0
Aorta: rupture/dissection	1	0.0
-	0	0.0
Miscellaneous	2	0.0
Burns (>30% BSA)	2	0.0
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	6660	94.7
INFECTION WITHOUT SEPSIS	172	2.4
SEPSIS	116	1.6
SEPTIC SHOCK	87	1.2
Missing	0	

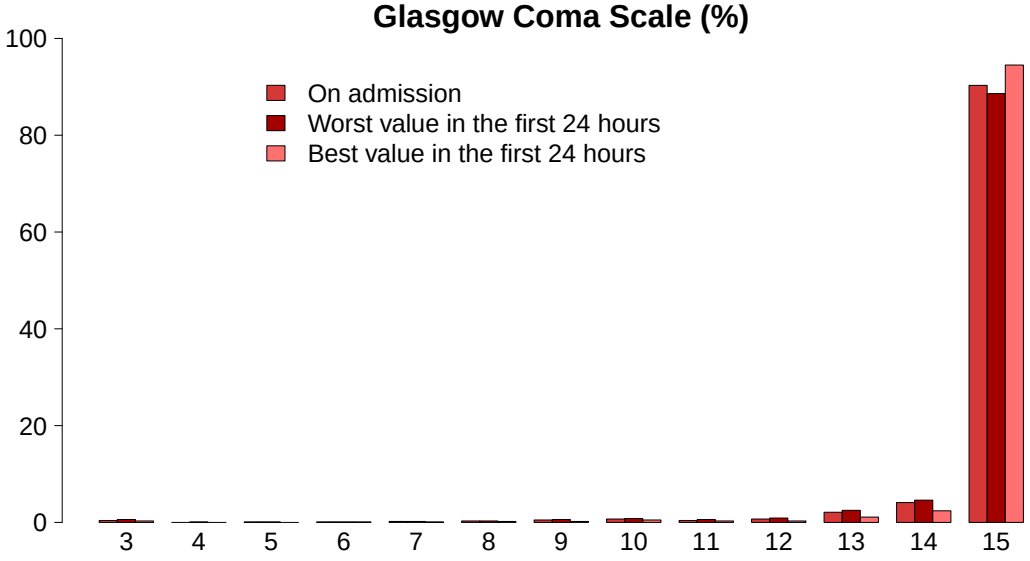
Infection severity on admission

Patients infected (N=375)



National report for general ICUs - **Year 2022**
Severity scores - Adult elect. surg. NON-COVID pts. eval. in the GiViTI model

Glasgow Coma Scale (%)

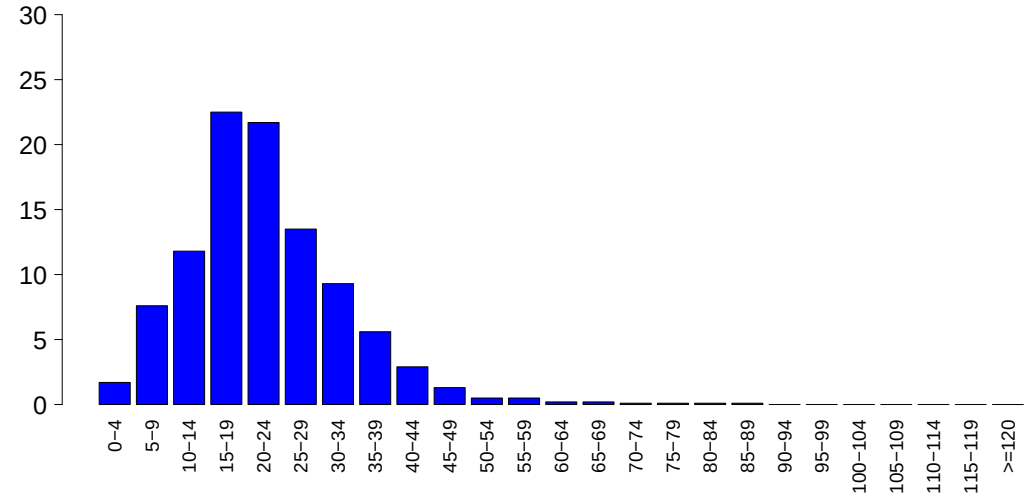


GCS (admission)	
Median	15
Q1−Q3	15−15
Not evaluable	1231
Missing	0

GCS (worst in first 24 hours)	
Median	15
Q1−Q3	15−15
Not evaluable	826
Missing	0

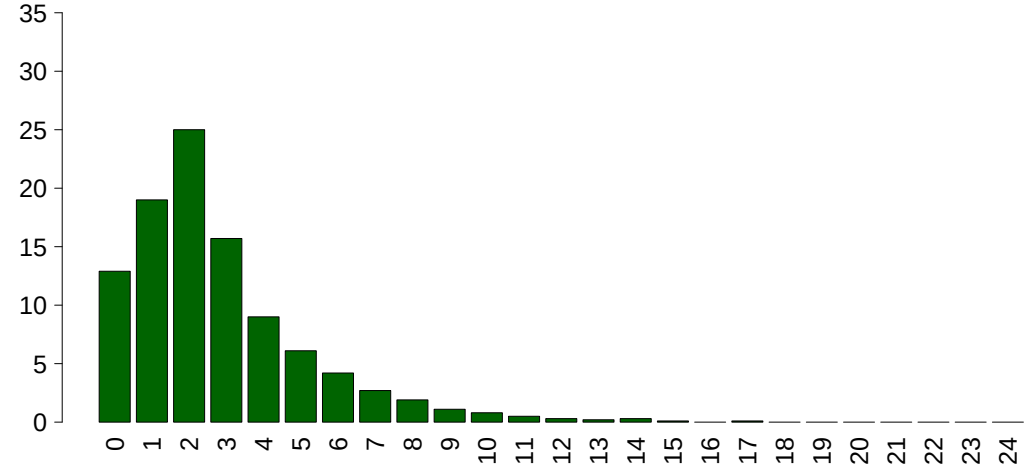
GCS (best in first 24 hours)	
Median	15
Q1−Q3	15−15
Not evaluable	465
Missing	81

SAPS II (%)



SAPSII	
Mean	22.4
SD	11.1
Median	21
Q1−Q3	15−28
Not evaluable	826
Missing	0

SOFA (%)



SOFA	
Mean	2.8
SD	2.5
Median	2
Q1−Q3	1−4
Not evaluable	826
Missing	0

National report for general ICUs - **Year 2022**
Characteristics during the stay - Adult elect. surg. NON-COVID pts. eval. in the GiViTI model

Complications during the stay	N	%
No	6379	90.7
Yes	656	9.3
Missing	0	

Failures during the stay	N	%
No	6745	95.9
Yes	290	4.1
A: Respiratory failure	165	2.3
B: Cardiovascular failure	103	1.5
C: Neurological failure	20	0.3
D: Hepatic failure	6	0.1
E: Renal failure (AKIN)	64	0.9
F: Acute skin failure	1	0.0
G: Metabolic failure	29	0.4
H: Coagulation failure	7	0.1
Missing	0	

Failures during the stay (top 10)	N	%
A	102	1.4
B	49	0.7
E	37	0.5
AB	35	0.5
G	22	0.3
AC	10	0.1
ABE	5	0.1
AE	4	0.1
BE	3	0.0
C	2	0.0
Missing	0	

Respiratory failure occured	N	%
None	6870	97.7
Intubation for airway maint.	74	1.1
Hypoxic failure	84	1.2
Hypercapnic failure	19	0.3
Missing	0	

Cardiovascular failure occured	N	%
None	6932	98.5
Cardiogenic shock	27	0.4
Hypovolemic shock	13	0.2
Haemorrhagic/hypovolemic shock	23	0.3
Septic shock	39	0.6
Anaphylactic shock	0	0.0
Neurogenic shock	2	0.0
Other shock	9	0.1
Missing	0	

Neurological failure occured	N	%
None	7015	99.7
Cerebral coma	17	0.2
Metabolic coma	2	0.0
Postanoxic coma	1	0.0
Missing	0	

Renal failure occured (AKIN)	N	%
None	6971	99.1
Mild	10	0.1
Moderate	13	0.2
Severe	41	0.6
Missing	0	

Complications during the stay	N	%
Respiratory	107	1.5
Pleural effusion	32	0.5
Atelectasis	25	0.4
Pneumothorax/Pneumomediastinum	16	0.2
Upper resp. tract disease	13	0.2
Severe ARDS	8	0.1
Cardiovascular	150	2.1
Acute severe arrhythmia: tachycardias	75	1.1
Cardiac arrest	24	0.3
Peripheral vascular disease	16	0.2
Acute severe arrhythmia: bradycardias	13	0.2
Acute ischaemia	8	0.1
Neurological	122	1.7
Drowsiness/agitation/delirium	78	1.1
Seizures	20	0.3
Post-surgical intracranial bleeding	13	0.2
New ischaemic stroke	7	0.1
CrIMyNe	4	0.1
Gastrointestinal and hepatic	83	1.2
Anastomotic dehiscence	14	0.2
Bowel ischaemia	13	0.2
Paralytic Ileus	13	0.2
Intrabdominal bleeding	10	0.1
Gastrointestinal bleeding: lower tract	9	0.1
Other	86	1.2
Metabolic disorder	29	0.4
Nephrourologic disease	22	0.3
Other disease	22	0.3
Other skin and/or soft tissue pathology	8	0.1
F.U.O. fever of unknown origin	5	0.1
Category/Stage I: Nonblanchable Erythema	2	0.0
Category/Stage II: Partial Thickness Skin Loss	2	0.0
Infections	167	2.4
Pneumonia	45	0.6
L.R.T.I. other than pneumonia	28	0.4
Primary bacteraemia of unknown origin	23	0.3
Post-surgical peritonitis	22	0.3
Post-surgical skin/soft tissue infection	18	0.3
Catheter-related UTI	18	0.3
Clinical sepsis	16	0.2
Catheter-related bacteremia (CR-BSI)	12	0.2
COVID-19	7	0.1
Pleurisy/Pleural empyema	3	0.0
Missing	0	

National report for general ICUs - **Year 2022**
Characteristics during the stay - Adult elect. surg. NON-COVID pts. eval. in the GiViTI model

Infections	N	%
None	6518	92.7
Only on admission	350	5.0
On admission and during ICU stay	25	0.4
Only during ICU stay	142	2.0
Missing	0	

Maximum severity of infection	N	%
None	6518	92.7
INFECTION WITHOUT SEPSIS	226	3.2
SEPSIS	174	2.5
SEPTIC SHOCK	117	1.7
Missing	0	

Severity evolution

		During the stay				
	N (R %)	None	INFECTION WITHOUT SEPSIS	SEPSIS	SEPTIC SHOCK	TOT
Admission	None	6518 (97.9%)	66 (1.0%)	53 (0.8%)	23 (0.3%)	6660
	INFECTION WITHOUT SEPSIS	-	160 (93.0%)	12 (7.0%)	0 (0.0%)	172
	SEPSIS	-	-	109 (94.0%)	7 (6.0%)	116
	SEPTIC SHOCK	-	-	-	87 (100.0%)	87
	TOT	6518	226	174	117	7035

Ventil. Associat. Pneumonia (VAP)	N	%
No	6999	99.5
Yes	36	0.5
Missing	0	

Catheter Bacteraemia (CR-BSI)	N	%
No	7023	99.8
Yes	12	0.2
Missing	0	

Incidence of VAP
(Pts. with VAP/1000 days of VM pre-VAP)

Estimate	13.6
CI (95%)	9.6−18.9

Incidence of CR-BSI
(Pts. with CR-BSI/1000 days of CVC pre-CR-BSI)

Estimate	1.4
CI (95%)	0.7−2.5

Incidence of VAP
(Pts. with VAP/pts. ventilated for 8 days)

Estimate	10.9%
CI (95%)	7.6−15.1

Incidence of CR-BSI
(Pts. with CR-BSI/pts. catheterized for 12 days)

Estimate	1.7%
CI (95%)	0.9−3.0

Catheter-related urinary tract infection (UTI)	N	%
No	7017	99.7
Yes	18	0.3
Missing	0	

Incidence of catheter-related UTI
(Pts. with catheter-related UTI/1000 days of UC pre-UTI)

Estimate	1.3
CI (95%)	0.8−2.1

Incidence of catheter-related UTI
(Pts. with catheter-related UTI/pts. with UC for 12 days)

Estimate	1.6%
CI (95%)	0.9−2.5

Process indicators - Adult elect. surg. NON-COVID pts. eval. in the GiViTI model	Use eval. in the admission		On discharge				Length (days)			Days from admission		
Procedures and/or treatments (Missing=0)	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	6960	98.9										
Invasive ventilation	3697	52.6	3465	49.3	160	2.3	0	0–1	0	0	0–0	0
Non invasive ventilation	519	7.4	160	2.3	173	2.5	1	1–2	0	0	0–1	0
Tracheostomy	281	4.0	199	2.8	258	3.7	2	1–7	0	9	5–14	0
iNO (inhaled nitric oxide)	2	0.0	1	0	2	0	21	12–30	0	4	4–4	0
Central Venous Catheter	2913	41.4	2231	31.7	2674	38	1	1–3	0	0	0–0	0
PICC	219	3.1	168	2.4	213	3	1	1–3	0	1	0–3	0
Arterial Catheter	5983	85.0	5035	71.6	788	11.2	1	1–2	0	0	0–0	0
Vasoactive drugs	1074	15.3	736	10.5	109	1.5	1	0–2	0	0	0–0	0
Antiarrhythmics	191	2.7	66	0.9	128	1.8	1	1–3	0	1	0–2	0
IABP	4	0.1	2	0	1	0	1	1–1	0	4	2–7	0
Invasive monitoring of C.O.	53	0.8	28	0.4	8	0.1	1	1–3	0	0	0–1	0
Continous monitoring of ScVO2	6	0.1	5	0.1	0	0	1	0–1	0	0	0–0	0
Temporary pacing	5	0.1	1	0	1	0	1	0–1	0	0	0–0	0
Ventricular assistance	0	0.0										
DC-shock	16	0.2								0	0–1	0
CPR	24	0.3								0	0–0	0
Massive blood transfusion	30	0.4								0	0–0	0
ICP monitoring without CSF drainage	4	0.1	2	0	2	0	2	1–7	0	1	1–1	0
ICP monitoring with CSF drainage	46	0.7	31	0.4	27	0.4	3	1–6	0	0	0–1	0
EVD without ICP monitoring	29	0.4	28	0.4	26	0.4	1	1–3	0	0	0–0	0
Haemofiltration	34	0.5	3	0	8	0.1	3	1–5	0	1	0–2	0
Haemodialysis	57	0.8	7	0.1	25	0.4	1	0–3	0	1	0–1	0
ECMO	0	0.0										
Hepatic clearance techniques	0	0.0										
Clearance techniques during sepsis	5	0.1	0	0	2	0	2	1–4	0	0	0–1	0
IAP (intra-abdominal pressure)	56	0.8										
Hypothermia	8	0.1	5	0.1	1	0	1	0–1	0	0	0–0	0
Enteral nutrition	548	7.8	101	1.4	412	5.9	3	1–7	0	1	0–2	0
Parenteral nutrition	593	8.4	103	1.5	442	6.3	2	1–4	0	0	0–1	0
SDD (Topical, Topical and systemic)	1	0.0										
Patient restraint	51	0.7										
Peridural catheter	713	10.1	694	9.9	599	8.5	1	1–2	0	0	0–0	0
Electrical cardioversion	10	0.1								0	0–1	0
Vacuum therapy	10	0.1										
Urinary catheter	6713	95.4	6273	89.2	6309	89.7	1	1–2	0	0	0–0	0
Pronation	7	0.1	0	0	0	0	2	1–4	0	6	1–8	0
Antivirals	11	0.2	4	0.1	9	0.1	2	2–6	0	1	0–6	0

National report for general ICUs - **Year 2022**
Process indicators - Adult elect. surg. NON-COVID pts. eval. in the GiViTI model

Procedures and/or treatments (Missing=0)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Antibiotics	3626	51.5										
Antibiotic prophylaxis	3019	42.9	2647	37.6	1314	18.7	1	1–1	0	0	0–0	0
Empirical antibiotic therapy (infection diagnosis confirmed)	224	3.2	111	1.6	117	1.7	2	1–5	0	1	0–3	0
Empirical antibiotic therapy (infection diagnosis unconfirmed)	375	5.3	179	2.5	309	4.4	2	1–4	0	1	0–2	0
Targeted antibiotic therapy	207	2.9	68	1	159	2.3	4	2–8	0	5	2–8	0
Antifungal in empirical therapy	57	0.8	16	0.2	32	0.5	3	2–6	0	3	0–5	0
Antifungal in targeted therapy	30	0.4	5	0.1	16	0.2	8	4–13	0	7	5–15	0
Pre-emptive antifungal	13	0.2	6	0.1	12	0.2	2	1–4	0	1	0–2	0

Antibiotic therapy		
Pt. infected in ICU only (N=142)	N	%
No therapy	25	17.6
Only empirical	45	31.7
Only targeted	26	18.3
Targeted after empirical	32	22.5
Other	14	9.9
Missing	0	

Antifungal therapy		
Pt. infected in ICU only (N=142)	N	%
No therapy	113	79.6
Only empirical	17	12.0
Only targeted	10	7.0
Targeted after empirical	1	0.7
Other	1	0.7
Missing	0	

National report for general ICUs - **Year 2022**
Process indicators - Adult elect. surg. NON-COVID pts. eval. in the GiViTI model

Invasive ventilation (N=3697)	N	%	Length (days) Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	219	5.0	4.9	9.1	2	1−6	0
For airway mainteinance	755	17.1	2.4	5.5	1	0−2	0
In weaning	2523	57.3	0.4	0.5	0	0−1	0
Not evaluable	906	20.6	2.0	4.6	1	0−1	707
Reintubation within 48 hours	36	0.8	5.2	5.3	4	1−7	0

Non invasive ventilation (N=519)	N	%
Non invasive ventilation only	314	60.5
Non invasive ventilation failed	35	6.7
For weaning	156	30.1
Other	14	2.7
Missing	0	

Tracheostomy not present on admission (N=82)	N	%
Surgical	26	31.7
Percutwist	6	7.3
Ciaglia	12	14.6
Monodil. Ciaglia	32	39.0
Fantoni	1	1.2
Griggs	5	6.1
Other Kind	0	0.0
Unknown	0	0.0
Missing	0	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=79)	
Mean	9.8
SD	6.4
Median	9
Q1−Q3	5−13.5
Missing	0

Invasive monitoring of C.O. (N=53)	N	%
Swan Ganz	13	24.5
PICCO	21	39.6
LIDCO	0	0.0
Vigileo-PRAM	14	26.4
Other	5	9.4
Missing	0	

SDD (N=1)	N	%
Topical	1	100.0
Topical and systemic	0	0.0
Missing	0	

Surgical interventions	N	%
No	6961	98.9
Yes	74	1.1
Missing	0	

Number of surgical interventions	N	%
0	6961	98.9
1	57	0.8
2	9	0.1
3	6	0.1
>3	2	0.0
Missing	0	

Surgical interventions Days from admission	
Mean	8.5
SD	14.1
Median	5
Q1−Q3	3−9
Missing	0

Surgical interventions (top 10)	N	%
Gastrointestinal surgery	54	0.8
Neurosurgery	9	0.1
Other surgery	7	0.1
Thoracic surgery	6	0.1
ENT surgery	5	0.1
Orthopaedic surgery	4	0.1
Peripheral vascular surgery	4	0.1
Nephro/Urological surgery	3	0.0
Hepatic surgery	2	0.0
Biliary tract surgery	2	0.0
Missing	0	

Non surgical interventions	N	%
No	7018	99.8
Yes	17	0.2
Missing	0	

Non surgical interventions Days from admission	
Mean	10.6
SD	10.5
Median	6
Q1−Q3	4−12.5
Missing	0

Non surgical interventions	N	%
Interventional endoscopy	9	0.1
Interventional radiology	4	0.1
Interventional cardiology	3	0.0
Interventional neuroradiology	3	0.0
Missing	0	

National report for general ICUs - **Year 2022**
Outcome indicators - Adult elect. surg. NON-COVID pts. eval. in the GiViTI model

ICU outcome	N	%
Dead	130	1.8
Transferred to same hospital	6767	96.2
Transferred to other hospital	87	1.2
Discharged home	48	0.7
Disch. terminally ill	3	0.0
Missing	0	

Transferred to (N=6854)	N	%
Ward	6633	96.8
Other ICU	54	0.8
High dependency care unit	138	2.0
Rehabilitation	26	0.4
Day hospital or Long-term care	3	0.0
Missing	0	

Reason of transfer to Other ICU (N=54)	N	%
Specialist expertise	30	55.6
Step-up care	3	5.6
Logistical/organizational reasons	21	38.9
Step-down care	0	0.0
Missing	0	

Transferred to Same hospital (N=6767)	N	%
Ward	6597	97.5
Other ICU	28	0.4
High dependency care unit	135	2.0
Rehabilitation	6	0.1
Day hospital or Long-term care	1	0.0
Missing	0	

Transferred to Other hospital (N=87)	N	%
Ward	36	41.4
Other ICU	26	29.9
High dependency care unit	3	3.4
Rehabilitation	20	23.0
Day hospital or Long-term care	2	2.3
Missing	0	

ICU mortality	N	%
Alive	6902	98.1
Dead	133	1.9
Missing	0	

Timing of ICU mortality (N=133)	N	%
Daytime (08:00AM - 07:59PM)	79	59.4
Nighttime (08:00PM - 07:59AM)	54	40.6
Weekdays (Monday - Friday)	99	74.4
Weekend (Saturday - Sunday)	34	25.6
Missing	0	

C.A.M. activation (N=133)	N	%
Yes, with organ donation	1	0.8
Yes, without organ donation	1	0.8
No, with organ donation	1	0.8
No, without organ donation	127	97.7
Missing	3	

Tissue removal (N=133)	N	%
Yes, with C.A.M. activation	0	0.0
Yes, without C.A.M. activation	11	8.3
No	122	91.7
Missing	0	

Hospital mortality	N	%
Dead	359	5.1
Transf. to other acute-care hospital	207	2.9
Transf. to other type of hosp. stay	551	7.8
Nursing home	98	1.4
Voluntary discharge	32	0.5
Discharged home	5788	82.3
Missing	0	

To other type of H stay (N=551)	N	%
Rehabilitation in the same institute	107	19.4
Rehabilitation in other institute	303	55.0
DH/long-term care, same inst.	38	6.9
DH/long-term care, other inst.	103	18.7
Missing	0	

Disch. terminally ill (N=6676)	N	%
Yes	57	0.9
No	6619	99.1
Missing	0	

Hospital mortality	N	%
Alive	6619	94.1
Dead	416	5.9
Missing	0	

Timing of hosp. mortality (N=416)	N	%
In ICU	133	32.0
Within 24 hours after ICU	25	6.0
24-47 hours after ICU	8	1.9
48-71 hours after ICU	12	2.9
72-95 hours after ICU	12	2.9
After 95 hours after ICU	226	54.3
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=283)	
Mean	20.2
SD	31.5
Median	12
Q1−Q3	5−23.5
Missing	0

National report for general ICUs - **Year 2022**
Outcome indicators - Adult elect. surg. NON-COVID pts. eval. in the GiViTI model

Last hospital mortality	N	%
Alive	6616	94.0
Dead	419	6.0
Missing	0	

ICU stay (days)	
Mean	2.0
SD	4.1
Median	1
Q1−Q3	1−1
Missing	0

ICU stay (days) **Alive** (N=6902)	
Mean	1.8
SD	3.2
Median	1
Q1−Q3	1−1
Missing	0

ICU stay (days) **Dead** (N=133)	
Mean	9.8
SD	17.5
Median	4
Q1−Q3	1−11
Missing	0

Stay after ICU (days) **Alive** (N=6902)	
Mean	11.0
SD	15.0
Median	7
Q1−Q3	4−13
Missing	1

Hospital stay (days)	
Mean	16.4
SD	19.1
Median	11
Q1−Q3	6−19
Missing	0

Hospital stay (days) **Alive** (N=6619)	
Mean	15.8
SD	17.8
Median	10
Q1−Q3	6−19
Missing	0

