GiViTI

Gruppo Italiano per la Valutazione degli Interventi In Terapia Intensiva

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Report
PROSAFE project

Year 2023

National report for general ICUs (124 ICUs)

ITALY

PROSAFE project - **National report for general ICUs** (124 ICUs)
July 2024

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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 2023 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 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 NA 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 65507 patients admitted to intensive care during 2023.

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 2023 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 2023 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.

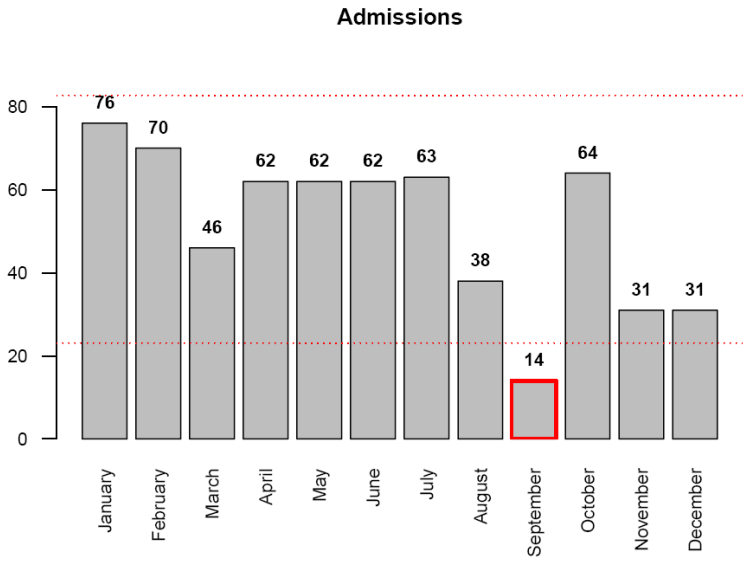
To more clearly illustrate the selection methods used in the choice of valid data, we present an extract from the data validity report of a randomly selected, anonymized ICU.

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.

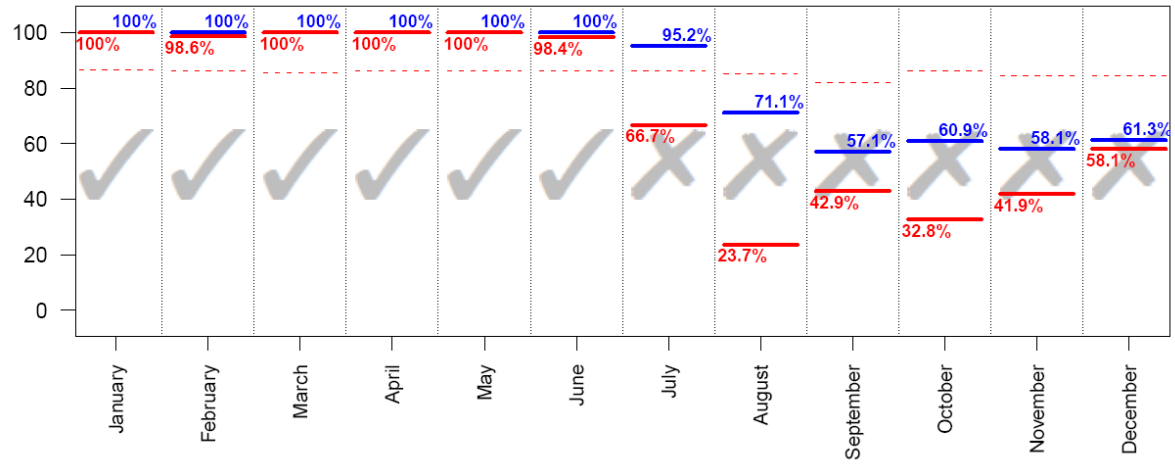
The second table divides the recruited patients by admission month and form completion status. Overall, the ICU in

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:

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

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:

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

where

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

PELOD The PELOD score for individual pediatric patients can become the probability of dying in ICU. This is

performed by the following formula:

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

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:

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

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 2023	Last hospital mortality
	GiViTI 2022	Last hospital mortality
	SAPS II	Hospital mortality
Pediatric	PIM 3	ICU mortality
	PIM 2	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.

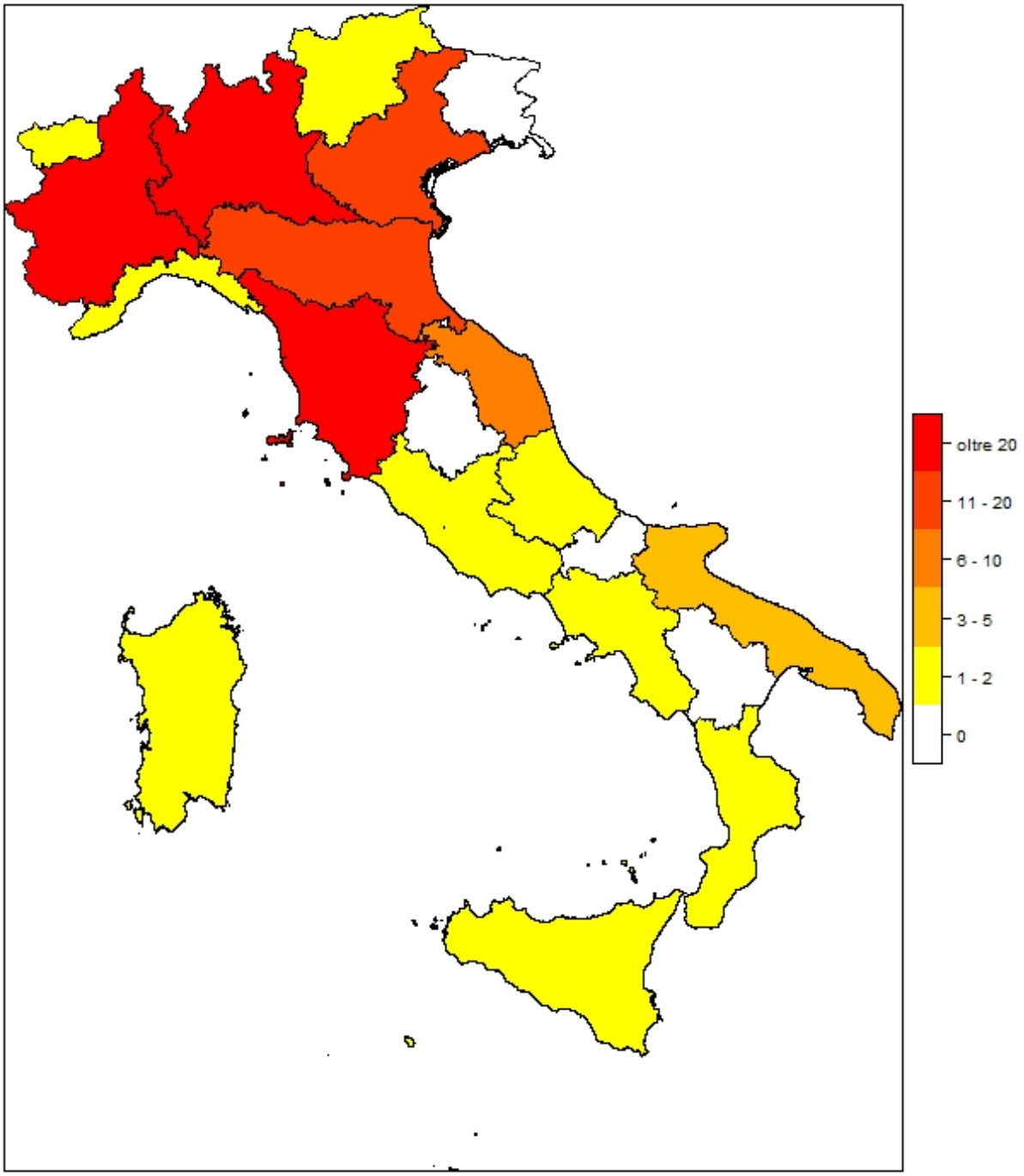
Statistics

National report for general ICUs - Year 2023
Project participation*

	TYPE							
Nation	General	Cardiosurgical	Surgeries and Transplants	Neurosurgical	Pediatrics	HDC	Other	**Total**
Greece					1 ICUs 184 patients			**1 ICUs** **184 patients**
Hungary				1 ICUs 323 patients				**1 ICUs** **323 patients**
Italy	**124 ICUs** **45263 patients**	14 ICUs 8930 patients	7 ICUs 3523 patients	8 ICUs 3472 patients	3 ICUs 1062 patients	1 ICUs 784 patients	2 ICUs 818 patients	**159 ICUs** **63852 patients**
Slovenia	1 ICUs 436 patients		2 ICUs 497 patients				1 ICUs 215 patients	**4 ICUs** **1148 patients**
Total	**125 ICUs** **45699 patients**	**14 ICUs** **8930 patients**	**9 ICUs** **4020 patients**	**9 ICUs** **3795 patients**	**4 ICUs** **1246 patients**	**1 ICUs** **784 patients**	**3 ICUs** **1033 patients**	**165 ICUs** **65507 patients**

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

Location of Italian participating ICUs (N=124)
ICUs per region



Region	N	%
Abruzzo	1	0.8
Basilicata	0	0
Calabria	1	0.8
Campania	1	0.8
Emilia Romagna	14	11.3
Friuli Venezia Giulia	0	0
Lazio	1	0.8
Liguria	2	1.6
Lombardia	27	21.8
Marche	7	5.6
Molise	0	0
Piemonte	25	20.2
Puglia	3	2.4
Sardegna	1	0.8
Sicilia	1	0.8
Toscana	26	21
Trentino Alto Adige	1	0.8
Umbria	0	0
Valle d'Aosta	1	0.8
Veneto	12	9.7

Geographical area	N	%
Northern Italy	82	66.1
Central Italy	35	28.2
Southern Italy	7	5.6

Description of hospitals (N=124) - **Year 2023**

Number of beds in hospital	N	%
< 300 beds	55	44.4
300 - 800 beds	58	46.8
> 800 beds	11	8.9
Missing	0	

Type of ICUs present in hospital	N	%
General	124	100.0
Medical	1	0.8
Surgical	6	4.8
Neurological/neurosurgical	12	9.7
Cardiosurgical	23	18.5
Burns	5	4.0
Post-transplantations	4	3.2
Other	29	23.4

Type of subICUs present in hospital	N	%
General	25	20.2
Surgical	6	4.8
Cardiological	89	71.8
Respiratory	27	21.8
Neurological (stroke unit)	57	46.0
Other	21	16.9

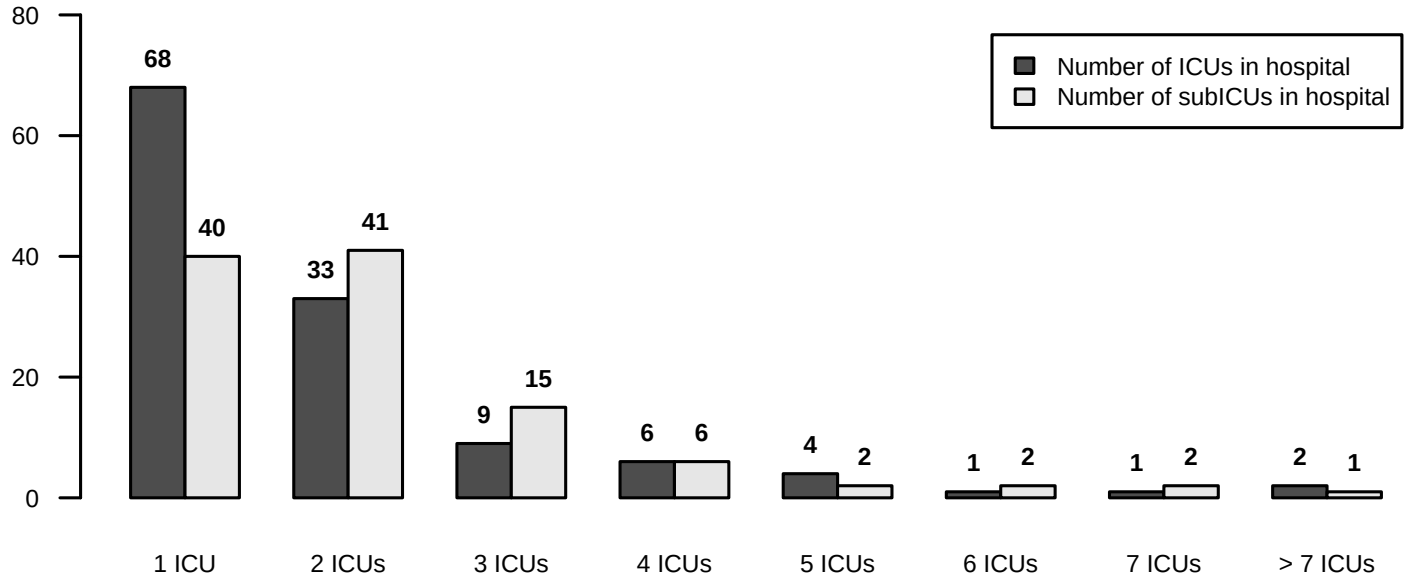
Non surgical specialties	N	%
Cardiology	119	96.0
Pulmonology	67	54.0
Nephrology	98	79.0
Infection disease	45	36.3
Pediatric	94	75.8
Neonatology	68	54.8
Neurology	90	72.6
Haematology	47	37.9
Emergency room	123	99.2
Traumatology	90	72.6
Emergency medical	74	59.7