Hospital stay (days) **Dead** (N=416)	
Mean	25.7
SD	32.7
Median	17
Q1−Q3	8−33
Missing	0

National report for general ICUs - **Year 2022**
Characteristics on admission - Adult emerg. surg. NON-COVID pts. eval. in the GiViTI model

Patients (N): 7485

Sex	N	%
Male	4364	58.3
Female	3121	41.7
Missing	0	

Age (years)	N	%
17-45	1122	15.0
46-65	2040	27.3
66-75	1737	23.2
>75	2586	34.5
Missing	0	
Mean	65.4	
SD	17.8	
Median	70	
Q1−Q3	55−79	
Min−Max	17−101	

Body mass Index (BMI)	N	%
Underweight	469	6.3
Normal	3483	46.5
Overweight	2281	30.5
Obese	1252	16.7
Missing	0	

Pregnancy status **Females** (N=3121)	N	%
Not fertile	1663	53.3
Not pregnant/Unknown	1266	40.6
Currently pregnant	14	0.4
Post partum	178	5.7
Missing	0	

Comorbidities	N	%
No	1553	20.7
Yes	5932	79.3
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	3784	50.6
Arrhythmia	1159	15.5
Diabetes Type II without insulin tr.	862	11.5
Any tumour without metastasis	771	10.3
Moderate COPD	765	10.2
Myocardial infarction	765	10.2
Peripheral vascular disease	764	10.2
Cerebrovascular disease	612	8.2
NYHA class II-III	577	7.7
Moderate or severe renal disease	573	7.7
Missing	0	

Stay before ICU (days)	
Mean	3.6
SD	9.6
Median	1
Q1−Q3	0−3
Missing	0

Source of admission	N	%
Same hospital	6919	92.4
Other hospital	566	7.6
Long-term chronic care hospital	0	0.0
Directly from the community	0	0.0
Missing	0	

Ward of admission **Hospital** (N=7485)	N	%
Medical ward	531	7.1
Surgical ward	4102	54.8
Emergency room	2578	34.4
Other ICU	172	2.3
High dependency care unit	102	1.4
Missing	0	

Reason for transfer from **Other ICU** (N=172)	N	%
Specialist expertise	72	41.9
Step-up care	35	20.3
Logistical/organizational reasons	61	35.5
Step-down care	4	2.3
Missing	0	

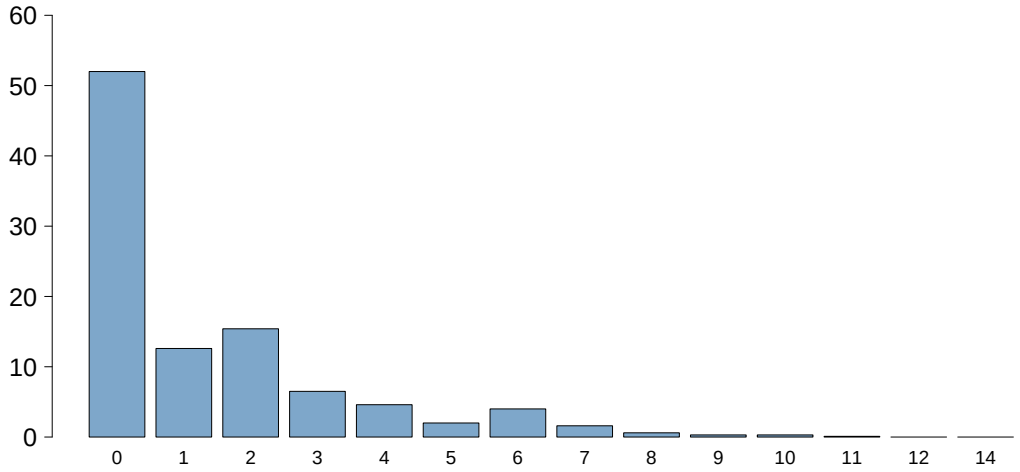
Ward of admission **Same hospital** (N=6919)	N	%
Medical ward	484	7.0
Surgical ward	4035	58.3
Emergency room	2234	32.3
Other ICU	72	1.0
High dependency care unit	94	1.4
Missing	0	

Ward of admission **Other hospital** (N=566)	N	%
Medical ward	47	8.3
Surgical ward	67	11.8
Emergency room	344	60.8
Other ICU	100	17.7
High dependency care unit	8	1.4
Missing	0	

Scheduled admission	N	%
No	7470	99.8
Yes	15	0.2
Missing	0	

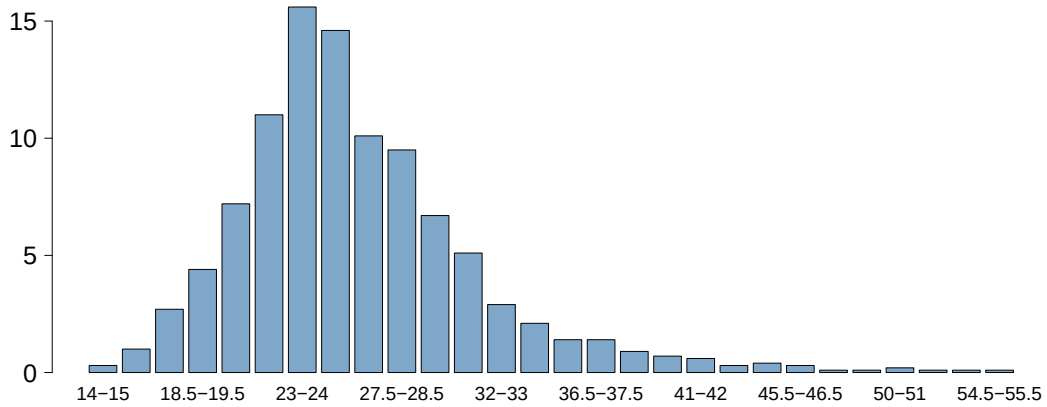
National report for general ICUs - **Year 2022**
Characteristics on admission - Adult emerg. surg. NON-COVID pts. eval. in the GiViTI model

Charlson score (%)



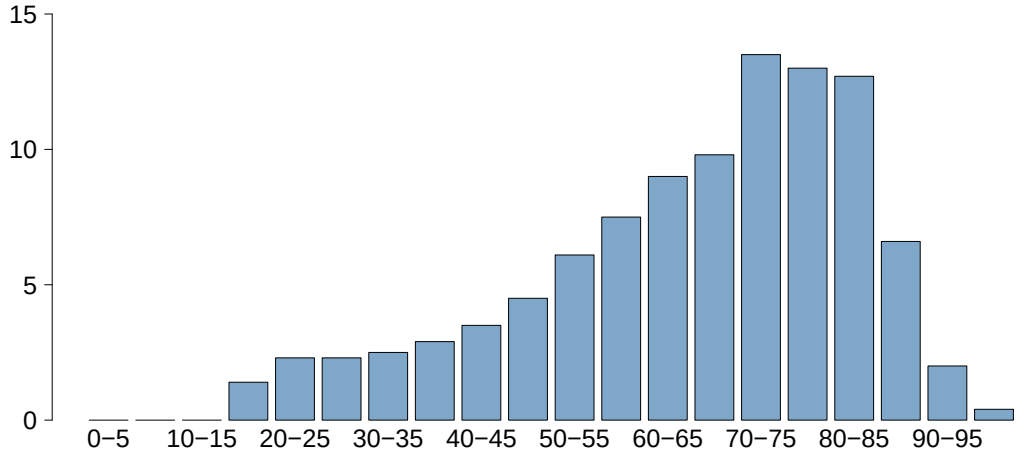
Charlson score	
Mean	1.4
SD	2.0
Median	0
Q1−Q3	0−2
Missing	4

BMI (%)



BMI	
Mean	26.3
SD	5.8
Median	25.4
Q1−Q3	22.9−28.5
Missing	0

Age (%)



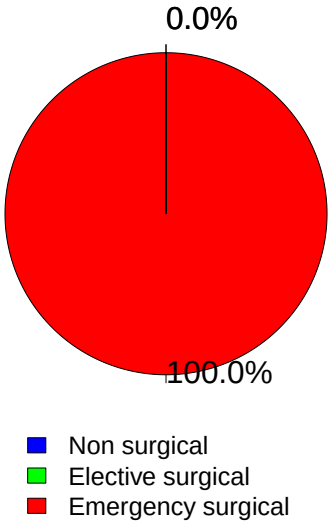
Age	
Mean	65.4
SD	17.8
Median	70
Q1−Q3	55−79
Missing	0

National report for general ICUs - **Year 2022**
Characteristics on admission - Adult emerg. surg. NON-COVID pts. eval. in the GiViTI model

Trauma	N	%
No	5820	77.8
Yes	1665	22.2
Multiple trauma	806	10.8
Missing	0	

Surgical status	N	%
Non surgical	0	0.0
Elective surgical	0	0.0
Emergency surgical	7485	100.0
Missing	0	

Surgical status



Source of admission **Surgical pt.** (N=7485)	N	%
Operating theatre of surgical ward	3794	50.7
Operating theatre of emergency room	1945	26.0
Surgical ward	308	4.1
Other	1438	19.2
Missing	0	

Surgical interventions (top 10) **Elective surgical** (N=0)	N	%
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Timing **Elective surgical** (N=0)	N	%
From -7 to -3 days	0	0.0
From -2 to -1 days	0	0.0
On ICU admission day	0	0.0
The day after ICU admission	0	0.0
Missing	0	

Surgical interventions (top 10) **Emergency surgical** (N=7485)	N	%
Gastrointestinal surgery	3357	44.8
Neurosurgery	1002	13.4
Orthopaedic surgery	945	12.6
Nephro/Urological surgery	463	6.2
Abdominal vascular surgery	279	3.7
Peripheral vascular surgery	259	3.5
Biliary tract surgery	228	3.0
ENT surgery	225	3.0
Thoracic surgery	189	2.5
Organ/s transplantation	153	2.0
Missing	385	

Timing **Emergency surgical** (N=7485)	N	%
From -7 to -3 days	143	1.9
From -2 to -1 days	870	11.6
On ICU admission day	6674	89.2
The day after ICU admission	308	4.1
Missing	25	

Non surgical interventions	N	%
None	7032	93.9
Elective	60	0.8
Emergency	393	5.3
Missing	0	

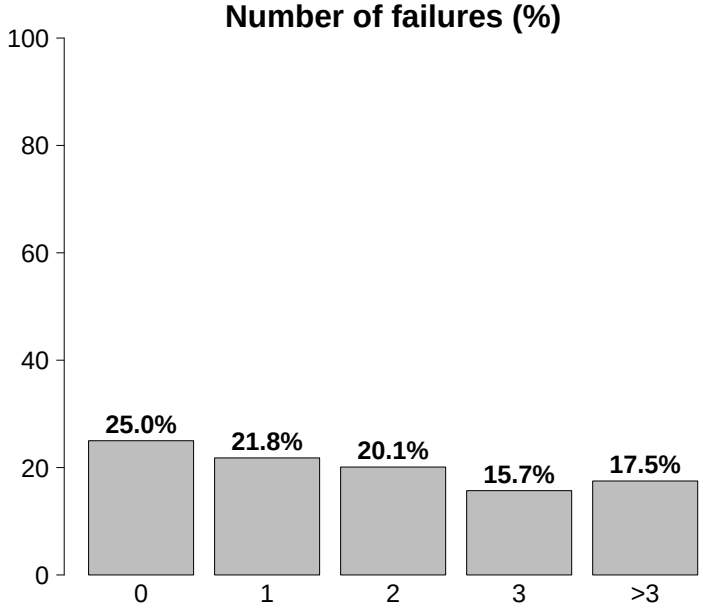
Non surgical interventions **Elective** (N=60)	N	%
Interventional endoscopy	19	31.7
Interventional radiology	11	18.3
Interventional neuroradiology	7	11.7
Interventional cardiology	6	10.0
Missing	17	

Non surgical interventions **Emergency** (N=393)	N	%
Interventional radiology	162	41.2
Interventional neuroradiology	100	25.4
Interventional endoscopy	84	21.4
Interventional cardiology	18	4.6
Missing	29	

National report for general ICUs - **Year 2022**
Characteristics on admission - Adult emerg. surg. NON-COVID pts. eval. in the GiViTI model

Reason for admission	N	%
Monitoring/Weaning	2767	37.0
Post surgical weaning	1345	18.0
Surgical monitoring	1409	18.8
Post interventional weaning	5	0.1
Interventional monitoring	8	0.1
Non surgical monitoring	0	0.0
Missing	0	
Intensive Treatment	4718	63.0
Only ventilatory support	1493	19.9
Only cardiovascular support	452	6.0
Ventilatory and cardiovascular support	2773	37.0
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	

Number of failures (%)



Failures on admission	N	%
No	1872	25.0
Yes	5613	75.0
A: Respiratory failure	4266	57.0
B: Cardiovascular failure	3225	43.1
C: Neurological failure	607	8.1
D: Hepatic failure	28	0.4
E: Renal failure	3002	40.1
F: Acute skin failure	1	0.0
G: Metabolic failure	2395	32.0
H: Coagulation failure	97	1.3
Missing	0	

Failures on admission (top 10)	N	%
ABEG	993	13.3
A	871	11.6
AB	647	8.6
ABE	438	5.9
E	425	5.7
EG	255	3.4
ABG	245	3.3
AE	190	2.5
G	184	2.5
BEG	174	2.3
Missing	0	

Respiratory failure	N	%
None	3219	43.0
Only hypoxic failure	977	13.1
Only hypercapnic failure	47	0.6
Hypoxic-hypercapnic failure	120	1.6
Intubation for airway maint.	3122	41.7
Missing	0	

Cardiovascular failure	N	%
None	4260	56.9
Without shock	606	8.1
Cardiogenic shock	82	1.1
Septic shock	1161	15.5
Haemorrhagic/hypovolemic shock	686	9.2
Hypovolemic shock	218	2.9
Anaphylactic shock	0	0.0
Neurogenic shock	137	1.8
Other shock	127	1.7
Mixed shock	208	2.8
Missing	0	

Neurologic failure	N	%
None	4840	88.9
Cerebral coma	417	7.7
Metabolic coma	141	2.6
Postanoxic coma	43	0.8
Toxic coma	6	0.1
Missing or not evaluable	2038	

Renal failure (AKIN)	N	%
None	4483	59.9
Mild	1420	19.0
Moderate	775	10.4
Severe	807	10.8
Missing	0	

Metabolic failure	N	%
None	5090	68.0
pH <= 7.3, PaCO2 < 45 mmHg	522	7.0
Base deficit >= 5 mmol/L, lactate >1.5x	1873	25.0
Missing	0	

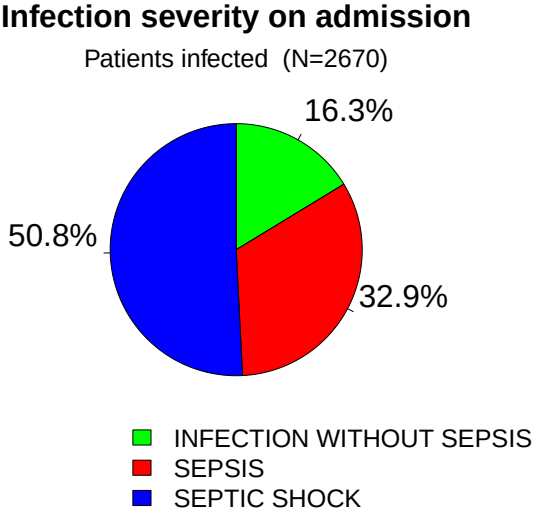
National report for general ICUs - Year 2022
Characteristics on admission - Adult emerg. surg. NON-COVID pts. eval. in the GiViTI model

Clinical conditions on admission	N	%
Respiratory	588	7.9
Pleural effusion	145	1.9
Aspiration pneumonia	103	1.4
Atelectasis	88	1.2
Upper respiratory tract disease	84	1.1
Pulmonary embolism	40	0.5
Cardiovascular	729	9.7
Ruptured or fissured aneurysm	222	3.0
Peripheral vascular disease	166	2.2
Acute severe arrhythmia: tachycardias	94	1.3
Cardiac arrest	88	1.2
Left heart failure without pulm. edema	55	0.7
Neurological	688	9.2
Spontaneous Intraparenchymal bleeding	241	3.2
Spontaneous Subarachnoid haemorrhage	181	2.4
Cerebral Aneurysm	130	1.7
Cerebral artery stroke	71	0.9
Brain tumour	59	0.8
Gastrointestinal and hepatic	2876	38.4
Gastrointestinal perforation	1020	13.6
Intestinal occlusion	808	10.8
Bowel ischaemia	406	5.4
Digestive tract malignancy	267	3.6
Intrabdominal bleeding (non traumatic)	192	2.6
Trauma (anatomical districts)	1665	22.2
Pelvis/bone/joint & muscle	939	12.5
Chest	605	8.1
Head	597	8.0
Abdomen	435	5.8
Spine	412	5.5
Major vessels injury	130	1.7
Miscellaneous	15	0.2
Other	1181	15.8
Nephrourologic disease	297	4.0
Metabolic disorder	225	3.0
Other disease	203	2.7
ENT/maxillofacial disease	101	1.3
Coagulation disorder	97	1.3
Post transplantation	163	2.2
Liver transplantation	97	1.3
Renal transplantation	47	0.6
Infections	2670	35.7
NON-surgical secondary peritonitis	853	11.4
Post-surgical peritonitis	395	5.3
Primary peritonitis	262	3.5
Pneumonia	212	2.8
NON-catheter-related UTI	206	2.8
Cholecystitis/cholangitis	186	2.5
NON-surgical skin/soft tissue infection	177	2.4
L.R.T.I. other than pneumonia	74	1.0
Primary bacteraemia of unknown origin	65	0.9
Clinical sepsis	54	0.7
Missing	0	

Trauma (anatomical districts)	N	%
Head	597	8.0
Maxillofacial fracture	238	3.2
Traumatic Subdural haematoma	234	3.1
Traumatic subarachnoid haemorrhage	207	2.8
Cerebral contusion/laceration	180	2.4
Skull fracture	171	2.3
Spine	412	5.5
Vertebral fracture, without deficit	297	4.0
Cervical injury, incomplete deficit	42	0.6
Paraplegia	33	0.4
Chest	605	8.1
Other injuries of the chest	343	4.6
Traum. haemothorax/pneumothorax	274	3.7
Severe lung contusion/laceration	123	1.6
Abdomen	435	5.8
Minor injuries of the abdomen	128	1.7
Spleen: Moderate-Severe laceration	104	1.4
Spleen: Massive rupture	94	1.3
Pelvis/bone/joint & muscle	939	12.5
Long bone fracture	789	10.5
Multiple fracture of the pelvis	216	2.9
Massive crush/amputation	54	0.7
Major vessels injury	130	1.7
Neck vessels: dissection/transection	44	0.6
Proximal limbs vessels: transection	40	0.5
Major abdominal vessels: transection	22	0.3
Miscellaneous	15	0.2
Burns (>30% BSA)	14	0.2
Inhalation injury	2	0.0
Missing	0	

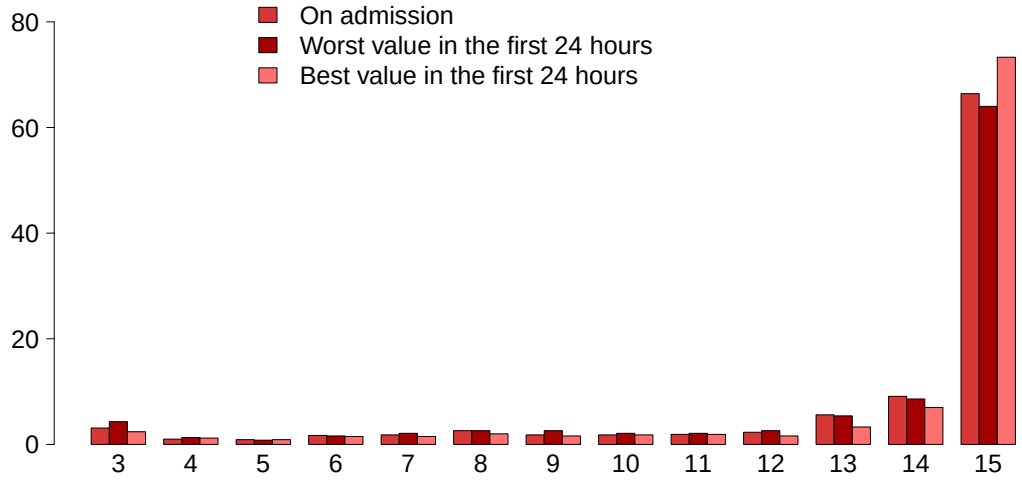
Infection severity on admission	N	%
None	4815	64.3
INFECTION WITHOUT SEPSIS	435	5.8
SEPSIS	879	11.7
SEPTIC SHOCK	1356	18.1
Missing	0	

Infection severity on admission



National report for general ICUs - **Year 2022**
Severity scores - Adult emerg. surg. NON-COVID pts. eval. in the GiViTI model

Glasgow Coma Scale (%)

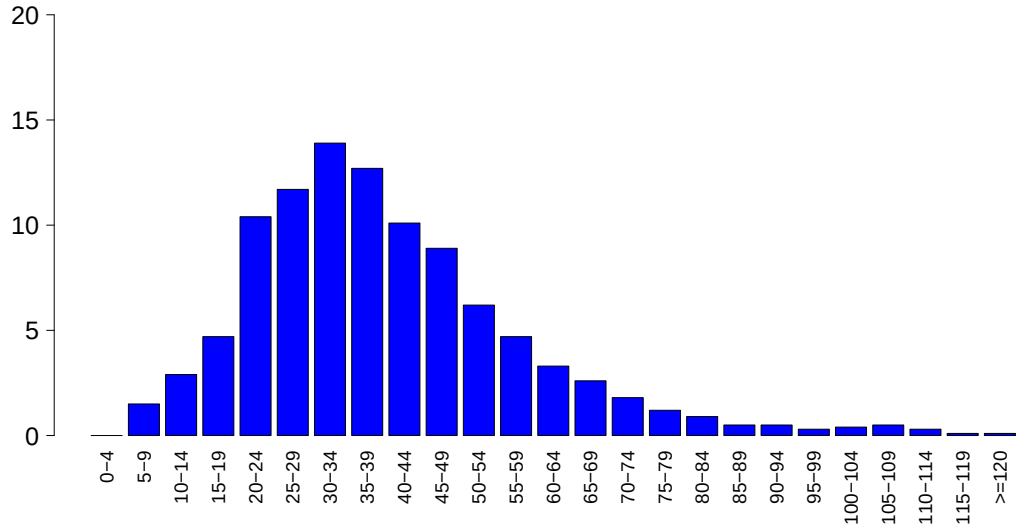


GCS (admission)	
Median	15
Q1–Q3	14–15
Not evaluable	2038
Missing	0

GCS (worst in first 24 hours)	
Median	15
Q1–Q3	13–15
Not evaluable	1964
Missing	0

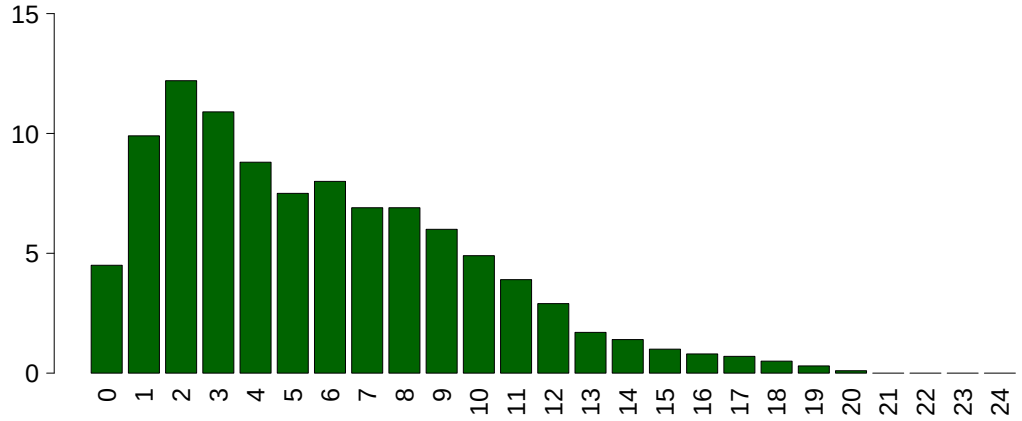
GCS (best in first 24 hours)	
Median	15
Q1–Q3	14–15
Not evaluable	1631
Missing	46

SAPS II (%)



SAPSII	
Mean	39.5
SD	18.3
Median	36
Q1–Q3	27–49
Not evaluable	1964
Missing	0

SOFA (%)



SOFA	
Mean	5.7
SD	4.1
Median	5
Q1–Q3	2–8
Not evaluable	1964
Missing	0

National report for general ICUs - **Year 2022**
Characteristics during the stay - Adult emerg. surg. NON-COVID pts. eval. in the GiViTI model

Complications during the stay	N	%
No	4885	65.3
Yes	2597	34.7
Missing	3	

Failures during the stay	N	%
No	6250	83.5
Yes	1235	16.5
A: Respiratory failure	566	7.6
B: Cardiovascular failure	562	7.5
C: Neurological failure	80	1.1
D: Hepatic failure	37	0.5
E: Renal failure (AKIN)	353	4.7
F: Acute skin failure	4	0.1
G: Metabolic failure	95	1.3
H: Coagulation failure	41	0.5
Missing	0	

Failures during the stay (top 10)	N	%
A	303	4.0
B	279	3.7
E	148	2.0
AB	129	1.7
G	66	0.9
BE	57	0.8
ABE	42	0.6
AE	41	0.5
C	22	0.3
AC	19	0.3
Missing	0	

Respiratory failure occured	N	%
None	6916	92.4
Intubation for airway maint.	224	3.0
Hypoxic failure	356	4.8
Hypercapnic failure	63	0.8
Missing	3	

Cardiovascular failure occured	N	%
None	6920	92.5
Cardiogenic shock	73	1.0
Hypovolemic shock	37	0.5
Haemorrhagic/hypovolemic shock	72	1.0
Septic shock	332	4.4
Anaphylactic shock	0	0.0
Neurogenic shock	16	0.2
Other shock	66	0.9
Missing	3	

Neurological failure occured	N	%
None	7402	98.9
Cerebral coma	57	0.8
Metabolic coma	17	0.2
Postanoxic coma	7	0.1
Missing	3	

Renal failure occured (AKIN)	N	%
None	7129	95.3
Mild	38	0.5
Moderate	62	0.8
Severe	253	3.4
Missing	3	

Complications during the stay	N	%
Respiratory	409	5.5
Pleural effusion	185	2.5
Atelectasis	106	1.4
Pneumothorax/Pneumomediastinum	50	0.7
Severe ARDS	41	0.5
Pulmonary embolism	36	0.5
Cardiovascular	486	6.5
Acute severe arrhythmia: tachycardias	243	3.2
Cardiac arrest	116	1.6
Deep venous thrombosis	52	0.7
Peripheral vascular disease	34	0.5
Acute severe arrhythmia: bradycardias	25	0.3
Neurological	521	7.0
Drowsiness/agitation/delirium	272	3.6
Intracranial hypertension	94	1.3
Brain edema	75	1.0
Seizures	64	0.9
New ischaemic stroke	39	0.5
Gastrointestinal and hepatic	380	5.1
Bowel ischaemia	78	1.0
Anastomotic dehiscence	68	0.9
Gastrointestinal perforation	61	0.8
Paralytic Ileus	56	0.7
Gastrointestinal bleeding: lower tract	39	0.5
Other	256	3.4
Metabolic disorder	95	1.3
Nephrourologic disease	62	0.8
Other disease	56	0.7
Other skin and/or soft tissue pathology	25	0.3
Category/Stage II: Partial Thickness Skin Loss	13	0.2
Extremity compartment syndrome (severe)	13	0.2
F.U.O. fever of unknown origin	8	0.1
Infections	1045	14.0
Pneumonia	417	5.6
L.R.T.I. other than pneumonia	216	2.9
Primary bacteraemia of unknown origin	109	1.5
Catheter-related bacteremia (CR-BSI)	107	1.4
Catheter-related UTI	103	1.4
Post-surgical peritonitis	80	1.1
Post-surgical skin/soft tissue infection	47	0.6
NON-surgical secondary peritonitis	40	0.5
Clinical sepsis	38	0.5
NON-surgical skin/soft tissue infection	29	0.4
Missing	3	

National report for general ICUs - **Year 2022**
Characteristics during the stay - Adult emerg. surg. NON-COVID pts. eval. in the GiViTI model

Infections	N	%
None	4107	54.9
Only on admission	2330	31.1
On admission and during ICU stay	337	4.5
Only during ICU stay	708	9.5
Missing	3	

Maximum severity of infection	N	%
None	4107	54.9
INFECTION WITHOUT SEPSIS	736	9.8
SEPSIS	1122	15.0
SEPTIC SHOCK	1519	20.3
Missing	1	

Severity evolution

		During the stay				
	N (R %)	None	INFECTION WITHOUT SEPSIS	SEPSIS	SEPTIC SHOCK	TOT
Admission	None	4107 (85.3%)	342 (7.1%)	251 (5.2%)	115 (2.4%)	4815
	INFECTION WITHOUT SEPSIS	-	394 (90.6%)	36 (8.3%)	5 (1.1%)	435
	SEPSIS	-	-	835 (95.0%)	44 (5.0%)	879
	SEPTIC SHOCK	-	-	-	1355 (100.0%)	1355
	TOT	4107	736	1122	1519	7484

Ventil. Associat. Pneumonia (VAP)	N	%
No	7099	94.9
Yes	384	5.1
Missing	2	

Catheter Bacteraemia (CR-BSI)	N	%
No	7375	98.6
Yes	107	1.4
Missing	3	

Incidence of VAP
(Pts. with VAP/1000 days of VM pre-VAP)

Estimate	15.7
CI (95%)	14.2−17.4

Incidence of CR-BSI
(Pts. with CR-BSI/1000 days of CVC pre-CR-BSI)

Estimate	2.5
CI (95%)	2.0−3.0

Incidence of VAP
(Pts. with VAP/pts. ventilated for 8 days)

Estimate	12.6%
CI (95%)	11.4−13.9

Incidence of CR-BSI
(Pts. with CR-BSI/pts. catheterized for 12 days)

Estimate	3.0%
CI (95%)	2.4−3.6

Catheter-related urinary tract infection (UTI)	N	%
No	7379	98.6
Yes	103	1.4
Missing	3	

Incidence of catheter-related UTI
(Pts. with catheter-related UTI/1000 days of UC pre-UTI)

Estimate	2.1
CI (95%)	1.7−2.5

Incidence of catheter-related UTI
(Pts. with catheter-related UTI/pts. with UC for 12 days)

Estimate	2.5%
CI (95%)	2.1−3.1

Process indicators - Adult emerg. surg. NON-COVID ICUs	Upon adm.		On admission		On discharge		Length (days)			Days from admission		
Procedures and/or treatments (Missing=0)	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	7460	99.7										
Invasive ventilation	5897	78.8	5215	69.7	1072	14.3	1	1–5	0	0	0–0	0
Non invasive ventilation	795	10.6	82	1.1	183	2.4	2	1–4	0	2	0–5	0
Tracheostomy	868	11.6	97	1.3	707	9.4	13	5–23	0	8	4–12	0
iNO (inhaled nitric oxide)	13	0.2	1	0	4	0.1	2	2–4	0	1	0–5	0
Central Venous Catheter	5633	75.3	3451	46.1	4755	63.5	4	2–10	0	0	0–0	0
PICC	265	3.5	83	1.1	250	3.3	3	1–8	0	11	1–21	0
Arterial Catheter	6757	90.3	4744	63.4	1896	25.3	3	1–8	0	0	0–0	0
Vasoactive drugs	3856	51.5	2602	34.8	742	9.9	2	1–4	0	0	0–0	0
Antiarrhythmics	516	6.9	127	1.7	270	3.6	3	1–6	0	1	0–3	0
IABP	4	0.1	4	0.1	2	0	2	2–4	0			
Invasive monitoring of C.O.	415	5.5	138	1.8	91	1.2	4	2–7	0	0	0–1	0
Continous monitoring of ScVO2	26	0.3	24	0.3	2	0	1	1–2	0	0	0–1	0
Temporary pacing	7	0.1	4	0.1	4	0.1	2	1–6	0	3	2–28	0
Ventricular assistance	0	0.0										
DC-shock	44	0.6								1	0–2	0
CPR	87	1.2								0	0–2	0
Massive blood transfusion	168	2.2								0	0–0	0
ICP monitoring without CSF drainage	133	1.8	85	1.1	16	0.2	6	4–9	0	0	0–0	0
ICP monitoring with CSF drainage	224	3.0	164	2.2	95	1.3	10	4–15	0	0	0–0	0
EVD without ICP monitoring	60	0.8	33	0.4	33	0.4	5	2–10	0	0	0–1	0
Haemofiltration	326	4.4	18	0.2	83	1.1	4	2–8	0	1	0–2	0
Haemodialysis	180	2.4	32	0.4	87	1.2	3	1–7	0	1	0–4	0
ECMO	3	0.0	1	0	1	0	1	0–6	0	14	8–21	0
Hepatic clearance techniques	0	0.0										
Clearance techniques during sepsis	122	1.6	10	0.1	26	0.3	2	1–3	0	0	0–1	0
IAP (intra-abdominal pressure)	171	2.3										
Hypothermia	7	0.1	1	0	0	0	2	1–2	0	8	2–10	0
Enteral nutrition	2391	31.9	303	4	1759	23.5	7	3–15	1	1	0–3	0
Parenteral nutrition	1775	23.7	208	2.8	1142	15.3	4	2–9	1	1	0–2	0
SDD (Topical, Topical and systemic)	0	0.0										
Patient restraint	101	1.3										
Peridural catheter	139	1.9	105	1.4	94	1.3	2	1–4	0	1	0–3	0
Electrical cardioversion	52	0.7								1	1–4	0
Vacuum therapy	163	2.2										
Urinary catheter	7312	97.7	6691	89.4	6806	90.9	3	1–8	0	0	0–0	0
Pronation	38	0.5	1	0	1	0	2	1–4	0	5	3–8	0
Antivirals	50	0.7	27	0.4	40	0.5	3	2–7	0	7	3–18	0

Procedures and/or treatments (Missing=0)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Antibiotics	5867	78.4										
Antibiotic prophylaxis	2349	31.4	1850	24.7	1054	14.1	1	1–2	0	0	0–0	0
Empirical antibiotic therapy (infection diagnosis confirmed)	2013	26.9	1180	15.8	858	11.5	3	2–5	0	0	0–3	0
Empirical antibiotic therapy (infection diagnosis unconfirmed)	1466	19.6	897	12	1096	14.6	3	1–5	0	0	0–1	0
Targeted antibiotic therapy	1382	18.5	174	2.3	814	10.9	6	3–10	0	5	3–8	0
Antifungal in empirical therapy	497	6.6	173	2.3	269	3.6	5	2–9	0	0	0–3	0
Antifungal in targeted therapy	182	2.4	16	0.2	100	1.3	10	4–17	0	8	4–14	0
Pre-emptive antifungal	79	1.1	24	0.3	51	0.7	5	3–8	0	0	0–2	0

Antibiotic therapy

Pt. infected in ICU only (N=708)	N	%
No therapy	84	11.9
Only empirical	137	19.4
Only targeted	178	25.1
Targeted after empirical	239	33.8
Other	70	9.9
Missing	0	

Antifungal therapy

Pt. infected in ICU only (N=708)	N	%
No therapy	629	88.8
Only empirical	39	5.5
Only targeted	33	4.7
Targeted after empirical	5	0.7
Other	2	0.3
Missing	0	

National report for general ICUs - **Year 2022**
Process indicators - Adult emerg. surg. NON-COVID pts. eval. in the GiViTI model

Invasive ventilation (N=5897)	N	%	Length (days) Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	1121	18.0	8.0	15.5	3	1−9	0
For airway mainteinance	3060	49.0	6.5	10.4	2	1−8	0
In weaning	1334	21.4	0.5	0.5	0	0−1	0
Not evaluable	724	11.6	3.0	6.5	1	0−2	345
Reintubation within 48 hours	115	1.8	8.9	11.5	4	2−11	0

Non invasive ventilation (N=795)	N	%
Non invasive ventilation only	202	25.4
Non invasive ventilation failed	57	7.2
For weaning	488	61.4
Other	48	6.0
Missing	0	

Tracheostomy not present on admission (N=771)	N	%
Surgical	95	12.3
Percutwist	79	10.2
Ciaglia	134	17.4
Monodil. Ciaglia	335	43.5
Fantoni	1	0.1
Griggs	96	12.5
Other Kind	16	2.1
Unknown	15	1.9
Missing	0	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=766)	
Mean	9.0
SD	6.6
Median	7
Q1−Q3	4−12
Missing	0

Invasive monitoring of C.O. (N=415)	N	%
Swan Ganz	96	23.1
PICCO	253	61.0
LIDCO	0	0.0
Vigileo-PRAM	43	10.4
Other	23	5.5
Missing	0	

SDD (N=0)	N	%
Topical	0	0.0
Topical and systemic	0	0.0
Missing	0	

Surgical interventions	N	%
No	6761	90.3
Yes	724	9.7
Missing	0	

Number of surgical interventions	N	%
0	6761	90.3
1	497	6.6
2	141	1.9
3	51	0.7
>3	35	0.5
Missing	0	

Surgical interventions Days from admission	
Mean	9.6
SD	10.1
Median	6
Q1−Q3	3−13
Missing	3

Surgical interventions (top 10)	N	%
Gastrointestinal surgery	540	7.2
Orthopaedic surgery	205	2.7
Neurosurgery	89	1.2
Other surgery	43	0.6
ENT surgery	37	0.5
Plastic surgery	35	0.5
Thoracic surgery	33	0.4
Maxillo-Facial surgery	27	0.4
Nephro/Urological surgery	26	0.3
Peripheral vascular surgery	12	0.2
Missing	0	

Non surgical interventions	N	%
No	7338	98.0
Yes	147	2.0
Missing	0	

Non surgical interventions Days from admission	
Mean	14.9
SD	14.3
Median	9
Q1−Q3	5−20.2
Missing	0

Non surgical interventions	N	%
Interventional endoscopy	77	1.0
Interventional radiology	72	1.0
Interventional neuroradiology	40	0.5
Interventional cardiology	11	0.1
Missing	0	

National report for general ICUs - **Year 2022**
Outcome indicators - Adult emerg. surg. NON-COVID pts. eval. in the GiViTI model

ICU outcome	N	%
Dead	1118	14.9
Transferred to same hospital	5823	77.8
Transferred to other hospital	491	6.6
Discharged home	40	0.5
Disch. terminally ill	13	0.2
Missing	0	

Transferred to (N=6314)	N	%
Ward	5318	84.2
Other ICU	341	5.4
High dependency care unit	472	7.5
Rehabilitation	163	2.6
Day hospital or Long-term care	19	0.3
Missing	1	

Reason of transfer to Other ICU (N=350)	N	%
Specialist expertise	74	21.1
Step-up care	14	4.0
Logistical/organizational reasons	256	73.1
Step-down care	6	1.7
Missing	0	

Transferred to Same hospital (N=5823)	N	%
Ward	5238	90.0
Other ICU	89	1.5
High dependency care unit	456	7.8
Rehabilitation	31	0.5
Day hospital or Long-term care	8	0.1
Missing	1	

Transferred to Other hospital (N=491)	N	%
Ward	80	16.3
Other ICU	252	51.3
High dependency care unit	16	3.3
Rehabilitation	132	26.9
Day hospital or Long-term care	11	2.2
Missing	0	

ICU mortality	N	%
Alive	6354	84.9
Dead	1131	15.1
Missing	0	

Timing of ICU mortality (N=1131)	N	%
Daytime (08:00AM - 07:59PM)	785	69.4
Nighttime (08:00PM - 07:59AM)	346	30.6
Weekdays (Monday - Friday)	847	74.9
Weekend (Saturday - Sunday)	284	25.1
Missing	0	

C.A.M. activation (N=1131)	N	%
Yes, with organ donation	57	5.1
Yes, without organ donation	37	3.3
No, with organ donation	2	0.2
No, without organ donation	1022	91.4
Missing	13	

Tissue removal (N=1131)	N	%
Yes, with C.A.M. activation	39	3.4
Yes, without C.A.M. activation	58	5.1
No	1034	91.4
Missing	0	

Hospital mortality	N	%
Dead	1602	21.4
Transf. to other acute-care hospital	604	8.1
Transf. to other type of hosp. stay	1273	17.0
Nursing home	161	2.2
Voluntary discharge	42	0.6
Discharged home	3803	50.8
Missing	0	

To other type of H stay (N=1273)	N	%
Rehabilitation in the same institute	156	12.3
Rehabilitation in other institute	775	60.9
DH/long-term care, same inst.	104	8.2
DH/long-term care, other inst.	238	18.7
Missing	0	

Disch. terminally ill (N=5883)	N	%
Yes	107	1.8
No	5776	98.2
Missing	0	

Hospital mortality	N	%
Alive	5776	77.2
Dead	1709	22.8
Missing	0	

Timing of hosp. mortality (N=1709)	N	%
In ICU	1131	66.2
Within 24 hours after ICU	30	1.8
24-47 hours after ICU	28	1.6
48-71 hours after ICU	18	1.1
72-95 hours after ICU	35	2.0
After 95 hours after ICU	467	27.3
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=578)	
Mean	17.7
SD	21.1
Median	11
Q1−Q3	5−22
Missing	0

National report for general ICUs - **Year 2022**
Outcome indicators - Adult emerg. surg. NON-COVID pts. eval. in the GiViTI model

Last hospital mortality	N	%
Alive	5745	76.8
Dead	1740	23.2
Missing	0	

ICU stay (days)	
Mean	6.9
SD	10.8
Median	3
Q1−Q3	1−8
Missing	1

ICU stay (days) **Alive** (N=6354)	
Mean	6.8
SD	10.6
Median	3
Q1−Q3	1−7
Missing	0

ICU stay (days) **Dead** (N=1131)	
Mean	7.7
SD	11.6
Median	3
Q1−Q3	1−9
Missing	1

Stay after ICU (days) **Alive** (N=6354)	
Mean	15.5
SD	19.0
Median	10
Q1−Q3	5−19
Missing	3

Hospital stay (days)	
Mean	23.4
SD	24.2
Median	16
Q1−Q3	8−30
Missing	0

Hospital stay (days) **Alive** (N=5776)	
Mean	25.0
SD	24.2
Median	18
Q1−Q3	10−32
Missing	0

Hospital stay (days) **Dead** (N=1709)	
Mean	17.9
SD	23.5
Median	11
Q1−Q3	4−23
Missing	0

National report for general ICUs - **Year 2022**
Characteristics on admission - Adult COVID patients evaluated in the GiViTI model

Patients (N): 2601

Sex	N	%
Male	1746	67.1
Female	855	32.9
Missing	0	

Age (years)	N	%
17-45	147	5.7
46-65	801	30.8
66-75	875	33.6
>75	778	29.9
Missing	0	
Mean	67.9	
SD	12.9	
Median	70	
Q1−Q3	61−77	
Min−Max	18−102	

Body mass Index (BMI)	N	%
Underweight	100	3.8
Normal	1035	39.8
Overweight	855	32.9
Obese	611	23.5
Missing	0	

Pregnancy status **Females** (N=855)	N	%
Not fertile	450	52.6
Not pregnant/Unknown	397	46.4
Currently pregnant	2	0.2
Post partum	6	0.7
Missing	0	

Comorbidities	N	%
No	356	13.7
Yes	2245	86.3
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	1442	55.4
Arrhythmia	405	15.6
Diabetes Type II without insulin tr.	373	14.3
Moderate COPD	342	13.1
Myocardial infarction	342	13.1
Cerebrovascular disease	261	10.0
Moderate or severe renal disease	250	9.6
Peripheral vascular disease	250	9.6
Antiplatelet therapy	249	9.6
NYHA class II-III	227	8.7
Missing	0	

Stay before ICU (days)	
Mean	4.8
SD	8.9
Median	1
Q1−Q3	0−6
Missing	0

Source of admission	N	%
Same hospital	2041	78.5
Other hospital	560	21.5
Long-term chronic care hospital	0	0.0
Directly from the community	0	0.0
Missing	0	

Ward of admission **Hospital** (N=2601)	N	%
Medical ward	979	37.6
Surgical ward	157	6.0
Emergency room	1062	40.8
Other ICU	183	7.0
High dependency care unit	220	8.5
Missing	0	

Reason for transfer from **Other ICU** (N=183)	N	%
Specialist expertise	50	27.3
Step-up care	40	21.9
Logistical/organizational reasons	90	49.2
Step-down care	3	1.6
Missing	0	

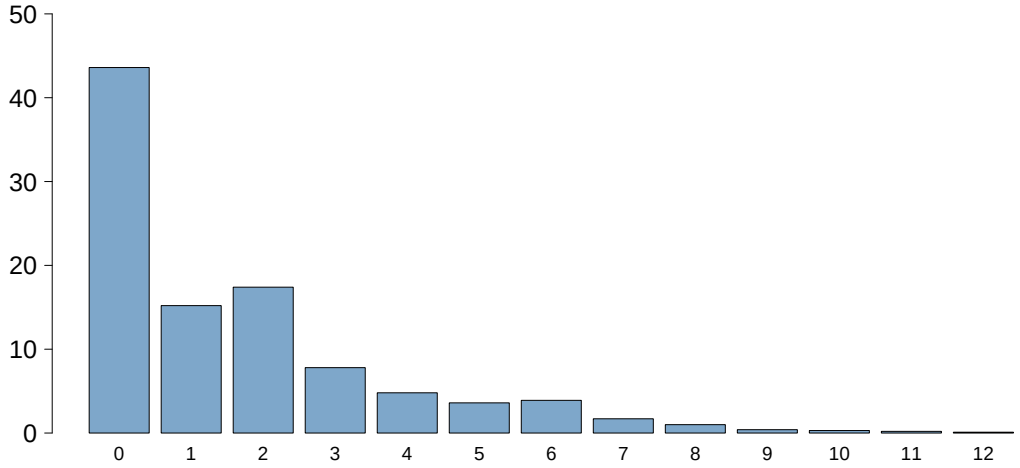
Ward of admission **Same hospital** (N=2041)	N	%
Medical ward	821	40.2
Surgical ward	146	7.2
Emergency room	835	40.9
Other ICU	45	2.2
High dependency care unit	194	9.5
Missing	0	

Ward of admission **Other hospital** (N=560)	N	%
Medical ward	158	28.2
Surgical ward	11	2.0
Emergency room	227	40.5
Other ICU	138	24.6
High dependency care unit	26	4.6
Missing	0	

Scheduled admission	N	%
No	2559	98.4
Yes	42	1.6
Missing	0	

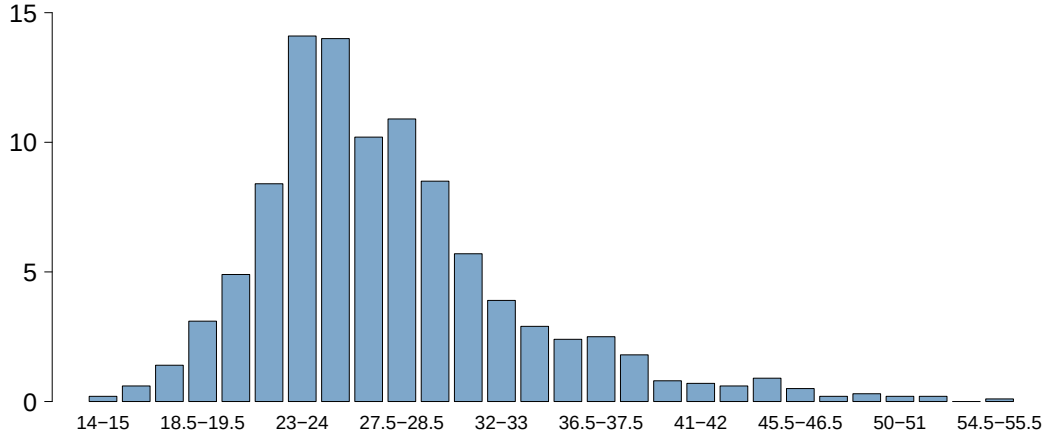
National report for general ICUs - **Year 2022**
Characteristics on admission - Adult COVID patients evaluated in the GiViTI model