Surgical specialties (independent ward)	N	%
Neurosurgery	36	29.0
Cardiosurgery	25	20.2
Major vascular surgery	53	42.7
Thoracic surgery	36	29.0
Pediatric surgery	17	13.7
Transplantation activities	12	9.7

Surgical specialties (procedures only)	N	%
Neurosurgery	8	6.5
Cardiosurgery	3	2.4
Major vascular surgery	15	12.1
Thoracic surgery	28	22.6
Pediatric surgery	26	21.0
Transplantation activities	14	11.3

Services/activities available in H (h24)	N	%
Neuroradiology	51	41.1
Interventional neuroradiology	34	27.4
Interventional vascular radiology	44	35.5
CT scan	123	99.2
MRI	58	46.8
Interventional hemodynamic	72	58.1
Endoscopy	84	67.7
Bronchoscopy	46	37.1
Hyperbaric chamber	8	6.5

Services/activities available in H (rep.)	N	%
Neuroradiology	8	6.5
Interventional neuroradiology	5	4.0
Interventional vascular radiology	26	21.0
CT scan	0	0.0
MRI	54	43.5
Interventional hemodynamic	8	6.5
Endoscopy	40	32.3
Bronchoscopy	50	40.3
Hyperbaric chamber	0	0.0



Description of ICUs (N=124) - **Year 2023**

Number of activable beds	
Mean (SD)	9.8 (5.7)
Median (Q1−Q3)	8.1 (6−12)
Missing	0

Number of beds declared to hospital	
Mean (SD)	8.7 (3.9)
Median (Q1−Q3)	8 (6−10.1)
Missing	0

University affiliation	N	%
Yes	57	46.0
No	67	54.0
Missing	0	

Square meter per bed	
Mean (SD)	15.0 (8.6)
Median (Q1−Q3)	12.6 (9−18)
Missing	0

Clinical psychologist	N	%
No	83	66.9
For relatives	38	30.6
For patients	36	29.0
For personnel	23	18.5

ICU Structure	N	%
NON OPEN-SPACE	61	49.2
OPEN-SPACE (or alike)	63	50.8
Missing	0	

Physicians	N	%
Dedicated to ICU only	21	16.9
Dedicated to ICU on a rotation basis	20	16.1
Dedicated to ICU only and on a rotation basis	83	66.9
Missing	0	

Declared beds per physician (average)	
Mean (SD)	4.5 (1.6)
Median (Q1−Q3)	4.3 (3.3−5.5)
Missing	1

Nurses	N	%
Dedicated to ICU only	81	65.3
Dedicated to ICU on a rotation basis	5	4.0
Dedicated to ICU only and on a rotation basis	38	30.6
Missing	0	

Declared beds per nurse (average)	
Mean (SD)	2.1 (0.4)
Median (Q1−Q3)	2 (1.8−2.3)
Missing	0

Number of hours conceeded for relatives' visits	N	%
0-1	21	16.9
2	17	13.7
3-4	20	16.1
5-12	58	46.8
13-20	2	1.6
>20	6	4.8
Missing	0	

Maximum number of visitors per patient	N	%
One	65	52.4
Two	55	44.4
Three or more	4	3.2
Missing	0	

Biomedical devices per declared bed	Median	Q1-Q3	<5 Years (mean %)
Total available monitors (excluding those dedicated to transport)	1.2	1.0−1.7	70.2
of which only for basic monitoring (without transducers detection of invasive pressure, pic, pvc, ...)	0.0	0.0−0.0	64.0
Invasive monitoring of cardiac output (Swan-Ganz)	0.1	0.0−0.2	71.8
Invasive monitoring of cardiac output (PiCCO)	0.2	0.1−0.3	74.9
Invasive monitoring of cardiac output (Vigileo)	0.1	0.0−0.2	71.1
Non-invasive monitoring of cardiac output (impedentiometry)	0.0	0.0−0.1	87.9
Defibrillators	0.3	0.2−0.4	75.1
Both invasive and non invasive ventilators	1.4	1.1−1.8	76.3
Non invasive ventilators	0.0	0.0−0.3	77.9
Syringe pumps	6.0	4.0−8.0	80.8
Peristaltic pumps	2.5	1.5−3.6	82.2

Biomedical equipment in ICU	N	%
Transoesophageal echo	53	42.7
Basic ultrasounds	124	100.0
Advanced ultrasounds	116	93.5
Blood-gas analyzer	124	100.0
Haemodialysis - Haemofiltration	111	89.5
Transport ventilator	123	99.2
Fiberscope	124	100.0
Extracorporeal circulation system	27	21.8

Routine microbiological surveillance cultures	N	%
Yes	120	96.8
No	4	3.2
Missing	0	

Description of ICUs (N=124) - **Year 2023**

Patients admitted	
Mean (SD)	374.8 (230.0)
Median	316.9
Q1−Q3	224.6−436.2
Missing	5