Charlson score (%)



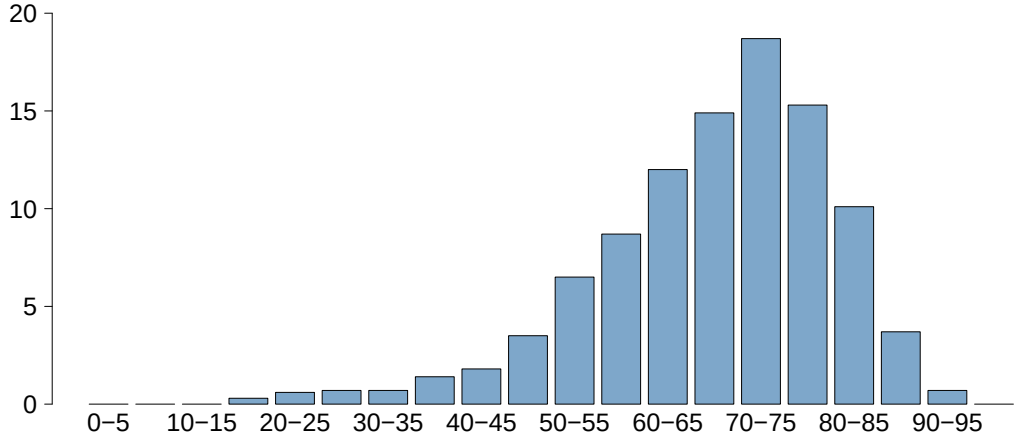
Charlson score	
Mean	1.6
SD	2.1
Median	1
Q1−Q3	0−2
Missing	1

BMI (%)



BMI	
Mean	27.8
SD	6.4
Median	26.2
Q1−Q3	23.9−30.1
Missing	0

Age (%)



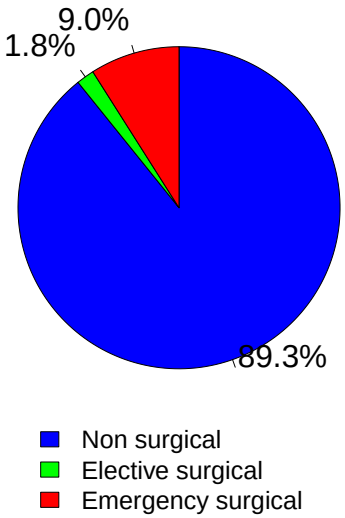
Age	
Mean	67.9
SD	12.9
Median	70
Q1−Q3	61−77
Missing	0

National report for general ICUs - **Year 2022**
Characteristics on admission - Adult COVID patients evaluated in the GiViTI model

Trauma	N	%
No	2485	95.5
Yes	116	4.5
Multiple trauma	37	1.4
Missing	0	

Surgical status	N	%
Non surgical	2322	89.3
Elective surgical	46	1.8
Emergency surgical	233	9.0
Missing	0	

Surgical status



Source of admission **Surgical pt.** (N=279)	N	%
Operating theatre of surgical ward	109	39.1
Operating theatre of emergency room	79	28.3
Surgical ward	12	4.3
Other	79	28.3
Missing	0	

Surgical interventions (top 10) **Elective surgical** (N=46)	N	%
Neurosurgery	14	30.4
Gastrointestinal surgery	9	19.6
Orthopaedic surgery	8	17.4
Thoracic surgery	4	8.7
ENT surgery	3	6.5
Biliary tract surgery	2	4.3
Hepatic surgery	1	2.2
Gynaecological surgery	1	2.2
Maxillo-Facial surgery	1	2.2
Abdominal vascular surgery	1	2.2
Missing	2	

Timing **Elective surgical** (N=46)	N	%
From -7 to -3 days	5	10.9
From -2 to -1 days	3	6.5
On ICU admission day	35	76.1
The day after ICU admission	3	6.5
Missing	0	

Surgical interventions (top 10) **Emergency surgical** (N=233)	N	%
Gastrointestinal surgery	111	47.6
Neurosurgery	31	13.3
Orthopaedic surgery	25	10.7
Peripheral vascular surgery	15	6.4
Abdominal vascular surgery	14	6.0
Nephro/Urological surgery	12	5.2
ENT surgery	7	3.0
Thoracic surgery	7	3.0
Obstetric surgery	4	1.7
Splenectomy	4	1.7
Missing	3	

Timing **Emergency surgical** (N=233)	N	%
From -7 to -3 days	5	2.1
From -2 to -1 days	23	9.9
On ICU admission day	207	88.8
The day after ICU admission	10	4.3
Missing	4	

Non surgical interventions	N	%
None	2386	91.7
Elective	19	0.7
Emergency	196	7.5
Missing	0	

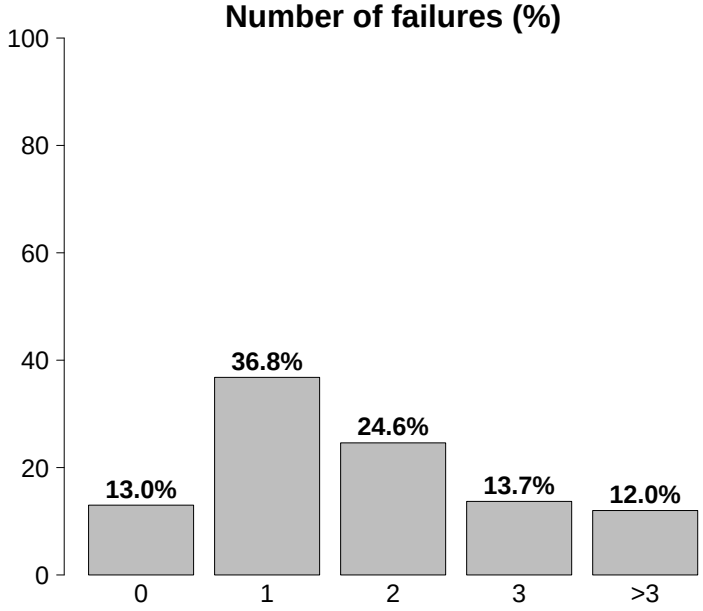
Non surgical interventions **Elective** (N=19)	N	%
Interventional cardiology	10	52.6
Interventional radiology	3	15.8
Interventional endoscopy	3	15.8
Interventional neuroradiology	2	10.5
Missing	1	

Non surgical interventions **Emergency** (N=196)	N	%
Interventional cardiology	115	58.7
Interventional neuroradiology	32	16.3
Interventional radiology	29	14.8
Interventional endoscopy	20	10.2
Missing	0	

National report for general ICUs - **Year 2022**
Characteristics on admission - Adult COVID patients evaluated in the GiViTI model

Reason for admission	N	%
Monitoring/Weaning	475	18.3
Post surgical weaning	44	1.7
Surgical monitoring	63	2.4
Post interventional weaning	6	0.2
Interventional monitoring	115	4.4
Non surgical monitoring	247	9.5
Missing	0	
Intensive Treatment	2126	81.7
Only ventilatory support	1387	53.3
Only cardiovascular support	78	3.0
Ventilatory and cardiovascular support	661	25.4
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	

Number of failures (%)



Failures on admission	N	%
No	337	13.0
Yes	2264	87.0
A: Respiratory failure	2048	78.7
B: Cardiovascular failure	739	28.4
C: Neurological failure	163	6.3
D: Hepatic failure	18	0.7
E: Renal failure	973	37.4
F: Acute skin failure	1	0.0
G: Metabolic failure	650	25.0
H: Coagulation failure	33	1.3
Missing	0	

Failures on admission (top 10)	N	%
A	838	32.2
AE	264	10.1
ABEG	210	8.1
AB	195	7.5
AEG	129	5.0
ABE	107	4.1
AG	83	3.2
E	76	2.9
ABCEG	46	1.8
ABG	45	1.7
Missing	0	

Respiratory failure	N	%
None	553	21.3
Only hypoxic failure	1437	55.2
Only hypercapnic failure	56	2.2
Hypoxic-hypercapnic failure	254	9.8
Intubation for airway maint.	301	11.6
Missing	0	

Cardiovascular failure	N	%
None	1862	71.6
Without shock	194	7.5
Cardiogenic shock	106	4.1
Septic shock	253	9.7
Haemorrhagic/hypovolemic shock	48	1.8
Hypovolemic shock	50	1.9
Anaphylactic shock	1	0.0
Neurogenic shock	9	0.3
Other shock	33	1.3
Mixed shock	45	1.7
Missing	0	

Neurologic failure	N	%
None	2088	92.8
Cerebral coma	80	3.6
Metabolic coma	44	2.0
Postanoxic coma	33	1.5
Toxic coma	6	0.3
Missing or not evaluable	350	

Renal failure (AKIN)	N	%
None	1628	62.6
Mild	476	18.3
Moderate	245	9.4
Severe	252	9.7
Missing	0	

Metabolic failure	N	%
None	1951	75.0
pH <= 7.3, PaCO2 < 45 mmHg	176	6.8
Base deficit >= 5 mmol/L, lactate >1.5x	474	18.2
Missing	0	

National report for general ICUs - **Year 2022**
Characteristics on admission - Adult COVID patients evaluated in the GiViTI model

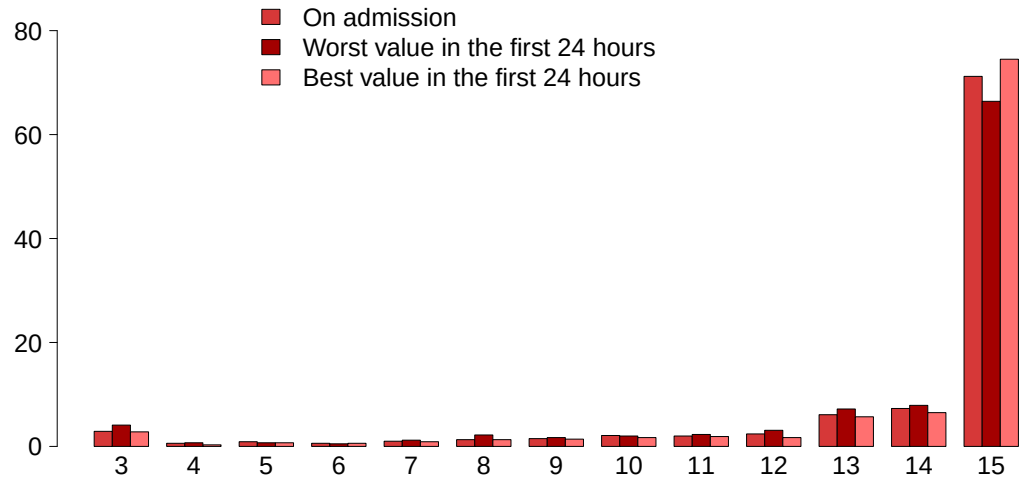
Clinical conditions on admission	N	%
Respiratory	892	34.3
Severe ARDS	314	12.1
Moderate ARDS	296	11.4
Pulmonary embolism	87	3.3
Pleural effusion	61	2.3
Mild ARDS	57	2.2
Cardiovascular	458	17.6
Left heart failure with pulm. edema	96	3.7
Acute ischaemia	72	2.8
Left heart failure without pulm. edema	71	2.7
Acute myocardial infarction	71	2.7
Acute severe arrhythmia: tachycardias	68	2.6
Neurological	191	7.3
Cerebral artery stroke	56	2.2
Seizures	48	1.8
Spontaneous Intraparenchymal bleeding	27	1.0
Neuropathy/myopathy	20	0.8
Metabolic/postanoxic encephalopathy	17	0.7
Gastrointestinal and hepatic	160	6.2
Gastrointestinal perforation	35	1.3
Intestinal occlusion	30	1.2
Gastrointestinal bleeding: upper tract	18	0.7
Bowel ischaemia	15	0.6
Acute pancreatitis	14	0.5
Trauma (anatomical districts)	116	4.5
Head	57	2.2
Chest	40	1.5
Pelvis/bone/joint & muscle	36	1.4
Spine	18	0.7
Abdomen	18	0.7
Major vessels injury	5	0.2
Miscellaneous	1	0.0
Other	231	8.9
Metabolic disorder	83	3.2
Nephrourologic disease	49	1.9
Coagulation disorder	33	1.3
Other disease	33	1.3
Haematological disease	25	1.0
Post transplantation	32	1.2
Renal transplantation	17	0.7
Lung transplantation	5	0.2
Infections	2601	100.0
COVID-19	2601	100.0
Pneumonia	1084	41.7
L.R.T.I. other than pneumonia	57	2.2
NON-catheter-related UTI	55	2.1
Catheter-related UTI	50	1.9
NON-surgical secondary peritonitis	40	1.5
Primary bacteraemia of unknown origin	37	1.4
Catheter-related bacteremia (CR-BSI)	27	1.0
Upper respiratory tract infection	21	0.8
NON-surgical skin/soft tissue infection	19	0.7
Missing	0	

Trauma (anatomical districts)	N	%
Head	57	2.2
Traumatic Subdural haematoma	23	0.9
Traumatic subarachnoid haemorrhage	21	0.8
Maxillofacial fracture	21	0.8
Cerebral contusion/laceration	18	0.7
Skull fracture	11	0.4
Spine	18	0.7
Vertebral fracture, without deficit	17	0.7
Cervical injury, incomplete deficit	1	0.0
-	0	0.0
Chest	40	1.5
Other injuries of the chest	26	1.0
Traum. haemothorax/pneumothorax	17	0.7
Severe lung contusion/laceration	5	0.2
Abdomen	18	0.7
Spleen: Moderate-Severe laceration	6	0.2
Liver: Moderate-Severe laceration	5	0.2
Kidney: Rupture/laceration	4	0.2
Pelvis/bone/joint & muscle	36	1.4
Long bone fracture	31	1.2
Multiple fracture of the pelvis	6	0.2
Very severe or open fracture of the pelvis	1	0.0
Major vessels injury	5	0.2
Proximal limbs vessels: transection	3	0.1
Aorta: rupture/dissection	2	0.1
Major abdominal vessels: transection	1	0.0
Miscellaneous	1	0.0
Burns (>30% BSA)	1	0.0
-	0	0.0
Missing	0	

PaO2/FiO2 (100*mmHg%) (prime 24h)	N	%
>=400 >=53.2 (0)	125	4.8
300-399 39.9-53.1 (1)	270	10.4
200-299 26.6-39.8 (2)	482	18.5
100-199 13.3-26.5 (3)	880	33.8
<100 <13.3 (4)	844	32.4
Missing	0	

National report for general ICUs - **Year 2022**
Severity scores - Adult COVID patients evaluated in the GiViTI model

Glasgow Coma Scale (%)

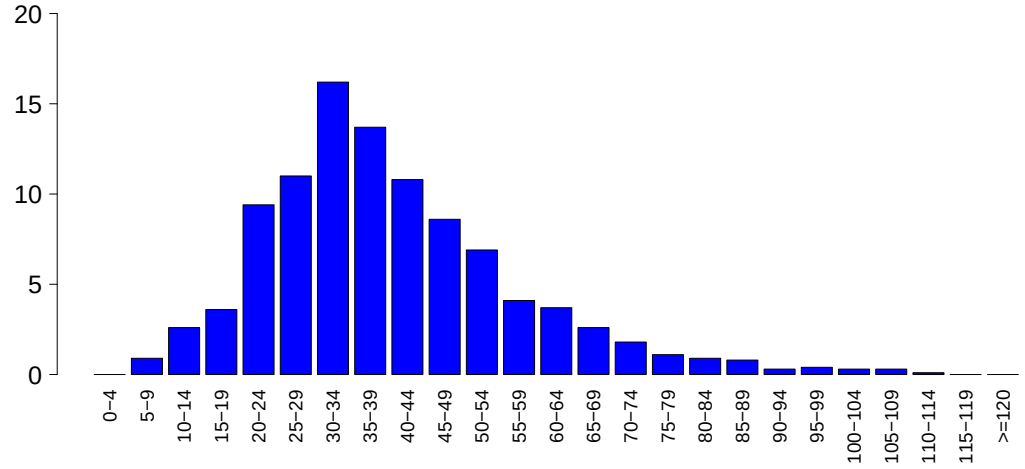


GCS (admission)	
Median	15
Q1−Q3	14−15
Not evaluable	350
Missing	0

GCS (worst in first 24 hours)	
Median	15
Q1−Q3	13−15
Not evaluable	663
Missing	0

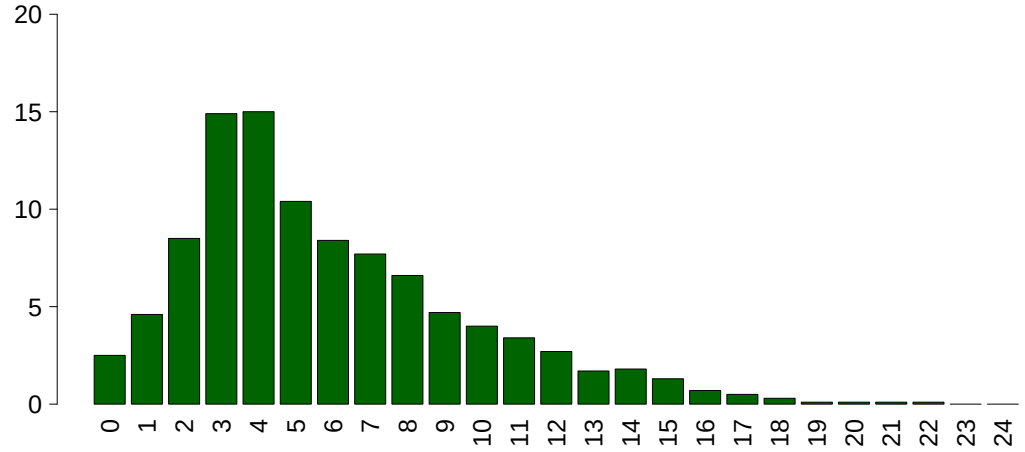
GCS (best in first 24 hours)	
Median	15
Q1−Q3	14−15
Not evaluable	646
Missing	4

SAPS II (%)



SAPSII	
Mean	39.7
SD	16.9
Median	37
Q1−Q3	29−49
Not evaluable	663
Missing	0

SOFA (%)



SOFA	
Mean	5.9
SD	3.7
Median	5
Q1−Q3	3−8
Not evaluable	663
Missing	0

National report for general ICUs - **Year 2022**
Characteristics during the stay - Adult COVID patients evaluated in the GiViTI model

Complications during the stay	N	%
No	1279	49.2
Yes	1322	50.8
Missing	0	

Failures during the stay	N	%
No	1857	71.4
Yes	744	28.6
A: Respiratory failure	415	16.0
B: Cardiovascular failure	393	15.1
C: Neurological failure	30	1.2
D: Hepatic failure	10	0.4
E: Renal failure (AKIN)	194	7.5
F: Acute skin failure	2	0.1
G: Metabolic failure	43	1.7
H: Coagulation failure	18	0.7
Missing	0	

Failures during the stay (top 10)	N	%
A	212	8.2
B	166	6.4
AB	112	4.3
E	56	2.2
BE	46	1.8
ABE	35	1.3
AE	29	1.1
G	19	0.7
BG	6	0.2
C	6	0.2
Missing	0	

Respiratory failure occured	N	%
None	2186	84.0
Intubation for airway maint.	81	3.1
Hypoxic failure	336	12.9
Hypercapnic failure	79	3.0
Missing	0	

Cardiovascular failure occured	N	%
None	2208	84.9
Cardiogenic shock	83	3.2
Hypovolemic shock	20	0.8
Haemorrhagic/hypovolemic shock	16	0.6
Septic shock	244	9.4
Anaphylactic shock	0	0.0
Neurogenic shock	3	0.1
Other shock	46	1.8
Missing	0	

Neurological failure occured	N	%
None	2571	98.8
Cerebral coma	17	0.7
Metabolic coma	10	0.4
Postanoxic coma	3	0.1
Missing	0	

Renal failure occured (AKIN)	N	%
None	2407	92.5
Mild	28	1.1
Moderate	26	1.0
Severe	140	5.4
Missing	0	

Complications during the stay	N	%
Respiratory	360	13.8
Severe ARDS	158	6.1
Pneumothorax/Pneumomediastinum	75	2.9
Pleural effusion	68	2.6
Atelectasis	46	1.8
Moderate ARDS	43	1.7
Cardiovascular	281	10.8
Acute severe arrhythmia: tachycardias	123	4.7
Cardiac arrest	66	2.5
Left heart failure w/o pulm. edema	32	1.2
Pulmonary hypertension	26	1.0
Acute severe arrhythmia: bradycardias	25	1.0
Neurological	167	6.4
Drowsiness/agitation/delirium	100	3.8
CrIMyNe	21	0.8
Seizures	19	0.7
Brain edema	18	0.7
Intracranial hypertension	18	0.7
Gastrointestinal and hepatic	62	2.4
Gastrointestinal bleeding: lower tract	18	0.7
Gastrointestinal bleeding: upper tract	12	0.5
Bowel ischaemia	8	0.3
Gastrointestinal perforation	6	0.2
Liver Dysfunction Syndrome	6	0.2
Other	91	3.5
Metabolic disorder	43	1.7
Other disease	22	0.8
Nephrourologic disease	15	0.6
Category/Stage III: Full Thickness Skin Loss	7	0.3
Category/Stage I: Nonblanchable Erythema	5	0.2
Other skin and/or soft tissue pathology	5	0.2
Category/Stage II: Partial Thickness Skin Loss	3	0.1
Infections	564	21.7
Pneumonia	294	11.3
L.R.T.I. other than pneumonia	111	4.3
Catheter-related UTI	106	4.1
Primary bacteraemia of unknown origin	81	3.1
Catheter-related bacteremia (CR-BSI)	70	2.7
COVID-19	39	1.5
Other fungal infections	23	0.9
NON-surgical skin/soft tissue infection	9	0.3
Clinical sepsis	8	0.3
Upper respiratory tract infection	8	0.3
Missing	0	

National report for general ICUs - **Year 2022**
Characteristics during the stay - Adult COVID patients evaluated in the GiViTI model

Infections	N	%
None	0	0.0
Only on admission	2037	78.3
On admission and during ICU stay	564	21.7
Only during ICU stay	0	0.0
Missing	0	

Ventil. Associat. Pneumonia (VAP)	N	%
No	2346	90.2
Yes	255	9.8
Missing	0	

Incidence of VAP *(Pts. with VAP/1000 days of VM pre-VAP)*	
Estimate	17.6
CI (95%)	15.5−19.9

Incidence of VAP *(Pts. with VAP/pts. ventilated for 8 days)*	
Estimate	14.1%
CI (95%)	12.4−15.9

Catheter Bacteraemia (CR-BSI)	N	%
No	2531	97.3
Yes	70	2.7
Missing	0	

Incidence of CR-BSI *(Pts. with CR-BSI/1000 days of CVC pre-CR-BSI)*	
Estimate	3.0
CI (95%)	2.3−3.8

Incidence of CR-BSI *(Pts. with CR-BSI/pts. catheterized for 12 days)*	
Estimate	3.6%
CI (95%)	2.8−4.5

Catheter-related urinary tract infection (UTI)	N	%
No	2495	95.9
Yes	106	4.1
Missing	0	

Incidence of catheter-related UTI *(Pts. with catheter-related UTI/1000 days of UC pre-UTI)*	
Estimate	4.1
CI (95%)	3.4−5.0

Incidence of catheter-related UTI *(Pts. with catheter-related UTI/pts. with UC for 12 days)*	
Estimate	5.0%
CI (95%)	4.1−6.0

Process indicators - Adult COVID patients evaluated using the GiViTI model	Use		On admission		On discharge		Length (days)			Days from admission		
Procedures and/or treatments (Missing=0)	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	2576	99.0										
Invasive ventilation	1593	61.2	766	29.5	723	27.8	7	2–15	0	0	0–1	0
Non invasive ventilation	1150	44.2	526	20.2	341	13.1	3	1–6	0	0	0–2	0
Tracheostomy	411	15.8	32	1.2	307	11.8	14	8–23	0	12	8–16	0
iNO (inhaled nitric oxide)	84	3.2	2	0.1	33	1.3	4	2–8	0	4	1–12	0
Central Venous Catheter	2016	77.5	656	25.2	1565	60.2	8	3–16	1	0	0–0	0
PICC	113	4.3	26	1	94	3.6	5	2–10	0	6	1–24	0
Arterial Catheter	2413	92.8	781	30	1128	43.4	7	3–14	2	0	0–0	0
Vasoactive drugs	1217	46.8	344	13.2	431	16.6	3	1–8	0	0	0–1	0
Antiarrhythmics	279	10.7	64	2.5	162	6.2	4	1–10	0	2	0–7	0
IABP	14	0.5	7	0.3	3	0.1	3	2–6	0	1	0–2	0
Invasive monitoring of C.O.	79	3.0	8	0.3	35	1.3	5	2–10	0	1	0–4	0
Continous monitoring of ScVO2	4	0.2	1	0	1	0	10	6–13	0	1	0–6	0
Temporary pacing	14	0.5	6	0.2	8	0.3	2	1–2	0	1	0–4	0
Ventricular assistance	0	0.0										
DC-shock	41	1.6								1	0–2	0
CPR	51	2.0								0	0–6	0
Massive blood transfusion	19	0.7								1	0–6	0
ICP monitoring without CSF drainage	7	0.3	1	0	1	0	8	6–12	0	0	0–0	0
ICP monitoring with CSF drainage	13	0.5	10	0.4	6	0.2	8	7–13	0	0	0–0	0
EVD without ICP monitoring	4	0.2	2	0.1	1	0	9	6–11	0	2	2–2	0
Haemofiltration	104	4.0	8	0.3	34	1.3	6	2–10	0	1	0–6	0
Haemodialysis	112	4.3	14	0.5	62	2.4	5	2–15	0	2	0–8	0
ECMO	21	0.8	5	0.2	11	0.4	15	7–26	0	5	2–8	0
Hepatic clearance techniques	0	0.0										
Clearance techniques during sepsis	24	0.9	0	0	2	0.1	3	2–3	0	1	0–3	0
IAP (intra-abdominal pressure)	18	0.7										
Hypothermia	4	0.2	1	0	1	0	2	1–2	0	0	0–0	0
Enteral nutrition	1488	57.2	298	11.5	1078	41.4	9	4–17	0	1	0–2	0
Parenteral nutrition	567	21.8	81	3.1	276	10.6	6	3–10	0	1	0–2	0
SDD (Topical, Topical and systemic)	25	1.0										
Patient restraint	42	1.6										
Peridural catheter	5	0.2	5	0.2	3	0.1	2	1–3	0			
Electrical cardioversion	44	1.7								5	2–11	0
Vacuum therapy	6	0.2										
Urinary catheter	2501	96.2	1854	71.3	2201	84.6	7	3–14	0	0	0–0	0
Pronation	637	24.5	68	2.6	76	2.9	4	1–7	0	0	0–1	0
Antivirals	215	8.3	99	3.8	117	4.5	5	3–11	0	1	0–3	0

National report for general ICUs - **Year 2022**
Process indicators - Adult COVID patients evaluated in the GiViTI model

Procedures and/or treatments (Missing=0)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Antibiotics	1732	66.6										
Antibiotic prophylaxis	211	8.1	127	4.9	101	3.9	3	1–5	0	0	0–0	0
Empirical antibiotic therapy (infection diagnosis confirmed)	961	36.9	395	15.2	360	13.8	4	2–6	0	0	0–2	0
Empirical antibiotic therapy (infection diagnosis unconfirmed)	314	12.1	154	5.9	191	7.3	4	2–7	0	0	0–1	0
Targeted antibiotic therapy	723	27.8	92	3.5	410	15.8	7	4–11	1	6	3–10	1
Antifungal in empirical therapy	153	5.9	47	1.8	74	2.8	5	3–10	0	4	0–12	0
Antifungal in targeted therapy	163	6.3	9	0.3	96	3.7	9	4–16	0	8	4–16	0
Pre-emptive antifungal	50	1.9	11	0.4	32	1.2	7	2–13	0	0	0–0	0

Antibiotic therapy

Pt. infected in ICU only (N=0)	N	%
No therapy	0	0.0
Only empirical	0	0.0
Only targeted	0	0.0
Targeted after empirical	0	0.0
Other	0	0.0
Missing	0	

Antifungal therapy

Pt. infected in ICU only (N=0)	N	%
No therapy	0	0.0
Only empirical	0	0.0
Only targeted	0	0.0
Targeted after empirical	0	0.0
Other	0	0.0
Missing	0	

National report for general ICUs - **Year 2022**
Process indicators - Adult COVID patients evaluated in the GiViTI model

Invasive ventilation (N=1593)	N	%	Length (days) Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	1183	64.9	13.1	15.7	9	4−17	0
For airway mainteinance	291	16.0	7.3	12.8	3	1−8.5	0
In weaning	52	2.9	0.5	0.5	1	0−1	0
Not evaluable	296	16.2	12.4	14.2	7	3−15.8	230
Reintubation within 48 hours	32	1.8	9.6	9.1	7.5	2−16	0

Non invasive ventilation (N=1150)	N	%
Non invasive ventilation only	602	52.3
Non invasive ventilation failed	349	30.3
For weaning	167	14.5
Other	32	2.8
Missing	0	

Tracheostomy not present on admission (N=379)	N	%
Surgical	55	14.5
Percutwist	33	8.7
Ciaglia	67	17.7
Monodil. Ciaglia	185	48.8
Fantoni	2	0.5
Griggs	22	5.8
Other Kind	9	2.4
Unknown	6	1.6
Missing	0	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=378)	
Mean	11.5
SD	6.4
Median	10
Q1−Q3	7−15
Missing	0

Invasive monitoring of C.O. (N=79)	N	%
Swan Ganz	19	24.1
PICCO	51	64.6
LIDCO	0	0.0
Vigileo-PRAM	3	3.8
Other	6	7.6
Missing	0	

SDD (N=25)	N	%
Topical	25	100.0
Topical and systemic	0	0.0
Missing	0	

Surgical interventions	N	%
No	2528	97.2
Yes	73	2.8
Missing	0	

Number of surgical interventions	N	%
0	2528	97.2
1	59	2.3
2	9	0.3
3	2	0.1
>3	3	0.1
Missing	0	

Surgical interventions Days from admission	
Mean	10.7
SD	11.0
Median	6
Q1−Q3	3−15.2
Missing	0

Surgical interventions (top 10)	N	%
Gastrointestinal surgery	42	1.6
ENT surgery	19	0.7
Nephro/Urological surgery	7	0.3
Orthopaedic surgery	7	0.3
Plastic surgery	5	0.2
Neurosurgery	4	0.2
Other surgery	4	0.2
Thoracic surgery	2	0.1
Peripheral vascular surgery	2	0.1
Splenectomy	2	0.1
Missing	0	

Non surgical interventions	N	%
No	2542	97.7
Yes	59	2.3
Missing	0	

Non surgical interventions Days from admission	
Mean	12.4
SD	13.5
Median	8
Q1−Q3	4−14
Missing	1

Non surgical interventions	N	%
Interventional endoscopy	31	1.2
Interventional cardiology	19	0.7
Interventional radiology	14	0.5
Interventional neuroradiology	2	0.1
Missing	0	

National report for general ICUs - **Year 2022**
Outcome indicators - Adult COVID patients evaluated in the GiViTI model

ICU outcome	N	%
Dead	876	33.7
Transferred to same hospital	1395	53.6
Transferred to other hospital	288	11.1
Discharged home	28	1.1
Disch. terminally ill	14	0.5
Missing	0	

Transferred to (N=1683)	N	%
Ward	1136	67.5
Other ICU	207	12.3
High dependency care unit	277	16.5
Rehabilitation	59	3.5
Day hospital or Long-term care	4	0.2
Missing	0	

Reason of transfer to Other ICU (N=214)	N	%
Specialist expertise	73	34.1
Step-up care	15	7.0
Logistical/organizational reasons	124	57.9
Step-down care	2	0.9
Missing	0	

Transferred to Same hospital (N=1395)	N	%
Ward	1066	76.4
Other ICU	64	4.6
High dependency care unit	250	17.9
Rehabilitation	11	0.8
Day hospital or Long-term care	4	0.3
Missing	0	

Transferred to Other hospital (N=288)	N	%
Ward	70	24.3
Other ICU	143	49.7
High dependency care unit	27	9.4
Rehabilitation	48	16.7
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	1711	65.8
Dead	890	34.2
Missing	0	

Timing of ICU mortality (N=890)	N	%
Daytime (08:00AM - 07:59PM)	664	74.6
Nighttime (08:00PM - 07:59AM)	226	25.4
Weekdays (Monday - Friday)	655	73.6
Weekend (Saturday - Sunday)	235	26.4
Missing	0	

C.A.M. activation (N=890)	N	%
Yes, with organ donation	6	0.7
Yes, without organ donation	17	1.9
No, with organ donation	1	0.1
No, without organ donation	852	97.3
Missing	14	

Tissue removal (N=890)	N	%
Yes, with C.A.M. activation	1	0.1
Yes, without C.A.M. activation	2	0.2
No	887	99.7
Missing	0	

Hospital mortality	N	%
Dead	1042	40.1
Transf. to other acute-care hospital	336	12.9
Transf. to other type of hosp. stay	363	14.0
Nursing home	37	1.4
Voluntary discharge	17	0.7
Discharged home	806	31.0
Missing	0	

To other type of H stay (N=363)	N	%
Rehabilitation in the same institute	37	10.2
Rehabilitation in other institute	252	69.4
DH/long-term care, same inst.	22	6.1
DH/long-term care, other inst.	52	14.3
Missing	0	

Disch. terminally ill (N=1559)	N	%
Yes	33	2.1
No	1526	97.9
Missing	0	

Hospital mortality	N	%
Alive	1526	58.7
Dead	1075	41.3
Missing	0	

Timing of hosp. mortality (N=1075)	N	%
In ICU	890	82.8
Within 24 hours after ICU	10	0.9
24-47 hours after ICU	14	1.3
48-71 hours after ICU	9	0.8
72-95 hours after ICU	9	0.8
After 95 hours after ICU	143	13.3
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=185)	
Mean	18.4
SD	27.9
Median	11
Q1−Q3	4−23
Missing	0

National report for general ICUs - **Year 2022**
Outcome indicators - Adult COVID patients evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	1487	57.2
Dead	1114	42.8
Missing	0	

ICU stay (days)	
Mean	11.0
SD	14.4
Median	6
Q1−Q3	2−14
Missing	0

ICU stay (days) **Alive** (N=1711)	
Mean	10.6
SD	14.8
Median	6
Q1−Q3	2−13
Missing	0

ICU stay (days) **Dead** (N=890)	
Mean	11.8
SD	13.5
Median	8
Q1−Q3	3−15
Missing	0

Stay after ICU (days) **Alive** (N=1711)	
Mean	13.7
SD	18.6
Median	9
Q1−Q3	2−18
Missing	0

Hospital stay (days)	
Mean	23.4
SD	23.0
Median	17
Q1−Q3	8−31
Missing	0

Hospital stay (days) **Alive** (N=1526)	
Mean	26.5
SD	24.4
Median	19.5
Q1−Q3	10−35
Missing	0

Hospital stay (days) **Dead** (N=1075)	
Mean	19.2
SD	20.1
Median	14
Q1−Q3	7−25
Missing	0

National report for general ICUs - **Year 2022**
Characteristics on admission - Pediatric patients evaluated with PIM 3

Patients (N): 352

Sex	N	%
Male	204	58.0
Female	148	42.0
Missing	0	

Age	N	%
Newborn (0-4 weeks)	1	0.3
1-6 months	2	0.6
6-12 months	9	2.6
12-24 months	21	6.0
2-4 years	45	12.8
5-8 years	47	13.4
9-16 years	227	64.5
Missing	0	
Mean	10.2	
SD	5.4	
Median	12	
Q1−Q3	5−15	
Min−Max	0−16	

Weight (kg)	
Newborns (N=1)	
Mean	70.0
SD	
Median	70
Q1−Q3	70−70
Missing	0

Gestational age		
Newborns (N=1)	N	%
At term	1	100.0
Not at term	0	0.0
Missing	0	

Comorbidities	N	%
No	217	61.6
Yes	135	38.4
Missing	0	

Comorbidities (top 10)	N	%
Epilepsy	18	5.1
Genetic diseases	17	4.8
Skeletal malformations/disorders	15	4.3
Asthma	12	3.4
Severe psychosis	12	3.4
Malignant haematological disease	11	3.1
Encephalopathy	10	2.8
Brain and skull malformations	9	2.6
Gastrointestinal malformations	8	2.3
Any tumour without metastasis	7	2.0
Missing	0	

Previous ICU admissions	N	%
None	254	72.2
<=2	33	9.4
>2	12	3.4
Unknown	53	15.1
Missing	0	

Previous ICU admissions (N=45)	N	%
Paediatric	15	33.3
Neonatal	13	28.9
General - adult	20	44.4
Other/Unknown	2	4.4
Missing	0	

Stay before ICU (days)	
Mean	2.1
SD	7.9
Median	0
Q1−Q3	0−1
Missing	0

Source of admission	N	%
Same hospital	294	83.5
Other hospital	39	11.1
Long-term chronic care hospital	3	0.9
Directly from the community	16	4.5
Missing	0	

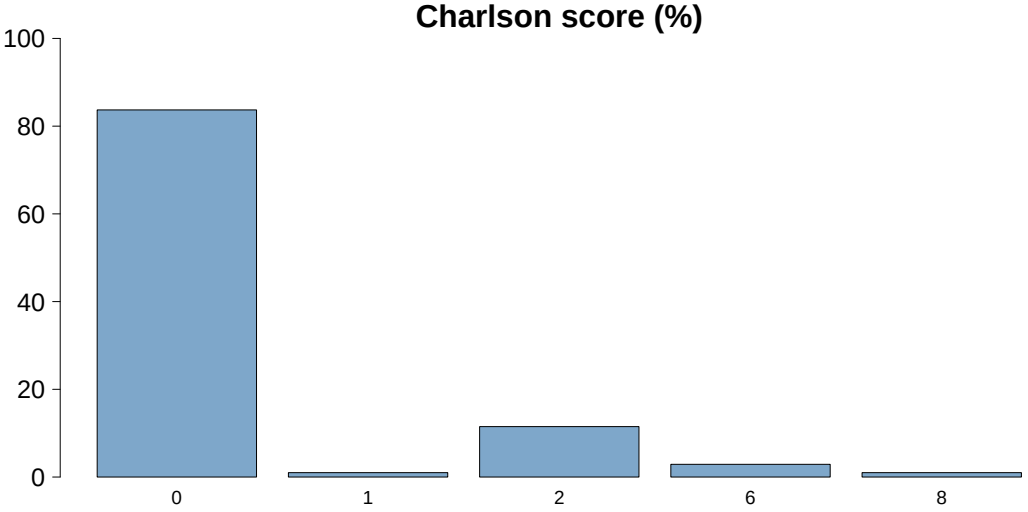
Ward of admission		
Hospital (N=333)	N	%
Medical ward	50	15.0
Surgical ward	76	22.8
Emergency room	198	59.5
Other ICU	6	1.8
High dependency care unit	3	0.9
Neonatology	0	0.0
Missing	0	

Reason for transfer from		
Other ICU (N=6)	N	%
Specialist expertise	3	50.0
Step-up care	2	33.3
Logistical/organizational reasons	1	16.7
Step-down care	0	0.0
Missing	0	

Scheduled admission	N	%
No	296	84.1
Yes	56	15.9
Missing	0	

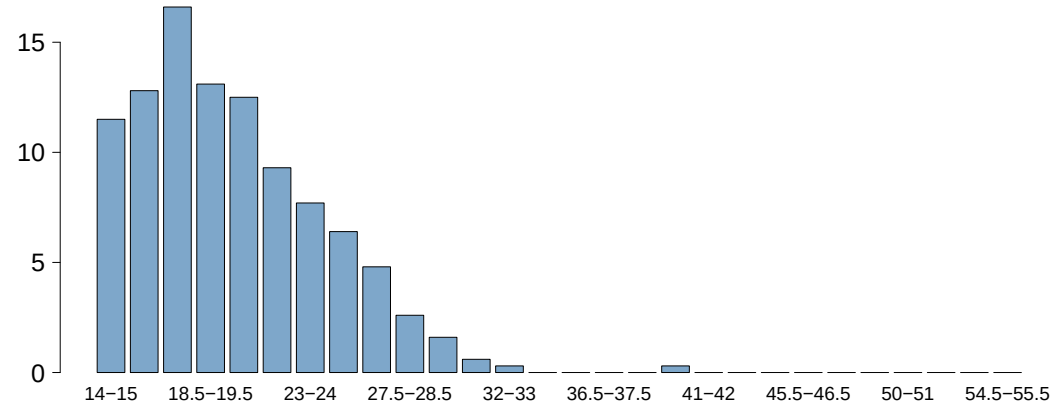
National report for general ICUs - **Year 2022**
Characteristics on admission - Pediatric patients evaluated with PIM 3

Charlson score (%)



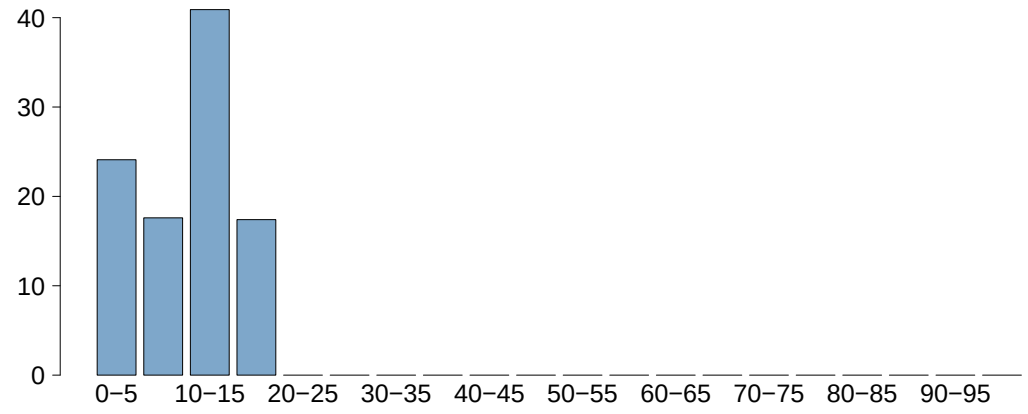
Charlson score	
Mean	0.5
SD	1.4
Median	0
Q1−Q3	0−0
Missing	248

BMI (%)



BMI	
Mean	19.8
SD	5.4
Median	19
Q1−Q3	16.3−22.6
Missing	5

Age (%)



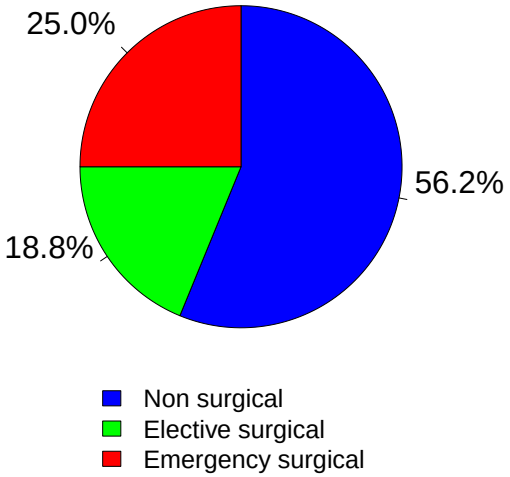
Age	
Mean	10.2
SD	5.4
Median	12
Q1−Q3	5−15
Missing	0

National report for general ICUs - **Year 2022**
Characteristics on admission - Pediatric patients evaluated with PIM 3

Trauma	N	%
No	224	63.6
Yes	128	36.4
Multiple trauma	55	15.6
Missing	0	

Surgical status	N	%
Non surgical	198	56.2
Elective surgical	66	18.8
Emergency surgical	88	25.0
Missing	0	

Surgical status



Source of admission **Surgical pt.** (N=154)	N	%
Operating theatre of surgical ward	69	46.6
Operating theatre of emergency room	42	28.4
Surgical ward	3	2.0
Other	34	23.0
Missing	6	

Surgical interventions (top 10) **Elective surgical** (N=66)	N	%
Neurosurgery	13	19.7
Maxillo-Facial surgery	12	18.2
Gastrointestinal surgery	11	16.7
ENT surgery	8	12.1
Thoracic surgery	8	12.1
Nephro/Urological surgery	6	9.1
Orthopaedic surgery	3	4.5
Other surgery	3	4.5
Pancreatic surgery	1	1.5
Hepatic surgery	1	1.5
Missing	0	

Timing **Elective surgical** (N=66)	N	%
From -7 to -3 days	0	0.0
From -2 to -1 days	1	1.5
On ICU admission day	66	100.0
The day after ICU admission	0	0.0
Missing	0	

Surgical interventions (top 10) **Emergency surgical** (N=88)	N	%
Orthopaedic surgery	29	33.0
Gastrointestinal surgery	21	23.9
Neurosurgery	21	23.9
ENT surgery	6	6.8
Thoracic surgery	6	6.8
Splenectomy	5	5.7
Nephro/Urological surgery	3	3.4
Ophthalmic surgery	2	2.3
Maxillo-Facial surgery	2	2.3
Pancreatic surgery	1	1.1
Missing	0	

Timing **Emergency surgical** (N=88)	N	%
From -7 to -3 days	0	0.0
From -2 to -1 days	11	12.5
On ICU admission day	75	85.2
The day after ICU admission	14	15.9
Missing	0	

Non surgical interventions	N	%
None	332	94.3
Elective	5	1.4
Emergency	15	4.3
Missing	0	

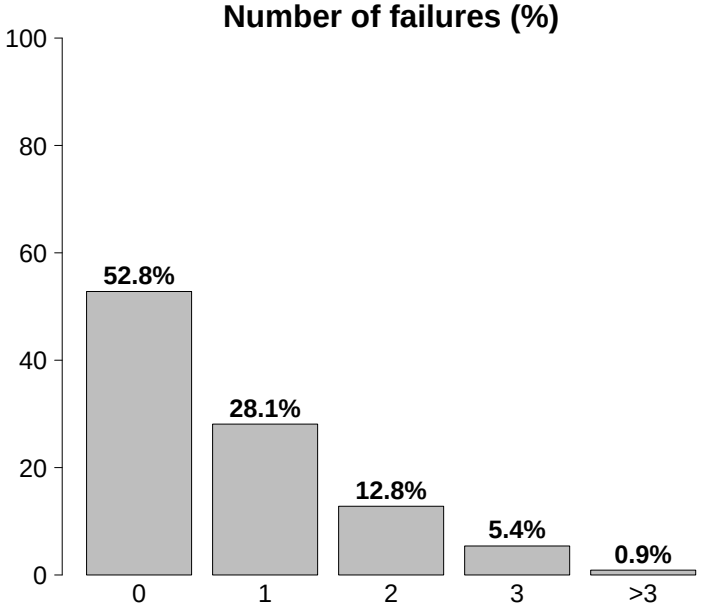
Non surgical interventions **Elective** (N=5)	N	%
Interventional cardiology	1	20.0
Therapeutic endoscopy (bronchoscopy excluded)	1	20.0
Interventional radiology	0	0.0
Interventional neuroradiology	0	0.0
Interventional endoscopy	0	0.0
Therapeutic bronchoscopy	0	0.0
Missing	3	

Non surgical interventions **Emergency** (N=15)	N	%
Interventional radiology	10	66.7
Interventional cardiology	4	26.7
Interventional neuroradiology	1	6.7
Interventional endoscopy	0	0.0
Therapeutic endoscopy (bronchoscopy excluded)	0	0.0
Therapeutic bronchoscopy	0	0.0
Missing	0	

National report for general ICUs - **Year 2022**
Characteristics on admission - Pediatric patients evaluated with PIM 3