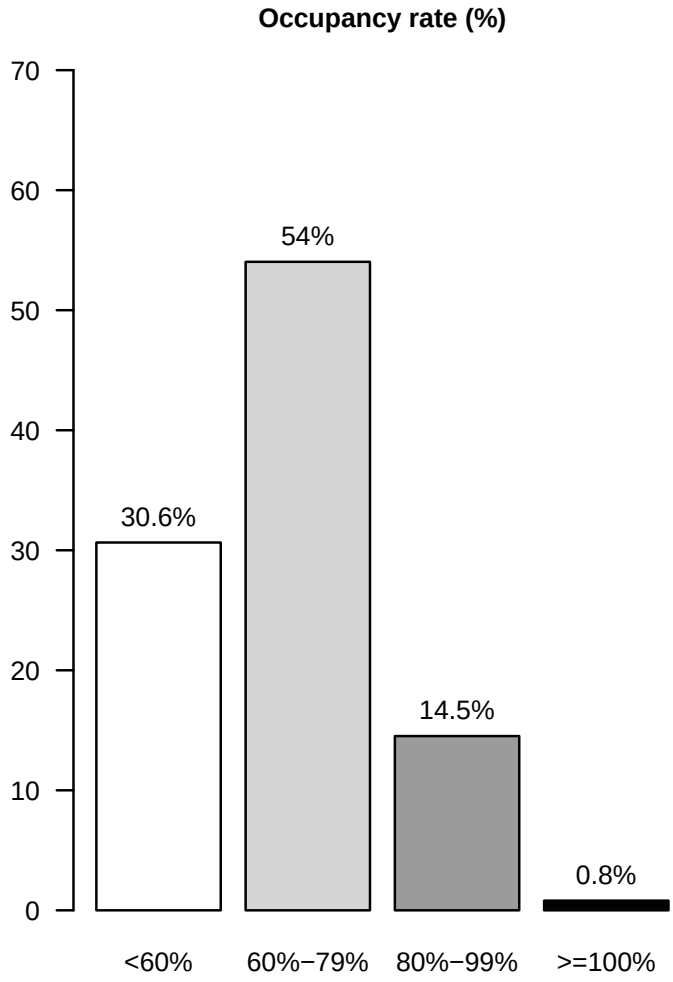
Occupancy rate (%)	
Mean (SD)	68.6 (13.1)
Median	67.7
Q1−Q3	59.2−77.2
Missing	5

Rotation index (patients/bed)	
Mean (SD)	42.1 (13.2)
Median	42.4
Q1−Q3	31.8−49.5
Missing	5

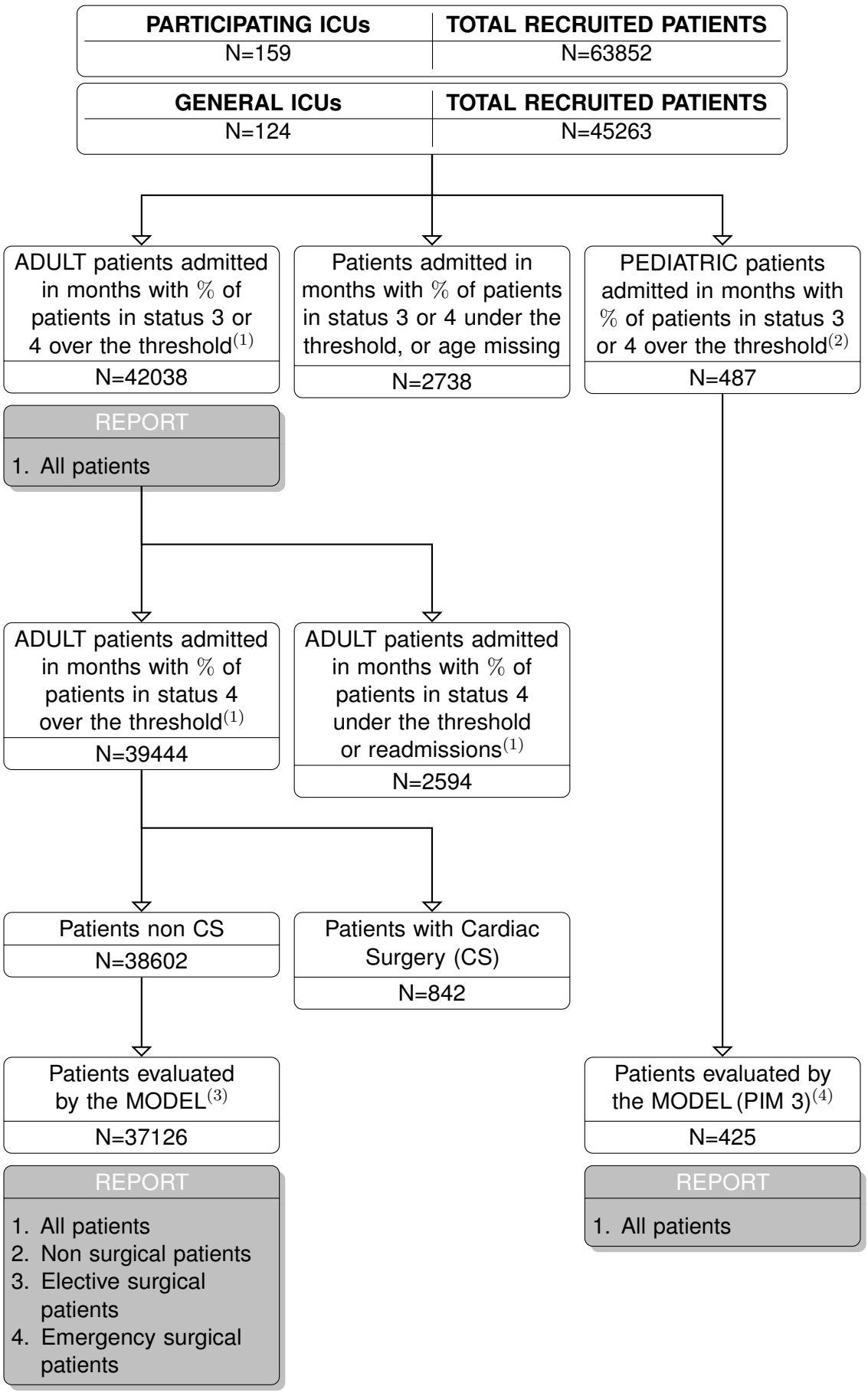
Turnover (hours)	
Mean (SD)	74.1 (45.3)
Median	69.1
Q1−Q3	43.5−89.4
Missing	5

Occupied beds per physician (average)	
Mean (SD)	3.0 (1.1)
Median	2.9
Q1−Q3	2.1−3.6
Missing	1

Occupied beds per nurse (average)	
Mean (SD)	1.4 (0.3)
Median	1.3
Q1−Q3	1.1−1.6
Missing	0



National report for general ICUs (124 ICUs) - **Year 2023**
Study flow-chart



(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) Patients transferred to other ICU are excluded.