Reason for admission	N	%
Monitoring/Weaning	221	65.0
Post surgical weaning	56	16.8
Surgical monitoring	56	16.8
Post interventional weaning	1	0.3
Interventional monitoring	10	3.0
Non surgical monitoring	92	27.5
Missing	6	
Admission for procedures/treatments	0	0.0
Intensive Treatment	118	34.7
Ventilatory support	108	30.7
Cardiovascular support	28	8.0
Metabolic support	10	2.8
Missing	0	
Palliative Sedation	1	0.3
Diagnosis of death/Organ donation	0	0.0
Missing	12	

Number of failures (%)



Failures on admission	N	%
No	186	52.8
Yes	166	47.2
A: Respiratory failure	96	27.3
B: Cardiovascular failure	43	12.2
C: Neurological failure	36	10.2
D: Hepatic failure	29	8.2
E: Renal failure	37	10.5
F: Acute skin failure	0	0.0
G: Metabolic failure	16	4.5
H: Coagulation failure	1	0.3
Missing	0	

Failures on admission (top 10)	N	%
A	45	12.8
C	14	4.0
AB	13	3.7
E	13	3.7
AC	10	2.8
D	10	2.8
G	10	2.8
B	7	2.0
AE	6	1.7
ABD	5	1.4
Missing	0	

Respiratory failure	N	%
None	244	69.3
Only hypoxic failure	30	8.5
Only hypercapnic failure	0	0.0
Hypoxic-hypercapnic failure	4	1.1
Intubation for airway maint.	74	21.0
Missing	0	

Cardiovascular failure	N	%
None	324	92.0
Without shock	5	1.4
Cardiogenic shock	3	0.9
Septic shock	5	1.4
Haemorrhagic/hypovolemic shock	9	2.6
Hypovolemic shock	0	0.0
Anaphylactic shock	0	0.0
Neurogenic shock	2	0.6
Other shock	2	0.6
Mixed shock	2	0.6
Missing	0	

Neurologic failure	N	%
None	259	85.2
Cerebral coma	30	9.9
Metabolic coma	6	2.0
Postanoxic coma	6	2.0
Toxic coma	3	1.0
Missing or not evaluable	48	

Renal failure (RIFLE)	N	%
None	315	89.5
Risk	25	7.1
Injury	9	2.6
Failure	2	0.6
Loss	0	0.0
End-stage renal disease	1	0.3
Missing	0	

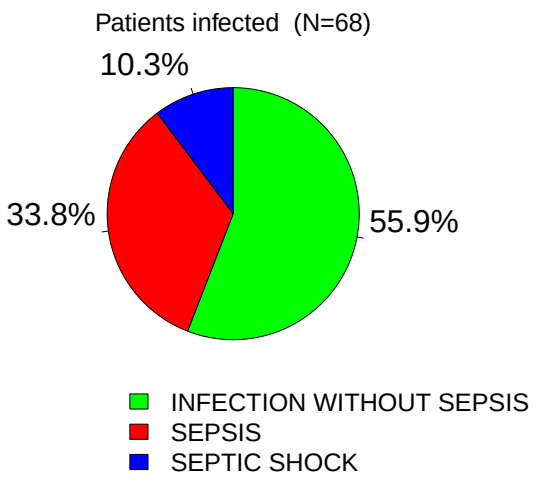
National report for general ICUs - Year 2022
Characteristics on admission - Pediatric patients evaluated with PIM 3

Clinical conditions on admission	N	%
Respiratory	50	14.2
Acute asthma/bronchospasm	18	5.1
Upper respiratory tract disease	10	2.8
Pneumothorax/Pneumomediastinum	5	1.4
Bronchiolitis	5	1.4
Aspiration pneumonia	4	1.1
Cardiovascular	12	3.4
Cardiac arrest	7	2.0
Left heart failure without pulm. edema	2	0.6
Left heart failure with pulm. edema	2	0.6
Acute severe arrhythmia: tachycardias	1	0.3
Acute severe arrhythmia: bradycardias	1	0.3
Neurological	58	16.5
Seizures	26	7.4
Brain tumour	10	2.8
Metabolic/postanoxic encephalopathy	5	1.4
Brain and skull malformations	4	1.1
Non traumatic cerebral oedema	3	0.9
Gastrointestinal and hepatic	27	7.7
Oesophago-gastro-intestinal malf.	10	2.8
Intestinal occlusion	4	1.1
Gastrointestinal bleeding: upper tract	2	0.6
Intrabdominal bleeding (non traumatic)	2	0.6
Anastomotic dehiscence	2	0.6
Trauma (anatomical districts)	128	36.4
Head	60	17.0
Pelvis/bone/joint & muscle	50	14.2
Abdomen	49	13.9
Chest	43	12.2
Spine	21	6.0
Major vessels injury	3	0.9
Miscellaneous	2	0.6
Other	84	23.9
Other disease	24	6.8
Metabolic disorder	16	4.5
ENT/maxillofacial disease	15	4.3
Acute intoxication	14	4.0
Haematological disease	5	1.4
Post transplantation	2	0.6
Bone marrow transplantation	2	0.6
-	0	0.0
Infections	68	19.3
Pneumonia	23	6.5
COVID-19	14	4.0
NON-surgical CNS infection	8	2.3
Upper respiratory tract infection	8	2.3
L.R.T.I. other than pneumonia	5	1.4
Catheter-related bacteremia (CR-BSI)	2	0.6
Clinical sepsis	2	0.6
Gastroenteritis	2	0.6
Myocarditis	2	0.6
Post-surgical peritonitis	2	0.6
Missing	0	

Trauma (anatomical districts)	N	%
Head	60	17.0
Maxillofacial fracture	29	8.2
Skull fracture	21	6.0
Cerebral contusion/laceration	18	5.1
Traumatic subarachnoid haemorrhage	14	4.0
Extradural/epidural haematoma	13	3.7
Spine	21	6.0
Vertebral fracture, without deficit	19	5.4
Tetraplegia	1	0.3
Paraplegia	1	0.3
Chest	43	12.2
Other injuries of the chest	25	7.1
Traum. haemothorax/pneumothorax	19	5.4
Severe lung contusion/laceration	11	3.1
Abdomen	49	13.9
Spleen: Moderate-Severe laceration	30	8.5
Liver: Moderate-Severe laceration	8	2.3
Kidney: Rupture/laceration	8	2.3
Pelvis/bone/joint & muscle	50	14.2
Long bone fracture	44	12.5
Multiple fracture of the pelvis	13	3.7
Very severe or open fracture of the pelvis	2	0.6
Major vessels injury	3	0.9
Neck vessels: dissection/transection	1	0.3
Aorta: rupture/dissection	1	0.3
Proximal limbs vessels: transection	1	0.3
Miscellaneous	2	0.6
Inhalation injury	1	0.3
Burns (>30% BSA)	1	0.3
Missing	0	

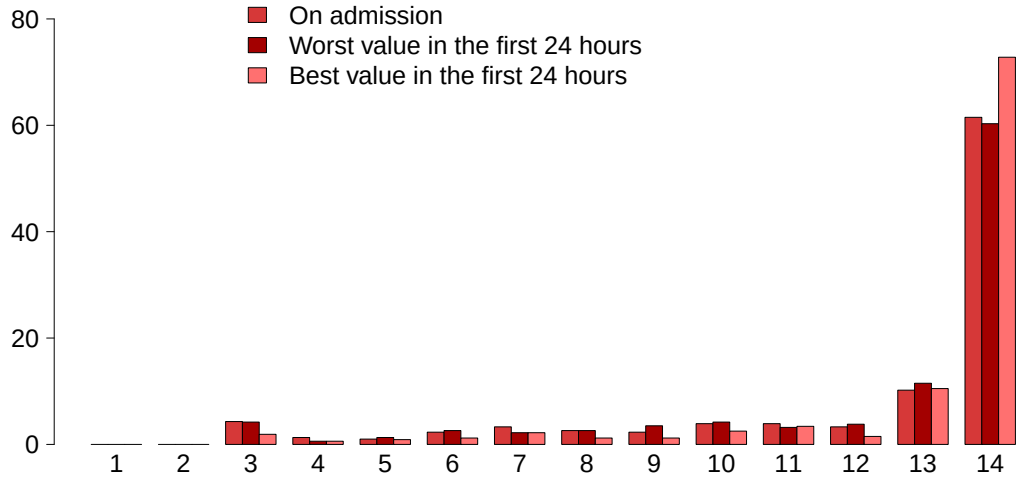
Infection severity on admission	N	%
None	284	80.7
INFECTION WITHOUT SEPSIS	38	10.8
SEPSIS	23	6.5
SEPTIC SHOCK	7	2.0
Missing	0	

Infection severity on admission



National report for general ICUs - **Year 2022**
Severity scores - Pediatric patients evaluated with PIM 3

Glasgow Coma Scale (%)

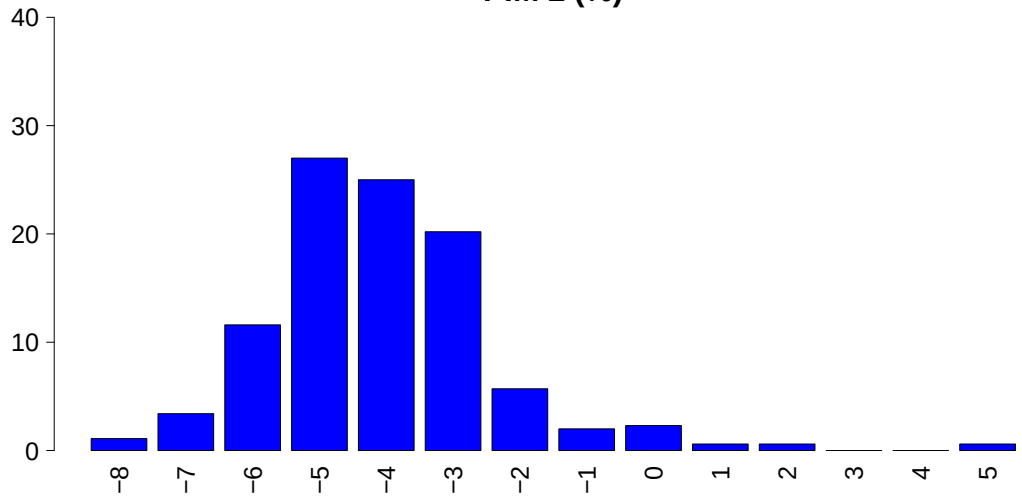


GCS (admission)	
Median	14
Q1–Q3	11.8–14
Not evaluable	48
Missing	0

GCS (worst in first 24 hours)	
Median	14
Q1–Q3	12–14
Not evaluable	40
Missing	0

GCS (best in first 24 hours)	
Median	14
Q1–Q3	13–14
Not evaluable	29
Missing	0

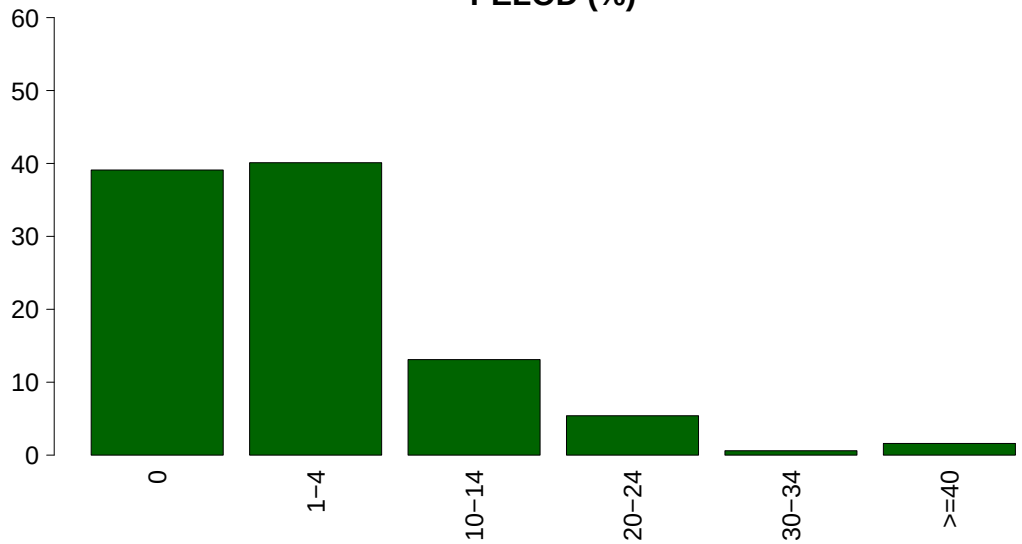
PIM 2 (%)



PIM 2	
Median	-4.4
Q1–Q3	-5–-3.1
Not evaluable	0
Missing	0

PIM 3	
Median	-4.4
Q1–Q3	-5.4–-3.3
Not evaluable	0
Missing	0

PELOD (%)



PELOD	
Mean	4.0
SD	8.3
Median	1
Q1–Q3	0–2
Not evaluable	40
Missing	0

National report for general ICUs - **Year 2022**
Characteristics during the stay - Pediatric patients evaluated with PIM 3

Complications during the stay	N	%
No	309	87.8
Yes	43	12.2
Missing	0	

Failures during the stay	N	%
No	337	95.7
Yes	15	4.3
A: Respiratory failure	12	3.4
B: Cardiovascular failure	4	1.1
C: Neurological failure	2	0.6
D: Hepatic failure	0	0.0
E: Renal failure (AKIN)	3	0.9
F: Acute skin failure	0	0.0
G: Metabolic failure	1	0.3
H: Coagulation failure	1	0.3
Missing	0	

Failures during the stay (top 10)	N	%
A	8	2.3
AB	1	0.3
ABC	1	0.3
ABEH	1	0.3
AE	1	0.3
B	1	0.3
CE	1	0.3
G	1	0.3
-	0	0.0
-	0	0.0
Missing	0	

Respiratory failure occured	N	%
None	340	96.6
Intubation for airway maint.	6	1.7
Hypoxic failure	6	1.7
Hypercapnic failure	0	0.0
Missing	0	

Cardiovascular failure occured	N	%
None	348	98.9
Cardiogenic shock	1	0.3
Hypovolemic shock	0	0.0
Haemorrhagic/hypovolemic shock	1	0.3
Septic shock	2	0.6
Anaphylactic shock	0	0.0
Neurogenic shock	1	0.3
Other shock	0	0.0
Missing	0	

Neurological failure occured	N	%
None	350	99.4
Cerebral coma	1	0.3
Metabolic coma	0	0.0
Postanoxic coma	1	0.3
Missing	0	

Renal failure occured (AKIN)	N	%
None	349	99.1
Mild	0	0.0
Moderate	1	0.3
Severe	2	0.6
Missing	0	

Complications during the stay	N	%
Respiratory	10	2.8
Atelectasis	3	0.9
Pneumothorax/Pneumomediastinum	3	0.9
Severe ARDS	2	0.6
Haemothorax	2	0.6
Moderate ARDS	1	0.3
Cardiovascular	3	0.9
Deep venous thrombosis	2	0.6
Cardiac arrest	1	0.3
Peripheral vascular disease	1	0.3
Acute severe arrhythmia: tachycardias	1	0.3
-	0	0.0
Neurological	11	3.1
Drowsiness/agitation/delirium	5	1.4
Brain edema	4	1.1
Intracranial hypertension	4	1.1
New ischaemic stroke	1	0.3
Post-surgical intracranial bleeding	1	0.3
Gastrointestinal and hepatic	2	0.6
Gastrointestinal perforation	1	0.3
Paralytic Ileus	1	0.3
-	0	0.0
-	0	0.0
-	0	0.0
Other	2	0.6
Extremity compartment syndrome (severe)	1	0.3
Metabolic disorder	1	0.3
F.U.O. fever of unknown origin	1	0.3
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Infections	16	4.5
Pneumonia	7	2.0
L.R.T.I. other than pneumonia	5	1.4
Catheter-related UTI	2	0.6
Primary bacteraemia of unknown origin	1	0.3
Catheter-related bacteremia (CR-BSI)	1	0.3
Catheter-related local infection	1	0.3
Post-surgical CNS infection	1	0.3
Upper respiratory tract infection	1	0.3
-	0	0.0
-	0	0.0
Missing	0	

National report for general ICUs - **Year 2022**
Characteristics during the stay - Pediatric patients evaluated with PIM 3

Infections	N	%
None	272	77.3
Only on admission	64	18.2
On admission and during ICU stay	4	1.1
Only during ICU stay	12	3.4
Missing	0	

Maximum severity of infection	N	%
None	272	77.3
INFECTION WITHOUT SEPSIS	46	13.1
SEPSIS	26	7.4
SEPTIC SHOCK	8	2.3
Missing	0	

Severity evolution

		During the stay				
	N (R %)	None	INFECTION WITHOUT SEPSIS	SEPSIS	SEPTIC SHOCK	TOT
Admission	None	272 (95.8%)	9 (3.2%)	3 (1.1%)	0 (0.0%)	284
	INFECTION WITHOUT SEPSIS	-	37 (97.4%)	1 (2.6%)	0 (0.0%)	38
	SEPSIS	-	-	22 (95.7%)	1 (4.3%)	23
	SEPTIC SHOCK	-	-	-	7 (100.0%)	7
	TOT	272	46	26	8	352

Ventil. Associat. Pneumonia (VAP)	N	%
No	346	98.3
Yes	6	1.7
Missing	0	

Catheter Bacteraemia (CR-BSI)	N	%
No	351	99.7
Yes	1	0.3
Missing	0	

Incidence of VAP
(Pts. with VAP/1000 days of VM pre-VAP)

Estimate	11.1
CI (95%)	4.1−24.1

Incidence of CR-BSI
(Pts. with CR-BSI/1000 days of CVC pre-CR-BSI)

Estimate	1.1
CI (95%)	0.0−6.0

Incidence of VAP
(Pts. with VAP/pts. ventilated for 8 days)

Estimate	8.8%
CI (95%)	3.2−19.2

Incidence of CR-BSI
(Pts. with CR-BSI/pts. catheterized for 12 days)

Estimate	1.3%
CI (95%)	0.0−7.2

Catheter-related urinary tract infection (UTI)	N	%
No	350	99.4
Yes	2	0.6
Missing	0	

Incidence of catheter-related UTI
(Pts. with catheter-related UTI/1000 days of UC pre-UTI)

Estimate	1.6
CI (95%)	0.2−5.9

Incidence of catheter-related UTI
(Pts. with catheter-related UTI/pts. with UC for 12 days)

Estimate	1.9%
CI (95%)	0.2−7.1

Procedures and/or treatments (Missing=0)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	304	86.4										
Invasive ventilation	157	44.6	128	36.4	11	3.1	1	0–2	1	0	0–1	0
Non invasive ventilation	28	8.0	9	2.6	7	2	2	1–3	0	0	0–0	0
Tracheostomy	19	5.4	5	1.4	13	3.7	14	8–30	1	9	5–14	0
iNO (inhaled nitric oxide)	3	0.9	0	0	1	0.3	6	3–7	0	0	0–10	0
Central Venous Catheter	136	38.6	75	21.3	104	29.5	3	1–6	0	0	0–0	0
PICC	8	2.3	2	0.6	8	2.3	8	3–10	0	12	8–16	0
Arterial Catheter	220	62.5	123	34.9	33	9.4	2	1–4	0	0	0–0	0
Vasoactive drugs	39	11.1	20	5.7	4	1.1	2	1–7	0	0	0–1	0
Antiarrhythmics	1	0.3	1	0.3	0	0	0	0–0	0			
IABP	0	0.0										
Invasive monitoring of C.O.	4	1.1	0	0	0	0	11	4–17	0	2	0–4	0
Continous monitoring of ScVO2	1	0.3	0	0	0	0	17	17–17	0	0	0–0	0
Temporary pacing	0	0.0										
Ventricular assistance	0	0.0										
DC-shock	1	0.3								0	0–0	0
CPR	1	0.3								0	0–0	0
Massive transfusion	2	0.6								0	0–1	0
ICP monitoring without CSF drainage	10	2.8	5	1.4	1	0.3	8	5–14	0	0	0–1	0
ICP monitoring with CSF drainage	5	1.4	3	0.9	3	0.9	4	2–6	0	2	1–4	0
EVD without ICP monitoring	0	0.0										
Haemofiltration	2	0.6	0	0	0	0	10	5–14	0	2	1–3	0
Haemodialysis	0	0.0										
ECMO	2	0.6	0	0	0	0	10	5–14	0	0	0–1	0
Hepatic clearance techniques	0	0.0										
Clearance techniques during sepsis	0	0.0										
IAP (intra-abdominal pressure)	2	0.6										
Hypothermia	0	0.0										
Enteral nutrition	73	20.7	19	5.4	45	12.8	4	2–18	1	1	0–2	0
Parenteral nutrition	21	6.0	5	1.4	13	3.7	4	2–7	0	0	0–2	0
SDD (Topical, Topical and systemic)	0	0.0										
Patient restraint	4	1.1										
Diagnostic fibrobronchoscopy	5	1.4								0	0–0	0
Surfactant treatment	0	0.0										
Vacuum therapy	0	0.0										
Oxygen therapy	45	12.8	21	6	29	8.2	2	1–3	0	1	0–1	0
Blood transfusion	1	0.3										
Peritoneal dialysis	0	0.0										
Plasmapheresis	3	0.9										
Thoracic drainage	6	1.7	5	1.4	2	0.6	4	3–11	0	0	0–0	0
Peridural catheter	5	1.4	2	0.6	5	1.4	1	1–4	0	0	0–0	0
Urinary catheter	249	70.7	196	55.7	207	58.8	2	1–4	1	0	0–0	0
Near-infrared spectroscopy	0	0.0										
Phototherapy	1	0.3										
Electrical cardioversion	0	0.0										
Pronation	4	1.1	0	0	1	0.3	4	2–10	0	4	2–10	0
Antivirals	13	3.7	6	1.7	8	2.3	3	1–5	0	0	0–0	0

National report for general ICUs - **Year 2022**
Process indicators - Pediatric patients evaluated with PIM 3

Procedures and/or treatments (Missing=0)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Antibiotics	168	47.7										
Antibiotic prophylaxis	85	24.1	58	16.5	46	13.1	1	1–2	0	0	0–1	0
Empirical antibiotic therapy (infection diagnosis confirmed)	39	11.1	16	4.5	21	6	2	1–4	0	0	0–3	0
Empirical antibiotic therapy (infection diagnosis unconfirmed)	44	12.5	25	7.1	36	10.2	2	1–3	0	0	0–0	0
Targeted antibiotic therapy	29	8.2	4	1.1	15	4.3	6	5–11	0	5	1–10	0
Antifungal in empirical therapy	6	1.7	3	0.9	3	0.9	3	1–7	0	4	2–18	0
Antifungal in targeted therapy	2	0.6	0	0	1	0.3	4	4–4	0	28	19–36	0
Pre-emptive antifungal	1	0.3	1	0.3	1	0.3	27	27–27	0			

Antibiotic therapy

Pt. infected in ICU only (N=12)	N	%
No therapy	1	8.3
Only empirical	2	16.7
Only targeted	3	25.0
Targeted after empirical	5	41.7
Other	1	8.3
Missing	0	

Antifungal therapy

Pt. infected in ICU only (N=12)	N	%
No therapy	11	91.7
Only empirical	0	0.0
Only targeted	1	8.3
Targeted after empirical	0	0.0
Other	0	0.0
Missing	0	

National report for general ICUs - **Year 2022**
Process indicators - Pediatric patients evaluated with PIM 3

Invasive ventilation (N=157)	N	%	Length (days) Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	18	10.1	8.6	11.0	3	1−13	1
For airway mainteinance	69	38.8	6.5	11.4	2	1−5	0
In weaning	62	34.8	0.5	0.5	1	0−1	0
Not evaluable	29	16.3	6.0	9.8	1	0.8−6	21
Reintubation within 48 hours	3	1.7	13.7	18.5	4	3−19.5	0

Non invasive ventilation (N=28)	N	%
Non invasive ventilation only	22	78.6
Non invasive ventilation failed	3	10.7
For weaning	1	3.6
Other	2	7.1
Missing	0	

Tracheostomy not present on admission (N=14)	N	%
Surgical	3	21.4
Percutwist	0	0.0
Ciaglia	2	14.3
Monodil. Ciaglia	4	28.6
Fantoni	0	0.0
Griggs	5	35.7
Other Kind	0	0.0
Unknown	0	0.0
Missing	0	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=14)	
Mean	9.1
SD	5.2
Median	9
Q1−Q3	5−14.2
Missing	0

Invasive monitoring of C.O. (N=4)	N	%
Swan Ganz	1	25.0
PICCO	2	50.0
LIDCO	0	0.0
Vigileo-PRAM	0	0.0
Other	1	25.0
Missing	0	

SDD (N=0)	N	%
Topical	0	0.0
Topical and systemic	0	0.0
Missing	0	

Surgical interventions	N	%
No	341	96.9
Yes	11	3.1
Missing	0	

Number of surgical interventions	N	%
0	341	96.9
1	6	1.7
2	4	1.1
3	0	0.0
>3	1	0.3
Missing	0	

Surgical interventions Days from admission	
Mean	15.9
SD	11.0
Median	15.5
Q1−Q3	8−19.5
Missing	0

Surgical interventions (top 10)	N	%
Neurosurgery	7	2.0
Orthopaedic surgery	6	1.7
Gastrointestinal surgery	2	0.6
Nephro/Urological surgery	1	0.3
ENT surgery	1	0.3
Splenectomy	1	0.3
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Non surgical interventions	N	%
No	349	99.1
Yes	3	0.9
Missing	0	

Non surgical interventions Days from admission	
Mean	16.8
SD	16.3
Median	12
Q1−Q3	7−15
Missing	0

Non surgical interventions	N	%
Interventional radiology	2	0.6
Therapeutic bronchoscopy	2	0.6
Diagnostic bronchoscopy on admission	1	0.3
Interventional cardiology	0	0.0
Interventional neuroradiology	0	0.0
Interventional endoscopy	0	0.0
Missing	0	

National report for general ICUs - **Year 2022**
Outcome indicators - Pediatric patients evaluated with PIM 3

ICU outcome	N	%
Dead	13	3.7
Transferred to same hospital	305	86.9
Transferred to other hospital	28	8.0
Discharged home	5	1.4
Disch. terminally ill	0	0.0
Missing	1	

Transferred to (N=333)	N	%
Ward	299	89.8
Other ICU	0	0.0
High dependency care unit	19	5.7
Rehabilitation	13	3.9
Day hospital or Long-term care	2	0.6
Missing	0	

Reason of transfer to Other ICU (N=0)	N	%
Specialist expertise	0	0.0
Step-up care	0	0.0
Logistical/organizational reasons	0	0.0
Step-down care	0	0.0
Missing	0	

Transferred to Same hospital (N=305)	N	%
Ward	287	94.1
Other ICU	0	0.0
High dependency care unit	16	5.2
Rehabilitation	1	0.3
Day hospital or Long-term care	1	0.3
Missing	0	

Transferred to Other hospital (N=28)	N	%
Ward	12	42.9
Other ICU	0	0.0
High dependency care unit	3	10.7
Rehabilitation	12	42.9
Day hospital or Long-term care	1	3.6
Missing	0	

ICU mortality	N	%
Alive	338	96.3
Dead	13	3.7
Missing	1	

Timing of ICU mortality (N=13)	N	%
Daytime (08:00AM - 07:59PM)	10	76.9
Nighttime (08:00PM - 07:59AM)	3	23.1
Weekdays (Monday - Friday)	11	84.6
Weekend (Saturday - Sunday)	2	15.4
Missing	0	

C.A.M. activation (N=13)	N	%
Yes, with organ donation	1	7.7
Yes, without organ donation	2	15.4
No, with organ donation	0	0.0
No, without organ donation	10	76.9
Missing	0	

Tissue removal (N=13)	N	%
Yes, with C.A.M. activation	1	7.7
Yes, without C.A.M. activation	1	7.7
No	11	84.6
Missing	0	

Hospital mortality *	N	%
Dead	11	3.7
Transf. to other acute-care hospital	32	10.8
Transf. to other type of hosp. stay	32	10.8
Nursing home	3	1.0
Voluntary discharge	2	0.7
Discharged home	217	73.1
Missing	3	

To other type of H stay* (N=32)	N	%
Rehabilitation in the same institute	4	12.9
Rehabilitation in other institute	24	77.4
DH/long-term care, same inst.	1	3.2
DH/long-term care, other inst.	2	6.5
Missing	1	

Disch. terminally ill* (N=286)	N	%
Yes	1	0.3
No	285	99.7
Missing	0	

Hospital mortality *	N	%
Alive	285	96.0
Dead	12	4.0
Missing	3	

Timing of hosp. mortality * (N=12)	N	%
In ICU	9	75.0
Within 24 hours after ICU	1	8.3
24-47 hours after ICU	0	0.0
48-71 hours after ICU	0	0.0
72-95 hours after ICU	0	0.0
After 95 hours after ICU	2	16.7
Missing	0	

Timing of hosp. mortality (days from ICU disch.) * Discharged alive from ICU (N=3)	
Mean	9.3
SD	8.3
Median	12
Q1−Q3	6−14
Missing	0

* Statistics computed on patients admitted in months with % of patients in status 4 over the threshold (readmissions excluded) (N=300).

National report for general ICUs - **Year 2022**
Outcome indicators - Pediatric patients evaluated with PIM 3

Last hospital mortality *	N	%
Alive	285	96.0
Dead	12	4.0
Missing	3	

Expected outcome (N=338)	N	%
Recovery/resolution of acute episode	326	96.7
Palliative care grade 1	4	1.2
Palliative care grade 2	3	0.9
Palliative care grade 3	0	0.0
Palliative care grade 4	4	1.2
Missing	1	

Outcome treatments (N=11)	N	%
NON invasive ventilation	3	27.3
Invasive ventilation	0	0.0
Oxygen therapy	2	18.2
Tracheostomy	3	27.3
Diuretics grugs	0	0.0
Inotropic agents drugs	0	0.0
Antiepileptics drugs	6	54.5
Dialytic therapy	0	0.0
Limb replacement	0	0.0
Nasogastric tube	2	18.2
Ostomies	4	36.4
Home based parenteral nutrition	3	27.3
Motor physiotherapy	5	45.5
Respiratory physiotherapy	3	27.3
Posture	5	45.5
Psychological counselling	3	27.3
Missing	0	

ICU stay (days)	
Mean	4.2
SD	8.0
Median	2
Q1−Q3	1−3
Missing	1

ICU stay (days) **Alive** (N=338)	
Mean	4.1
SD	8.0
Median	2
Q1−Q3	1−3
Missing	0

ICU stay (days) **Dead** (N=13)	
Mean	7.3
SD	8.3
Median	3
Q1−Q3	1−11
Missing	0

Stay after ICU (days) * **Alive** (N=290)	
Mean	9.2
SD	13.4
Median	6
Q1−Q3	2−11
Missing	3

Hospital stay (days) *	
Mean	14.8
SD	17.4
Median	9
Q1−Q3	5−18
Missing	4

Hospital stay (days) * **Alive** (N=285)	
Mean	14.8
SD	17.3
Median	9
Q1−Q3	5−18
Missing	1

Hospital stay (days) * **Dead** (N=12)	
Mean	14.8
SD	19.5
Median	5
Q1−Q3	1−25.5
Missing	0

* Statistics computed on patients admitted in months with % of patients in status 4 over the threshold (readmissions excluded) (N=300).

Appendix

National report for general ICUs - Year 2022
Prognostic models: GiViTI 2022 - Adult patients

Model: Logistic regression.
Dependent variable: Hospital mortality°.
Sample used for model development: Adults patients from general Italian ICUs.
Sample size (TRAINING set): 26743 patients.

Independent variables	Coefficients (95% CI)	Odds Ratio (95% CI)	p
Intercept	-6.32 (-6.61;-6.04)	/	/
Miscellanea			
Ward of admission: Medical ward/High dependency care unit vs. Surgical ward/Emergency room/Other ICU	0.39 (0.28; 0.49)	/	×
Surgical status (Elective surgical vs. Non surgical)	-0.83 (-1.00;-0.66)	/	×
Surgical status (Emergency surgical vs. Non surgical)	-0.44 (-0.57;-0.31)	/	
Age in decades	0.41 (0.37; 0.44)	1.50 (1.45; 1.55)	<0.001
Vasoactive drugs: first 24 hours (Yes vs. No)	0.28 (0.15; 0.42)	1.33 (1.16; 1.52)	<0.001
Monitoring/Weaning**: Non surgical interventions (Yes vs. No)	0.14 (-0.45; 0.73)	/	×
Admitted in hospital the same day of ICU admission (Yes vs. No)	0.68 (0.47; 0.88)	/	×
$\log_e$(Stay before ICU (days) + 1/24)	0.20 (0.15; 0.24)	/	
Min(BMI - 25.4, 0)	-0.08 (-0.10;-0.06)	0.92 (0.91; 0.94)	<0.001
Physiopatological components			
Bilirubin (mg/100ml) (1.2-11.9 vs. <1.2)	0.24 (0.14; 0.33)	1.27 (1.15; 1.40)	<0.001
Bilirubin (mg/100ml) (>=12 vs. <1.2)	1.03 (0.46; 1.60)	2.79 (1.58; 4.94)	
Creatinine (mg/dl) (>=5 vs. <5)	-0.60 (-0.90;-0.29)	/	×
Urine Output (L/24h) (<0.2 vs. >=1)	1.46 (1.27; 1.65)	/	
Urine Output (L/24h) (0.2-0.49 vs. >=1)	0.89 (0.71; 1.07)	/	×
Urine Output (L/24h) (0.5-0.99 vs. >=1)	0.30 (0.20; 0.41)	/	
HCO3 (mEq/L) (<20 vs. >=20)	0.18 (0.08; 0.27)	1.19 (1.08; 1.31)	<0.001
PaO2/FiO2 (100*mmHg/%) (<100 vs. >=300)	0.95 (0.78; 1.13)	/	
PaO2/FiO2 (100*mmHg/%) (100-199 vs. >=300)	0.37 (0.24; 0.50)	/	×
PaO2/FiO2 (100*mmHg/%) (200-299 vs. >=300)	0.03 (-0.07; 0.14)	/	
Sodium (mEq/L) (>=145 vs. <145)	0.16 (0.04; 0.28)	1.17 (1.04; 1.32)	0.010
Serum urea (mg/100 ml) (60-179 vs. <60)	0.21 (0.12; 0.31)	1.24 (1.13; 1.36)	<0.001
Serum urea (mg/100 ml) (>=180 vs. <60)	0.53 (0.34; 0.73)	1.70 (1.40; 2.07)	
Systolic Blood Pressure (mmHg) (<70 vs. >=100)	0.49 (0.33; 0.64)	/	×
Systolic Blood Pressure (mmHg) (70-99 vs. >=100)	0.15 (0.04; 0.26)	/	
Platelets (10^3/mm3) (100-150 vs. >150)	0.19 (0.08; 0.30)	/	
Platelets (10^3/mm3) (50-99 vs. >150)	0.36 (0.21; 0.51)	/	×
Platelets (10^3/mm3) (<50 vs. >150)	0.81 (0.62; 1.00)	/	
WBC (10^9/L) (>=20 vs. <20)	0.29 (0.16; 0.42)	/	×
Heart rate (bpm) (>=120 vs. <120)	0.10 (0.00; 0.21)	1.11 (1.00; 1.23)	0.057
Clinical conditions on admission			
Infection severity on admission (Infection without sepsis vs. None)	-0.24 (-0.38;-0.09)	/	
Infection severity on admission (Sepsis vs. None)	0.03 (-0.10; 0.16)	/	×
Infection severity on admission (Septic shock vs. None)	0.08 (-0.19; 0.35)	/	
Traumatic diffuse injury with oedema (Yes vs. No)	1.06 (0.48; 1.64)	2.88 (1.61; 5.15)	<0.001
Trauma: Chest (Yes vs. No)	-0.29 (-0.54;-0.05)	/	×
Trauma: Pelvis/bone/joint/muscle (Yes vs. No)	-0.42 (-0.64;-0.19)	0.66 (0.53; 0.83)	<0.001
Peritonites (Yes vs. No)	0.27 (0.08; 0.46)	1.31 (1.09; 1.58)	0.005
COVID-19 (Yes vs. No)	0.78 (0.64; 0.92)	2.18 (1.89; 2.52)	<0.001
Restrictive lung disease, exacerbation (Yes vs. No)	0.72 (0.24; 1.20)	2.05 (1.27; 3.31)	0.004
Acute asthma/bronchospasm (Yes vs. No)	-0.60 (-1.09;-0.10)	0.55 (0.34; 0.90)	0.012
Acute bile-duct disease (Yes vs. No)	-0.60 (-0.99;-0.20)	0.55 (0.37; 0.82)	0.002
Acute intoxication (Yes vs. No)	-0.62 (-0.98;-0.26)	/	×
ARDS (Mild ARDS vs. Not)	0.13 (-0.22; 0.49)	1.14 (0.80; 1.63)	
ARDS (Moderate ARDS vs. Not)	0.24 (0.02; 0.46)	1.27 (1.02; 1.58)	0.001
ARDS (Severe ARDS vs. Not)	0.41 (0.18; 0.65)	1.51 (1.19; 1.92)	
Gastrointestinal perforation (Yes vs. No)	0.30 (0.10; 0.50)	1.35 (1.10; 1.65)	0.004
Lung cancer (Yes vs. No)	0.62 (0.27; 0.97)	1.86 (1.31; 2.64)	<0.001
Metabolic/postanoxic encephalopathy (Yes vs. No)	0.48 (0.21; 0.75)	1.62 (1.23; 2.12)	<0.001
Spontaneous Intraparenchymal bleeding (Yes vs. No)	0.60 (0.38; 0.81)	1.82 (1.47; 2.25)	<0.001
Spontaneous Subarachnoid haemorrhage (Yes vs. No)	0.48 (0.20; 0.76)	1.61 (1.22; 2.13)	<0.001
Cardiac arrest (Yes vs. No)	0.30 (0.12; 0.48)	1.34 (1.12; 1.61)	0.001
Other disease (Yes vs. No)	-0.47 (-0.71;-0.22)	0.63 (0.49; 0.80)	<0.001
Comorbidities			
Dementia (Yes vs. No)	0.34 (0.16; 0.53)	1.41 (1.18; 1.69)	<0.001
Malignant haematological disease (Yes vs. No)	0.78 (0.59; 0.97)	2.19 (1.81; 2.65)	<0.001
Neurodegenerative/Neuromuscular disease (Yes vs. No)	0.43 (0.23; 0.64)	1.54 (1.26; 1.89)	<0.001
Peripheral vascular disease (Yes vs. No)	0.18 (0.06; 0.31)	1.20 (1.07; 1.36)	0.003
NYHA class II-III-IV (Yes vs. No)	0.24 (0.13; 0.35)	1.27 (1.14; 1.43)	<0.001
Tumour (Any tumour without metastasis vs. Not)	0.16 (0.03; 0.29)	1.17 (1.04; 1.33)	<0.001
Tumour (Metastatic cancer vs. Not)	1.13 (0.96; 1.31)	3.10 (2.60; 3.70)	
Severe COPD (Yes vs. No)	0.38 (0.22; 0.54)	/	×
Liver disease (Yes vs. No)	0.50 (0.32; 0.68)	1.65 (1.38; 1.96)	<0.001

(to be continued)

° For patients transferred to other ICU or to rehabilitation/high dependency care unit in other hospital, it is considered the outcome at the last hospital discharge.
× See interaction significance.
*** Monitoring/Weaning is equivalent to Cardiovascular failure: (None) and Respiratory failure: No.*

Organ failures			
GCS (3,4,5 vs. 15)	1.61 (1.40; 1.82)	/	×
GCS (6,Not evaluable in the first 24 hours in neurological patient* vs. 15)	1.11 (0.94; 1.28)	/	
GCS (7,8,9,10,11,12,Not evaluable in the first 24 hours in NON-neurological patient* vs. 15)	0.71 (0.60; 0.81)	/	
GCS (13,14 vs. 15)	0.12 (-0.01; 0.26)	/	
Worst pupils in the first 24 hrs. (Unilaterally dilated and non-reactive vs. Bilaterally reactive and/or miotic/Unavailable/Unassessable)	1.75 (1.12; 2.38)	/	×
Worst pupils in the first 24 hrs. (Bilaterally dilated and non-reactive vs. Bilaterally reactive and/or miotic/Unavailable/Unassessable)	3.34 (2.87; 3.80)	/	
Hepatic failure (Yes vs. No)	0.58 (0.15; 1.01)	1.79 (1.16; 2.76)	0.008
Cardiovascular failure (Anaphylactic shock/Neurogenic shock/Other shock vs. None)	0.40 (0.12; 0.69)	/	×
Cardiovascular failure (Without shock vs. None)	0.38 (0.10; 0.65)	/	
Cardiovascular failure (Septic shock vs. None)	0.21 (-0.16; 0.59)	/	
Cardiovascular failure (Haemorrhagic/hypovolemic shock/Hypovolemic shock vs. None)	0.19 (-0.10; 0.48)	/	
Cardiovascular failure (Cardiogenic shock/Mixed shock vs. None)	0.15 (-0.10; 0.40)	/	
Respiratory failure (Yes vs. No)	0.38 (0.24; 0.51)	/	×
Metabolic failure (Yes vs. No)	0.08 (-0.05; 0.21)	/	×
Renal failure (AKIN) (Moderate/Severe vs. None/Mild)	0.32 (0.14; 0.51)	/	×
Neurologic failure (Cerebral coma/Postanoxic coma vs. None/Metabolic coma/Unassessable)	0.34 (0.19; 0.50)	1.41 (1.21; 1.64)	<0.001
Neurologic failure (Toxic coma vs. None/Metabolic coma/Unassessable)	-1.15 (-1.85;-0.46)	0.32 (0.16; 0.63)	
Surgical and non surgical procedures			
Nephro/Urological surgery (Yes vs. No)	-0.54 (-0.80;-0.28)	0.58 (0.45; 0.76)	<0.001
Interactions among independent variables			
Cardiovascular failure × Respiratory failure	0.05 (-0.17; 0.27)	1.06 (0.85; 1.32)	<0.001
Worst pupils in the first 24 hrs. (Unilaterally dilated and non-reactive) × Admitted in hospital the same day of ICU admission	-2.01 (-3.81;-0.22)	0.13 (0.02; 0.80)	<0.001
Worst pupils in the first 24 hrs. (Unilaterally dilated and non-reactive) × $\log_e$(Stay before ICU (days) + 1/24)	-0.56 (-0.97;-0.16)	0.57 (0.38; 0.85)	<0.001
Worst pupils in the first 24 hrs. (Bilaterally dilated and non-reactive) × PaO2/FiO2 (100*mmHg/%) (<200)	-1.05 (-1.82;-0.29)	0.35 (0.16; 0.75)	<0.001
Renal failure (AKIN) (Moderate/Severe) × Infection severity on admission (Infection without sepsis/Sepsis/Septic shock)	-0.42 (-0.60;-0.24)	0.66 (0.55; 0.79)	<0.001
Severe COPD × Cardiovascular failure (Without shock)	-0.54 (-1.01;-0.07)	0.58 (0.36; 0.94)	<0.001
Urine Output (L/24h) (<0.5) × GCS (15)	-0.55 (-0.77;-0.33)	0.58 (0.46; 0.72)	<0.001
Worst pupils in the first 24 hrs. (Bilaterally dilated and non-reactive) × Acute intoxication	-2.08 (-3.80;-0.36)	0.12 (0.02; 0.70)	<0.001
Ward of admission: Medical ward/High dependency care unit) × GCS (3,4,5)	-0.65 (-1.00;-0.29)	0.52 (0.37; 0.74)	<0.001
Creatinine (mg/dl) (>=5) × Cardiovascular failure (Septic shock/Cardiogenic shock/Mixed shock)	0.48 (0.09; 0.88)	1.62 (1.09; 2.41)	<0.001
WBC (10^9/L) (>=20) × Platelets (10^3/mm3) (<=150)	-0.31 (-0.53;-0.10)	0.73 (0.59; 0.91)	<0.001
Metabolic failure × Renal failure (AKIN) (Moderate/Severe)	0.23 (0.04; 0.42)	1.26 (1.04; 1.53)	<0.001
Creatinine (mg/dl) (>=5) × Admitted in hospital the same day of ICU admission	-0.62 (-1.00;-0.24)	0.54 (0.37; 0.78)	<0.001
Monitoring/Weaning: Non surgical interventions × GCS (15)	-0.96 (-1.70;-0.22)	0.38 (0.18; 0.80)	<0.001
Cardiovascular failure (Without shock) × Systolic Blood Pressure (mmHg) (<100)	-0.47 (-0.74;-0.20)	0.63 (0.48; 0.82)	<0.001
Systolic Blood Pressure (mmHg) (<100) × Cardiovascular failure (Septic shock/Haemorrhagic/hypovolemic shock/Hypovolemic shock)	-0.26 (-0.50;-0.02)	0.77 (0.61; 0.98)	<0.001
Metabolic failure × Surgical status (Elective surgical/Emergency surgical)	0.22 (0.05; 0.39)	1.24 (1.05; 1.47)	<0.001
Cardiovascular failure × Respiratory failure × PaO2/FiO2 (100*mmHg/%) (<200)	-0.26 (-0.42;-0.10)	0.77 (0.65; 0.91)	<0.001
Monitoring/Weaning × Trauma: Chest	-1.02 (-1.88;-0.16)	0.36 (0.15; 0.85)	<0.001

Dependent variable explained

Likelihood Ratio Test:	11800
Degree of freedom:	97
p-value:	<0.0001

Goodness-of-fit

Area under the ROC curve:	0.893
GiViTI Calibration Test:	0.247
p-value:	0.619
Polynomial Degree:	2

** A neurological patient is a one with an altered consciousness, probably due to a direct brain injury. It is defined by the presence of at least one of these clinical conditions on admission: Cerebral artery stroke, Vertebral basilar ischemic stroke, Intracranial hypertension, Spontaneous Hydrocephalus, Non traumatic cerebral oedema, Metabolic/postanoxic encephalopathy, Seizures, Brain tumour, Cerebral Aneurysm, AVM (ArterioVenous Malformation), Chronic Subdural haematoma, Spontaneous Subarachnoid haemorrhage, Spontaneous Intraparenchymal bleeding, CNS degenerative disease, Brain and skull malformations, Cerebral contusion/laceration, Traumatic diffuse injury without oedema, Traumatic diffuse injury with oedema, Extradural/epidural haematoma, Traumatic Subdural haematoma, Traumatic intraparenchymal bleeding, Traumatic subarachnoid haemorrhage, Skull fracture, NON-surgical CNS infection, Post-surgical CNS infection, Ventriculostomy-related CNS infection.*

× *See interaction significance.*

*** Monitoring/Weaning is equivalent to Cardiovascular failure: (None) and Respiratory failure: No.*

National report for general ICUs - **Year 2022**
Validity of the models - Calibration belts

The calibration belt is designed to compare actually observed mortality with expected mortality according to a given prediction model. Expected mortality is plotted on the x axis while observed mortality is plotted on the y-axis. Two overlapping belts are presented in each graph: the first, in light grey, with a confidence level of 80%, and the second, in dark grey, with a confidence level of 95%. The belt lying above the bisector indicates that observed mortality is higher than expected mortality; vice versa, the belt lying below the bisector indicates that observed mortality is lower than expected mortality. The belt is plotted in the range of expected mortality values actually present in the sample under study. The higher the polynomial, the more complex the relationship between expected and observed mortality. A significant test ($p<0.05$) indicates poor calibration.

These pages show the calibration belts built on 2022 data using PIM 2, PIM 3, PELOD, SAPSII, and GiViTI 2022 prognostic model. The latter is reported for the overall population and also the subgroups presented in the report. Patients with valid data for the model were splitted in two subgroups in order to build the model on the first one (training set) and to validate it on the second one (validation set).