National report for general ICUs - **Year 2023**
Characteristics on admission - Adult patients

Patients (N): 42038

Sex	N	%
Male	25362	60.3
Female	16671	39.7
Missing	5	

Age (years)	N	%
17-45	4756	11.3
46-65	12321	29.3
66-75	11233	26.7
>75	13728	32.7
Missing	0	
Mean	66.1	
SD	16.0	
Median	70	
Q1−Q3	57−78	
Min−Max	17−101	

Body mass Index (BMI)	N	%
Underweight	2378	5.7
Normal	18579	44.8
Overweight	12604	30.4
Obese	7933	19.1
Missing	544	

Pregnancy status **Females** (N=16671)	N	%
Not fertile	8516	51.3
Not pregnant/Unknown	7719	46.5
Currently pregnant	59	0.4
Post partum	301	1.8
Missing	76	

Comorbidities	N	%
No	5791	13.8
Yes	36063	86.2
Missing	184	

Comorbidities (top 10)	N	%
Hypertension	22554	53.9
Arrhythmia	6628	15.8
Diabetes Type II without insulin tr.	5952	14.2
Moderate COPD	4996	11.9
Any tumour without metastasis	4821	11.5
Myocardial infarction	4667	11.2
Peripheral vascular disease	4047	9.7
Cerebrovascular disease	3726	8.9
Moderate or severe renal disease	3658	8.7
NYHA class II-III	3630	8.7
Missing	184	

Stay before ICU (days)	
Mean	4.3
SD	11.7
Median	1
Q1−Q3	0−3
Missing	186

Source of admission	N	%
Same hospital	37614	89.8
Other hospital	4122	9.8
Long-term chronic care hospital	158	0.4
Directly from the community	2	0.0
Missing	142	

Ward of admission **Hospital** (N=41736)	N	%
Medical ward	5621	13.5
Surgical ward	17072	40.9
Emergency room	15624	37.4
Other ICU	2358	5.6
High dependency care unit	1061	2.5
Missing	0	

Reason for transfer from **Other ICU** (N=2358)	N	%
Specialist expertise	625	26.5
Step-up care	384	16.3
Logistical/organizational reasons	1270	53.9
Step-down care	76	3.2
Missing	3	

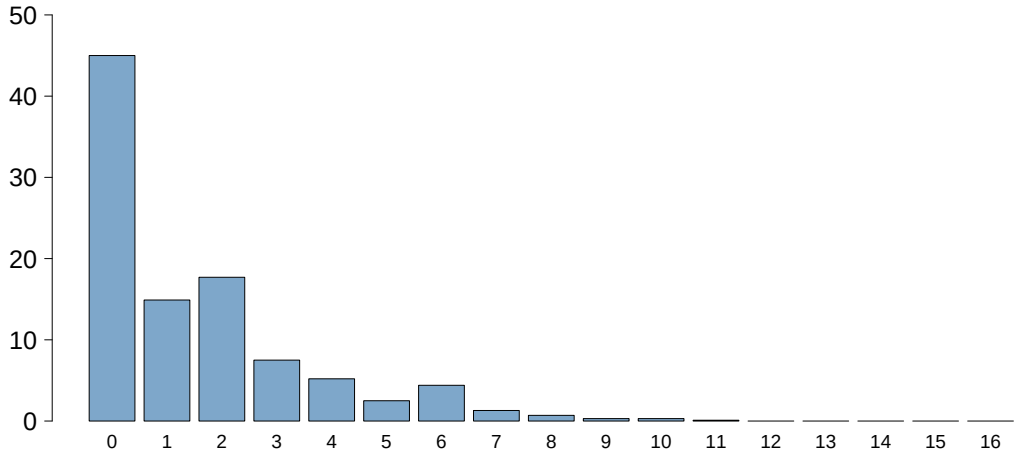
Ward of admission **Same hospital** (N=37614)	N	%
Medical ward	5182	13.8
Surgical ward	16879	44.9
Emergency room	13803	36.7
Other ICU	779	2.1
High dependency care unit	971	2.6
Missing	0	

Ward of admission **Other hospital** (N=4122)	N	%
Medical ward	439	10.7
Surgical ward	193	4.7
Emergency room	1821	44.2
Other ICU	1579	38.3
High dependency care unit	90	2.2
Missing	0	

Scheduled admission	N	%
No	33517	80.1
Yes	8333	19.9
Missing	188	

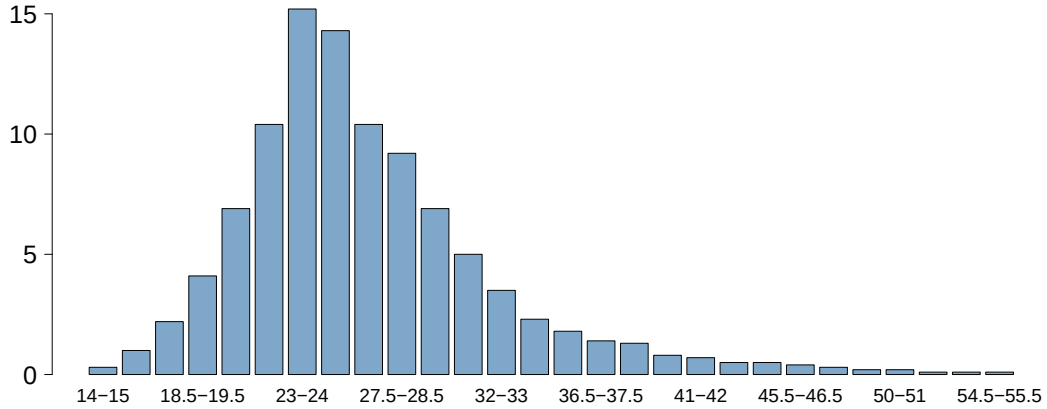
National report for general ICUs - **Year 2023**
Characteristics on admission - Adult patients

Charlson score (%)



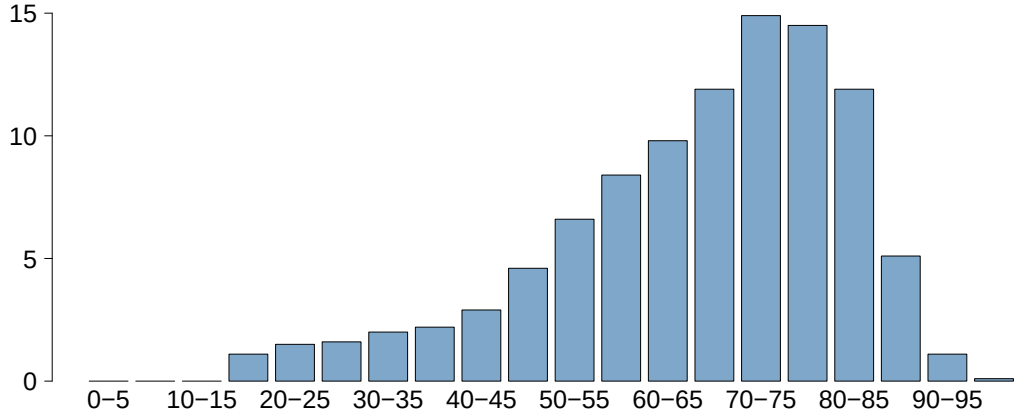
Charlson score	
Mean	1.6
SD	2.0
Median	1
Q1−Q3	0−2
Missing	187