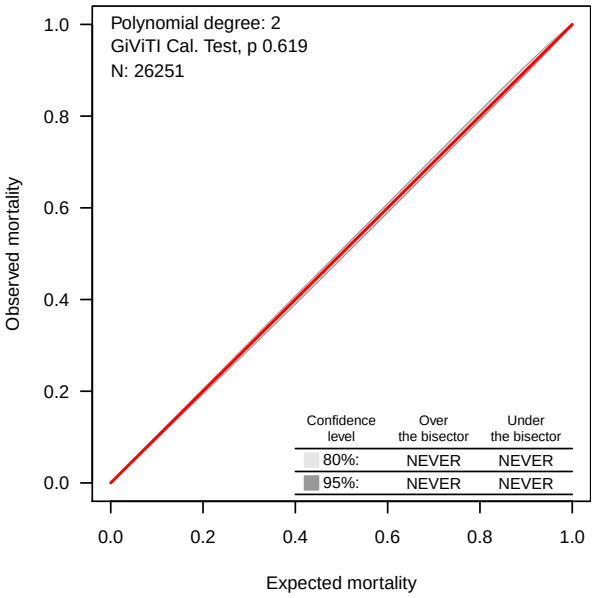
These belts serve as a representation of the validity of the models used to evaluate the performance of each ICU. A model is well calibrated, and thus a useful tool for evaluating individual departments, when the bisector is fully included in the belt. Only when this occurs can a deviation from the bisector be attributed to local factors and not to poor calibration of the model. Poor calibration is clearly visible for SAPSII and, accordingly, this should be used with caution to assess the performance of individual ICUs.

The calibration belts built by applying the GiViTI 2021 model to the data of 2022 NON-COVID patients and applying the GiViTI 2020 COVID model to the data of 2022 COVID patients are also shown. The aim of these belts is to investigate 2021 to 2022 difference in terms of performance of the GiViTI general ICUs.

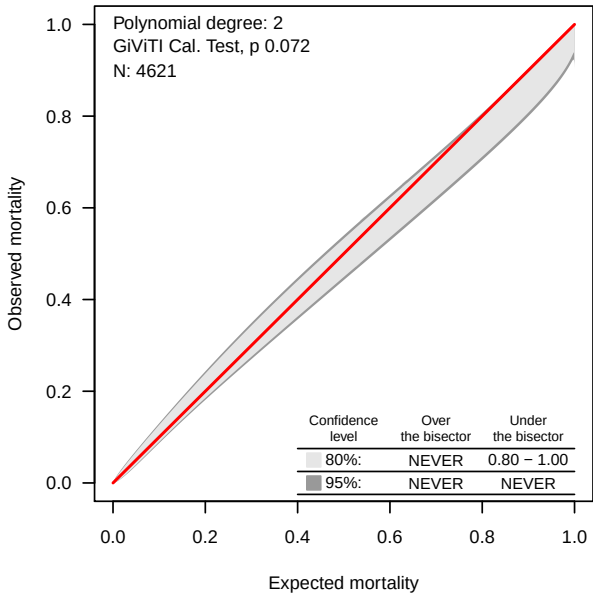
For further informations please look at [PLoS ONE 6(2): e16110].

National report for general ICUs - Year 2022
Validity of the models - Calibration belts

Predictive model: GiViTI 2022 (training set)

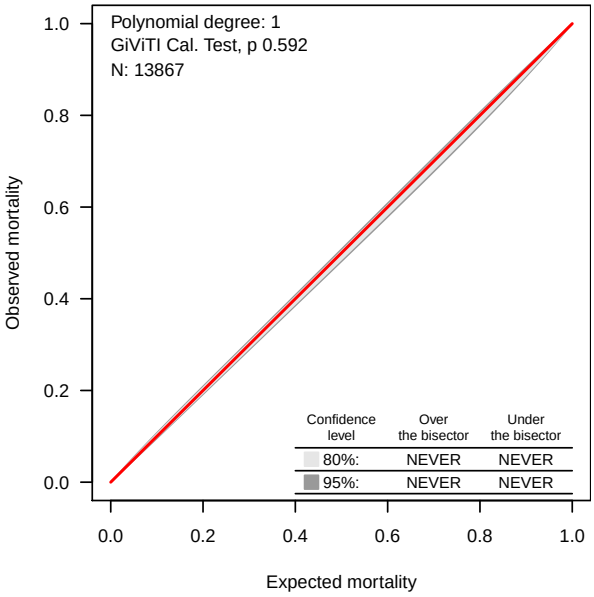


Predictive model: GiViTI 2022 (validation set)

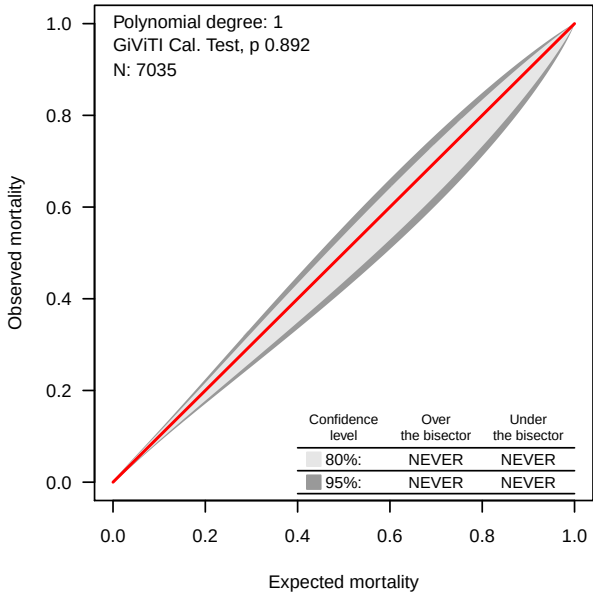


UNIFORMITY OF FIT

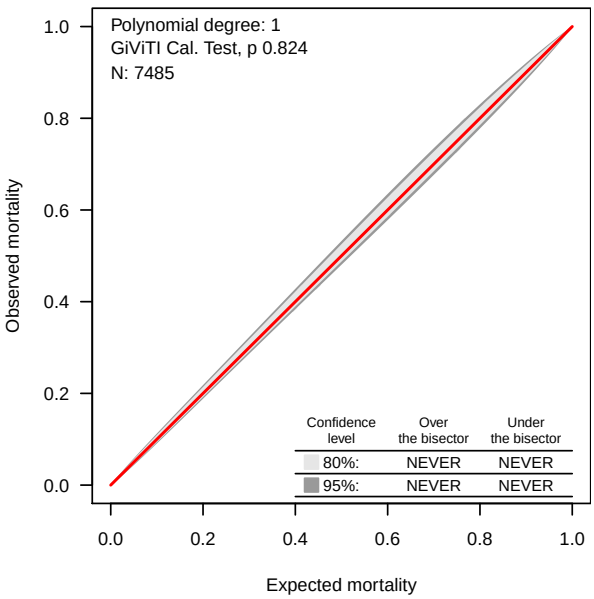
Predictive model: GiViTI 2022
Non surgical (only NON−COVID patients)



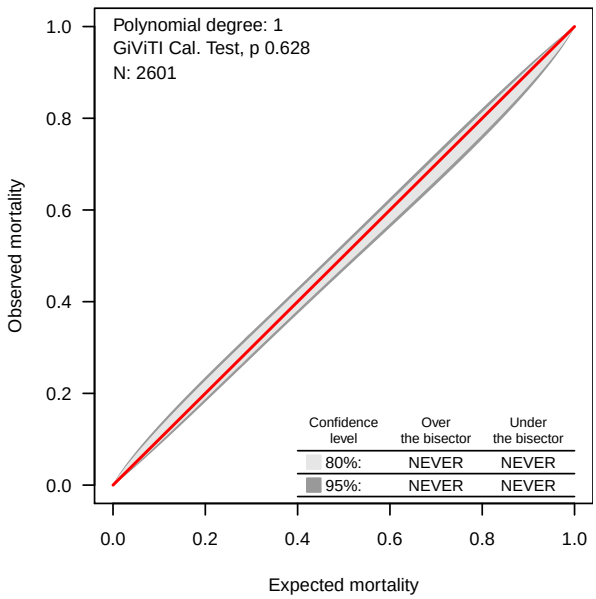
Predictive model: GiViTI 2022
Elective surgical (only NON−COVID patients)



Predictive model: GiViTI 2022
Emergency surgical (only NON−COVID patients)



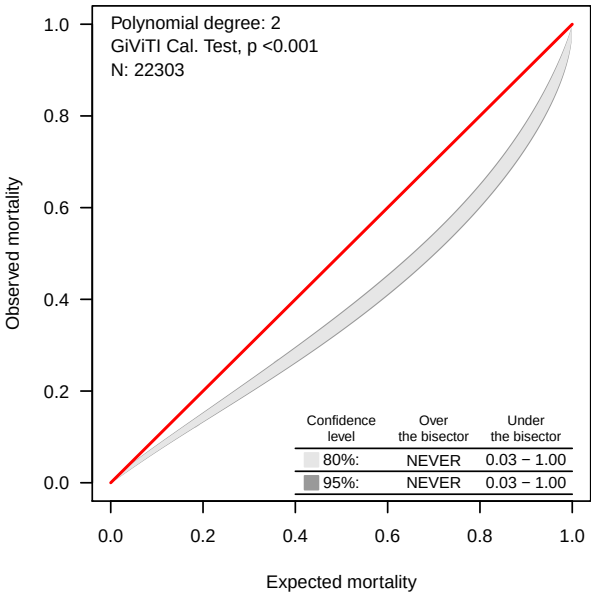
Predictive model: GiViTI 2022
Only COVID patients



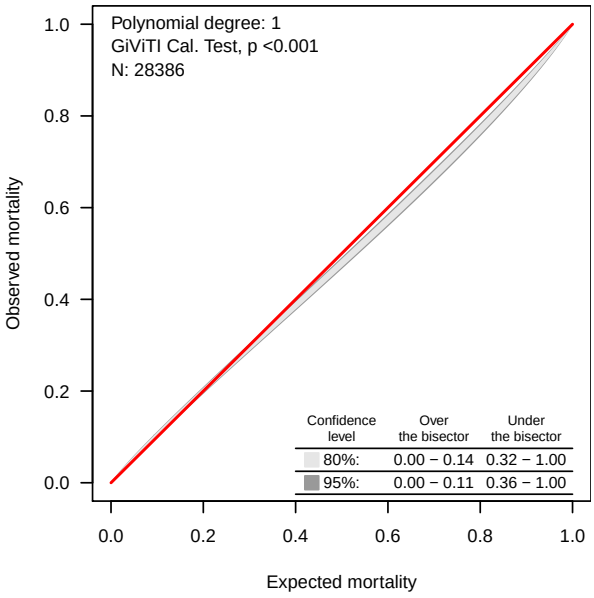
National report for general ICUs - Year 2022
Validity of the models - Calibration belts

EXTERNAL SCORE

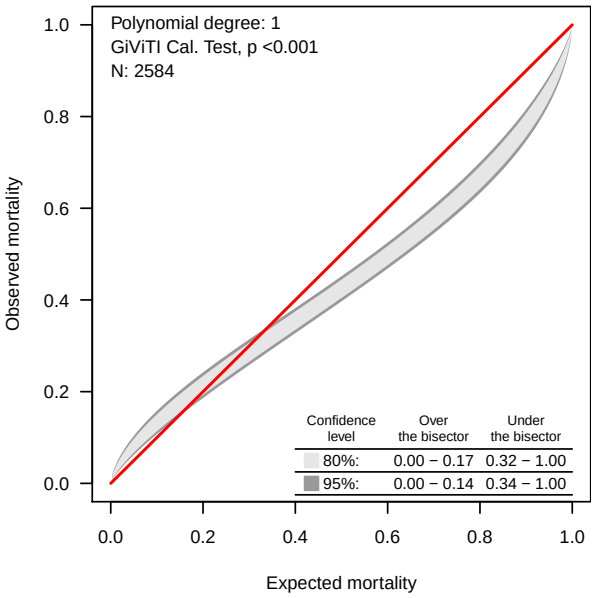
Predictive model: SAPSII



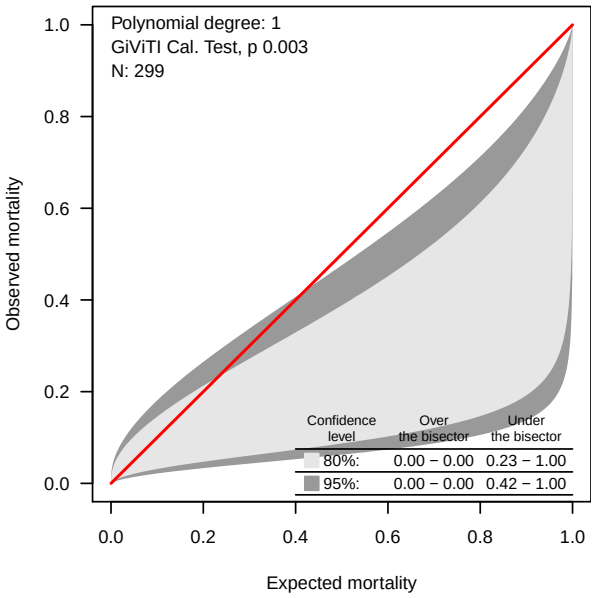
Predictive model: GiViTI 2021 (only NON−COVID patients)



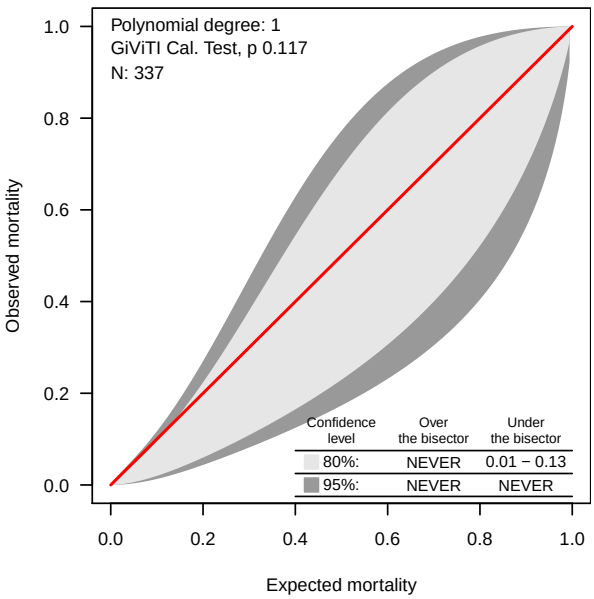
Predictive model: GiViTI 2020 COVID (only COVID patients)



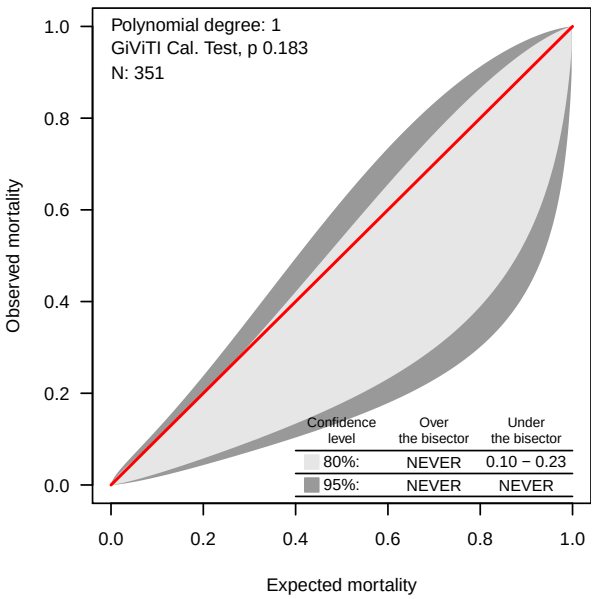
Predictive model : PELOD



Predictive model: PIM2



Predictive model: PIM3



Coauthors

ABASCIÀ ARIANNA (TORINO - TO), ADORNI ADELE (COMO - CO), AGOSTINI FULVIO (TORINO - TO), ALBORGHETTI ARMANDO (PONTE SAN PIETRO - BG), ALESSANDRO GATTA (RICCIONE - RN), ALQUATI OMAR (CREMA - CR), AMADORI CARLO (CECINA - LI), ANTONINI BENVENUTO (MANERBIO - BS), AVALLI LEONELLO (MONZA - MB), BABINI MARIA (LUGO - RA), BAGALINI GIAMPIERO (FERMO - FM), BALATA ANDREA (SASSARI - SS), BARATTINI MASSIMO (FIRENZE - FI), BARBAGALLO MARIA (PARMA - PR), BARBERI ELISA (MASSA - MS), BARBONI ELISABETTA (FIRENZE - FI), BASSI GIOVANNI (MASSA - MS), BASSO MARCO (TORINO - TO), BELLANI GIACOMO (TRENTO - TN), BELLONZI ALESSANDRA (FERRARA - FE), BENDINELLI MATTEO (PISTOIA - PT), BENSI MARCO (TORTONA - AL), BERRUTO FRANCESCO (ORBASSANO - TO), BERTAZZOLI ALBERTO (BRESCIA - BS), BERTOLINI ROBERTA (PISA - PI), BERTONE STEFANIA (CHIVASSO - TO), BONATO VALERIA (ALESSANDRIA - AL), BONCRISTIANO DANIELA MONIQUE (TORINO - TO), BONICALZI VINCENZO (TORINO - TO), BONIOTTI CORINNA (BRESCIA - BS), BONIZZOLI MANUELA (FIRENZE - FI), BONUCCI PAOLA (SIENA - SI), BOTTAZZI ANDREA (PAVIA - PV), BRESADOLA FRANCESCA (BENTIVOGLIO - BO), BRIZIO ELISABETTA (SAVIGLIANO - CN), BRUZZONE CRISTINA (LAVAGNA - GE), BUSCAGLIA GIUSEPPE (GENOVA - GE), CALICCHIO GIUSEPPE (SALERNO - SA), CALZOLARI ALESSANDRO (LEGNANO - MI), CALZOLARI ALESSANDRO (LEGNANO - MI), CAPITANIO GUIDO (PALERMO - PA), CAPRA CARLO (MAGENTA - MI), CARACCIOLO ADALGISA (BARI - BA), CARIA FEDERICO CARLO (MONTEBELLUNA - TV), CASALINI PIERPAOLO (FAENZA - RA), CASALIS MICHELE (PIOMBINO - LI), CASTELLI GIAN PAOLO (MANTOVA - MN), CENTANARO MONICA (GENOVA - GE), CIANI ANDREA (PESCIA - PT), CICERI RITA (LECCO - LC), CINGOLANI EMILIANO (ROMA - RM), COCCIOLO FRANCESCO (CESENA -), COCCO LIVIO (ARIANO IRPINO - AV), CURTO FRANCESCO CURTO (MILANO - MI), DAL CERO PAOLO (CONEGLIANO - TV), DE CRISTOFARO ANNA (PESARO - PU), DE LUCA ALESSANDRA (FIRENZE - FI), DE LUCIA MARTA (PONDERANO - BI), DE MASI FRANCESCO (PISA - PI), DELLA SELVA ANDREA (VERDUNO - CN), DI PASQUALE DINO AURELIO CLETO (PONTEDERA - PI), FABI MARIA CRISTINA (FANO - PU), FALINI STEFANO (GROSSETO - GR), FANFANI ELENA (FIRENZE - FI), FARALDI LOREDANA (MILANO - MI), FERRUCCI GIULIA (CENTO - FE), FIOCCA FEDERICO (BRESCIA - BS), FIORE GILBERTO (MONCALIERI - TO), FORFORI FRANCESCO (PISA - PI), FRACCARO MARIA GIOVANNA (CITTADELLA - PD), FRUGIUELE JACOPO (BAGHERIA - PA), GALANTE DARIO (CERIGNOLA - FG), GALLO MAURO (TORINO - TO), GAVINELLI VERONICA (BORGOMANERO - NO), GIACOMINI MATTEO (OSIO SOTTO - BG), GIANNI MASSIMO (AOSTA - AO), GIRARDIS MASSIMO (MODENA - MO), GIUDICI RICCARDO (MILANO - MI), GIUGNI AIMONE (BOLOGNA - BO), GIUNTINI ROMANO (EMPOLI - FI), GIUNTOLI MONICA (LIVORNO - LI), GUADAGNUCCI ALBERTO (MASSA - MS), GUAGLIARDI CLEMENTINA (GALLARATE - VA), GUFFANTI ELENA ANGELA AUGUSTA (MILANO - MI), JORIO ANTONELLA (JESI - AN), LAICI CRISTIANA (BOLOGNA - BO), LAMBORGHINI SARA (FERRARA - FE), LANZA MARIA CONCETTA (FORLÌ - FC), LEPROTTI ELENA (TRENTO - TN), LOMAGISTRO MARINA (SAN GIOVANNI ROTONDO -), MADEIRA SUSANA MONICA (BIBBIENA - AR), MAIO MARIELLA (TORINO - TO), MANNOLINI GIOVANNI (PONTREMOLI - MS), MARICONTI LAURA (LODI - LO), MARINI FEDERICA (POGGIBONSI - SI), MARTINELLI PAOLO (FIRENZE - FI), MARZULLO ANTONELLA (TORINO - TO), MASTROIANNI ALESSANDRO (CHIERI - TO), MELIS MARTINA (OLBIA - OT), MERETO NADIA (GENOVA - GE), MICHELI FABIO (BERGAMO - BG), MONTILLO GERARDO (ROSSANO - CS), MORELLI SANDRO MORELLI (TERNI - TR), MORIGI ARISTIDE (BOLOGNA - BO), MOROSINI PAOLO (FABRIANO - AN), MUTTINI STEFANO (MILANO - MI), NARDIN GIORDANO (TARANTO - TA), NARDINI MASSIMILIANO (LIDO DI CAMAIORE - LU), NASCIMBEN ENNIO (TREVISO - TV), NEGRO GIANCARLO (SANNICOLA - LE), NONINI SANDRA (MILANO - MI), NUCCI MARIA LETIZIA (SIENA - SI), OLIVIERI MARIA CANDIDA (AREZZO - AR), PARACCHINI SIMONE (LUCCA - LU), PARNIGOTTO ALESSANDRA (MONSELICE - PD), PARRINI VIERI (BORGO SAN LORENZO - FI), PASETTI GIOVANNI STEFANO (ORBETELLO - GR), PAVONI VITTORIO (BAGNO A RIPOLI - FI), PEDEFERRI MATTEO (MERATE - LC), PELLICIOLI ISABELLA (BERGAMO - BG), PERINO BERT PAOLO (TORINO - TO), PERO ALICE (VERCELLI - VC), PESSANO PAOLO (TRENTO - TN), PETA MARIO (TREVISO - TV), PETRUCCI NICOLA (DESENZANO DEL GARDA - BS), PEYRONEL CRISTINA (PINEROLO - TO), PICCIRILLO FABIO (ROZZANO - MI), PIERELLI DANIELE (NOVARA - NO), PINTUCCI RITA (MILANO - MI), POOLE DANIELE (BELLUNO - BL), RECH ALESSANDRO (VARESE - VA), RIGHINI ERMINIO (LAGOSANTO - FE), RIZZI TATIANA (RHO - MI), RONA ROBERTO (MONZA - MB), ROSANÒ ELISABETTA (ANCONA - AN), ROTICIANI VALERIA (MONTEVARCHI - AR), RUGGERI PATRIZIA (CREMONA - CR), SABBATINI GIOVANNI (CINISELLO BALSAMO - MI), SALVI GIOVANNI (IMPERIA - IM), SAVIOLI MONICA (MILANO - MI), SELVAGGI PAOLA (TORINO - TO), SOLDÀ PAOLA ROSA (DOMODOSSOLA - VB), TENIO RITA (MONDOVI - CN), TINI LAURA (VENEZIA - VE), TINTORI DAVIDE (BRESCIA - BS), TURCHET FEDERICA (CASTELFRANCO VENETO - TV), TURRIZIANI ILARIA (BOLOGNA - BO), UGOLINI ANDREA (NEGRAR - VR), VACCARI CATERINA (NOVI LIGURE - AL), VANZINO ROMANO (VIGEVANO - PV), VLASSICH FRANCESCA (PORTO VIRO - RO), VOTO GIULIANA (CASTELLAMMARE DI STABIA), ZAMPERONI ANNA (TREVISO - TV), ZANI GIANLUCA (RAVENNA - RA), ZAPPA SERGIO (BRESCIA - BS), ZOMPANTI VALERIA

(MACERATA - MC).