BMI (%)



BMI	
Mean	26.8
SD	6.5
Median	25.7
Q1−Q3	23−29.3
Missing	544

Age (%)



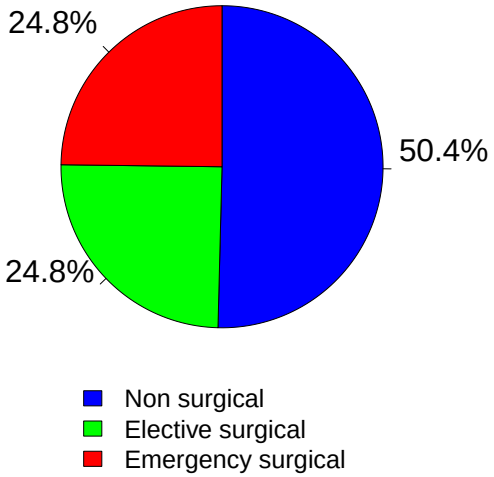
Age	
Mean	66.1
SD	16.0
Median	70
Q1−Q3	57−78
Missing	0

National report for general ICUs - **Year 2023**
Characteristics on admission - Adult patients

Trauma	N	%
No	36944	88.3
Yes	4912	11.7
Multiple trauma	2054	4.9
Missing	182	

Surgical status	N	%
Non surgical	21116	50.4
Elective surgical	10361	24.8
Emergency surgical	10379	24.8
Missing	182	

Surgical status



Source of admission **Surgical pt.** (N=20740)	N	%
Operating theatre of surgical ward	14799	71.5
Operating theatre of emergency room	2439	11.8
Surgical ward	843	4.1
Other	2622	12.7
Missing	37	

Surgical interventions (top 10) **Elective surgical** (N=10361)	N	%
Gastrointestinal surgery	2653	25.6
Nephro/Urological surgery	1186	11.4
Neurosurgery	1128	10.9
Orthopaedic surgery	1099	10.6
ENT surgery	612	5.9
Gynaecological surgery	522	5.0
Thoracic surgery	513	5.0
Hepatic surgery	494	4.8
Pancreatic surgery	462	4.5
Abdominal vascular surgery	424	4.1
Missing	1268	

Timing **Elective surgical** (N=10361)	N	%
From -7 to -3 days	153	1.5
From -2 to -1 days	351	3.4
On ICU admission day	10604	102.3
The day after ICU admission	102	1.0
Missing	35	

Surgical interventions (top 10) **Emergency surgical** (N=10379)	N	%
Gastrointestinal surgery	4440	42.8
Neurosurgery	1318	12.7
Orthopaedic surgery	1220	11.8
Nephro/Urological surgery	664	6.4
ENT surgery	374	3.6
Abdominal vascular surgery	368	3.5
Peripheral vascular surgery	363	3.5
Biliary tract surgery	330	3.2
Organ/s transplantation	321	3.1
Liver transplantation	212	2.0
Missing	769	

Timing **Emergency surgical** (N=10379)	N	%
From -7 to -3 days	249	2.4
From -2 to -1 days	1111	10.7
On ICU admission day	9398	90.5
The day after ICU admission	422	4.1
Missing	40	

Non surgical interventions	N	%
None	37844	90.4
Elective	686	1.6
Emergency	3321	7.9
Missing	187	

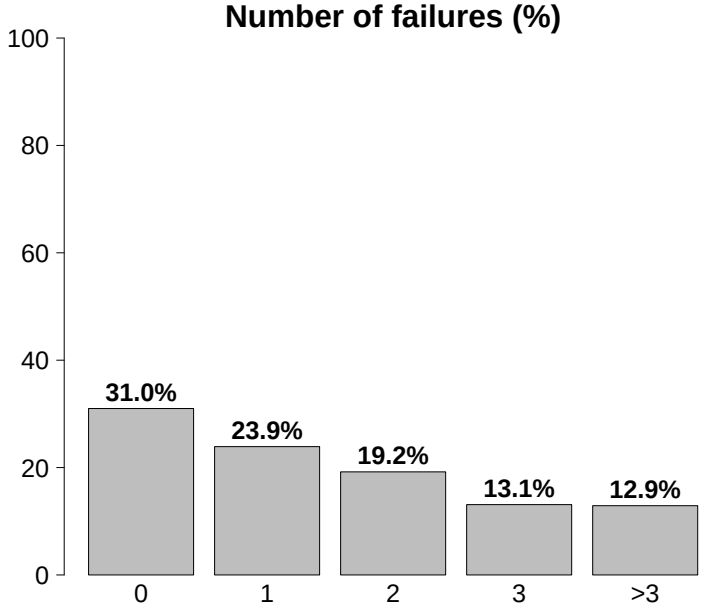
Non surgical interventions **Elective** (N=686)	N	%
Interventional endoscopy	165	24.1
Interventional radiology	151	22.0
Interventional cardiology	134	19.5
Interventional neuroradiology	129	18.8
Missing	107	

Non surgical interventions **Emergency** (N=3321)	N	%
Interventional cardiology	1068	32.2
Interventional radiology	885	26.6
Interventional endoscopy	768	23.1
Interventional neuroradiology	562	16.9
Missing	38	

National report for general ICUs - **Year 2023**
Characteristics on admission - Adult patients

Reason for admission	N	%
Monitoring/Weaning	17675	42.3
Post surgical weaning	6029	14.5
Surgical monitoring	6412	15.4
Post interventional weaning	234	0.6
Interventional monitoring	888	2.1
Non surgical monitoring	3935	9.5
Missing	177	
Intensive Treatment	23771	56.9
Only ventilatory support	10872	26.0
Only cardiovascular support	2495	6.0
Ventilatory and cardiovascular support	10398	24.9
Missing	6	
Palliative Sedation	175	0.4
Diagnosis of death/Organ donation	142	0.3
Missing	275	

Number of failures (%)



Failures on admission	N	%
No	13014	31.0
Yes	29024	69.0
A: Respiratory failure	21269	50.6
B: Cardiovascular failure	12893	30.7
C: Neurological failure	4357	10.4
D: Hepatic failure	371	0.9
E: Renal failure	15141	36.0
F: Acute skin failure	26	0.1
G: Metabolic failure	11138	26.5
H: Coagulation failure	415	1.0
Missing	0	

Failures on admission (top 10)	N	%
A	5523	13.1
ABEG	3370	8.0
E	2738	6.5
AB	2346	5.6
AE	1720	4.1
ABE	1456	3.5
AC	1264	3.0
EG	1150	2.7
BEG	1018	2.4
G	927	2.2
Missing	0	

Respiratory failure	N	%
None	20768	49.4
Only hypoxic failure	6975	16.6
Only hypercapnic failure	878	2.1
Hypoxic-hypercapnic failure	2124	5.1
Intubation for airway maint.	11292	26.9
Missing	1	

Cardiovascular failure	N	%
None	29145	69.3
Without shock	2933	7.0
Cardiogenic shock	1872	4.5
Septic shock	4048	9.6
Haemorrhagic/hypovolemic shock	1613	3.8
Hypovolemic shock	753	1.8
Anaphylactic shock	59	0.1
Neurogenic shock	386	0.9
Other shock	575	1.4
Mixed shock	653	1.6
Missing	1	

Neurologic failure	N	%
None	28887	86.9
Cerebral coma	2272	6.8
Metabolic coma	779	2.3
Postanoxic coma	1082	3.3
Toxic coma	223	0.7
Missing or not evaluable	8795	

Renal failure (AKIN)	N	%
None	26596	63.7
Mild	7204	17.3
Moderate	3650	8.7
Severe	4287	10.3
Missing	301	

Metabolic failure	N	%
None	30600	73.3
pH <= 7.3, PaCO2 < 45 mmHg	3092	7.4
Base deficit >= 5 mmol/L, lactate >1.5x	8046	19.3
Missing	300	

National report for general ICUs - Year 2023
Characteristics on admission - Adult patients

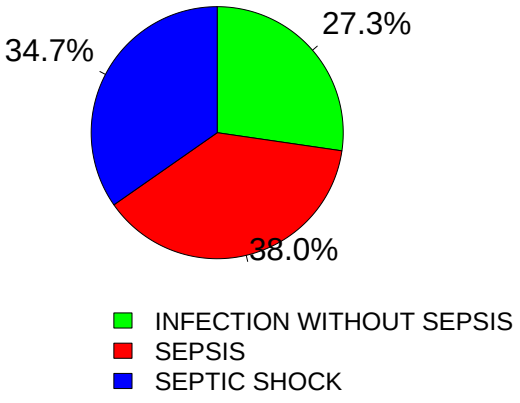
Clinical conditions on admission	N	%
Respiratory	7164	17.1
Acute exacerbation of COPD	1348	3.2
Pleural effusion	1315	3.1
Aspiration pneumonia	869	2.1
Upper respiratory tract disease	711	1.7
Atelectasis	706	1.7
Cardiovascular	7746	18.5
Cardiac arrest	1854	4.4
Left heart failure with pulm. edema	1137	2.7
Left heart failure without pulm. edema	858	2.1
Acute severe arrhythmia: tachycardias	824	2.0
Acute ischaemia	706	1.7
Neurological	5885	14.1
Spontaneous Intraparenchymal bleeding	1159	2.8
Seizures	1006	2.4
Cerebral artery stroke	995	2.4
Brain tumour	957	2.3
Spontaneous Subarachnoid haemorrhage	625	1.5
Gastrointestinal and hepatic	8606	20.6
Digestive tract malignancy	1980	4.7
Gastrointestinal perforation	1533	3.7
Intestinal occlusion	1334	3.2
Bowel ischaemia	631	1.5
Gastrointestinal bleeding: upper tract	626	1.5
Trauma (anatomical districts)	4909	11.7
Pelvis/bone/joint & muscle	2160	5.2
Chest	1947	4.7
Head	1934	4.6
Spine	1167	2.8
Abdomen	867	2.1
Major vessels injury	183	0.4
Miscellaneous	97	0.2
Other	9440	22.6
Other disease	2043	4.9
Nephrourologic disease	2032	4.9
Metabolic disorder	1888	4.5
Acute intoxication	913	2.2
ENT/maxillofacial disease	790	1.9
Post transplantation	621	1.5
Liver transplantation	313	0.7
Renal transplantation	205	0.5
Infections	13410	32.1
Pneumonia	4443	10.6
NON-surgical secondary peritonitis	1248	3.0
NON-catheter-related UTI	976	2.3
Post-surgical peritonitis	769	1.8
L.R.T.I. other than pneumonia	766	1.8
Primary bacteraemia of unknown origin	733	1.8
Positivity to COVID	711	1.7
Cholecystitis/cholangitis	651	1.6
NON-surgical skin/soft tissue infection	622	1.5
Clinical sepsis	508	1.2
Missing	203	

Trauma (anatomical districts)	N	%
Head	1934	4.6
Traumatic subarachnoid haemorrhage	720	1.7
Traumatic Subdural haematoma	716	1.7
Maxillofacial fracture	678	1.6
Cerebral contusion/laceration	612	1.5
Skull fracture	500	1.2
Spine	1167	2.8
Vertebral fracture, without deficit	955	2.3
Cervical injury, incomplete deficit	70	0.2
Tetraplegia	60	0.1
Chest	1947	4.7
Other injuries of the chest	1189	2.8
Traum. haemothorax/pneumothorax	760	1.8
Severe lung contusion/laceration	383	0.9
Abdomen	867	2.1
Spleen: Moderate-Severe laceration	261	0.6
Minor injuries of the abdomen	254	0.6
Liver: Moderate-Severe laceration	181	0.4
Pelvis/bone/joint & muscle	2160	5.2
Long bone fracture	1764	4.2
Multiple fracture of the pelvis	565	1.4
Very severe or open fracture of the pelvis	88	0.2
Major vessels injury	183	0.4
Neck vessels: dissection/transection	61	0.1
Proximal limbs vessels: transection	58	0.1
Aorta: rupture/dissection	35	0.1
Miscellaneous	97	0.2
Burns (>30% BSA)	69	0.2
Inhalation injury	38	0.1
Missing	203	

Infection severity on admission	N	%
None	28425	68.0
INFECTION WITHOUT SEPSIS	3661	8.8
SEPSIS	5095	12.2
SEPTIC SHOCK	4651	11.1
Missing	206	

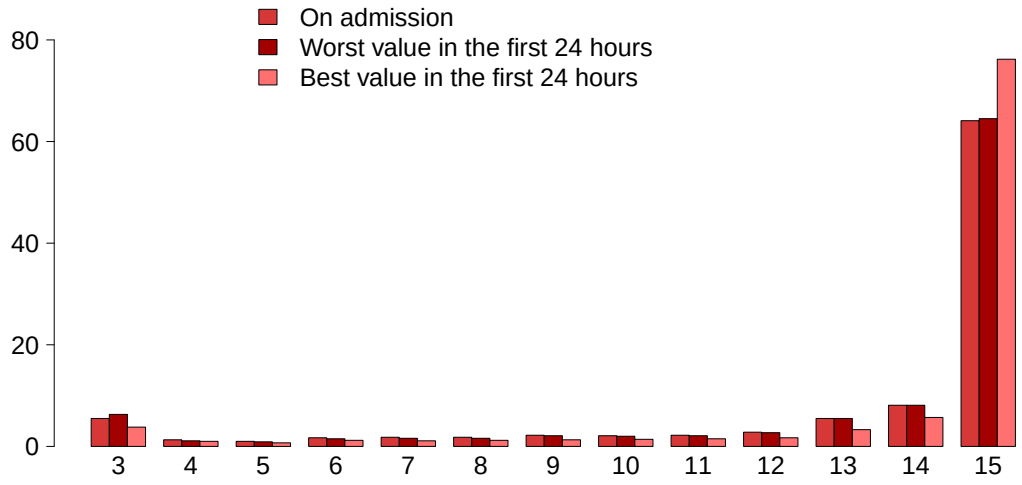
Infection severity on admission

Patients infected (N=13407)



National report for general ICUs - **Year 2023**
Severity scores - Adult patients

Glasgow Coma Scale (%)

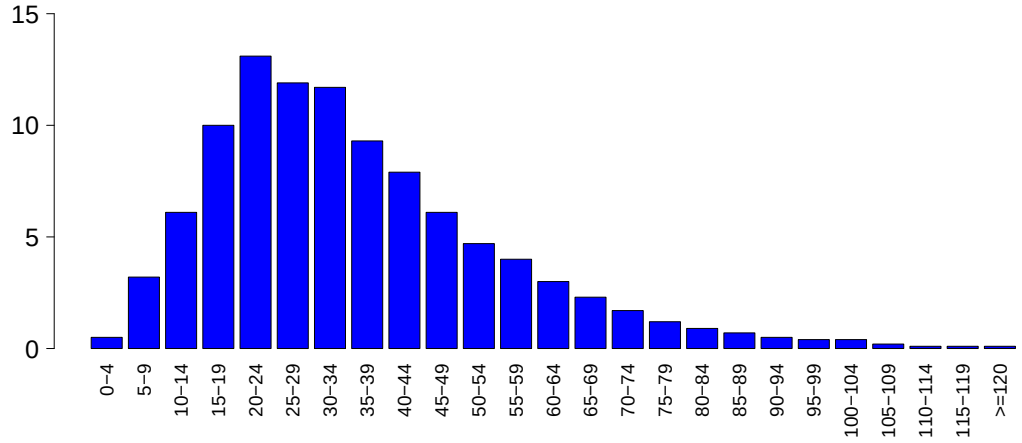


GCS (admission)	
Median	15
Q1–Q3	13–15
Not evaluable	8562
Missing	233

GCS (worst in first 24 hours)	
Median	15
Q1–Q3	13–15
Not evaluable	9309
Missing	293

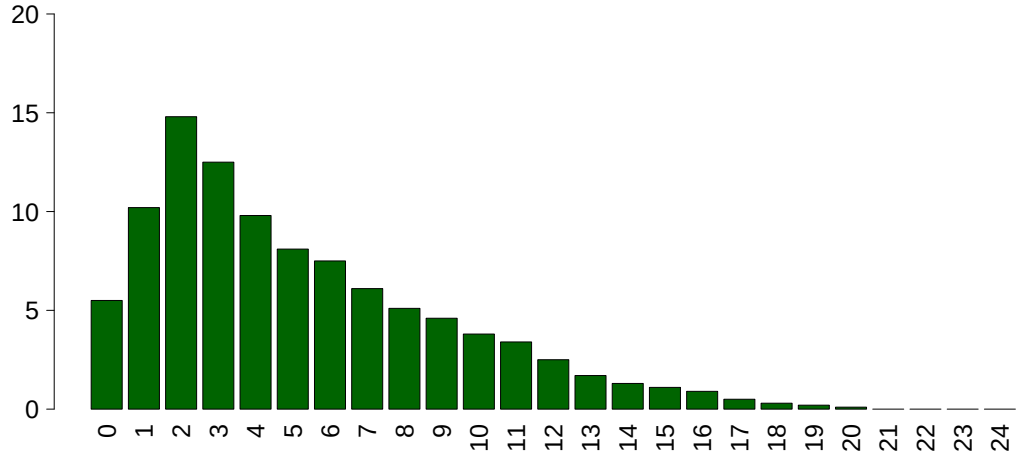
GCS (best in first 24 hours)	
Median	15
Q1–Q3	15–15
Not evaluable	7477
Missing	580

SAPS II (%)



SAPSII	
Mean	35.4
SD	19.3
Median	32
Q1–Q3	22–45
Not evaluable	9309
Missing	305

SOFA (%)



SOFA	
Mean	5.2
SD	4.0
Median	4
Q1–Q3	2–8
Not evaluable	9309
Missing	303

National report for general ICUs - **Year 2023**
Characteristics during the stay - Adult patients

Complications during the stay	N	%
No	28887	69.2
Yes	12862	30.8
Missing	289	

Failures during the stay	N	%
No	36072	85.8
Yes	5966	14.2
A: Respiratory failure	2983	7.1
B: Cardiovascular failure	2536	6.0
C: Neurological failure	452	1.1
D: Hepatic failure	169	0.4
E: Renal failure (AKIN)	1647	3.9
F: Acute skin failure	16	0.0
G: Metabolic failure	441	1.0
H: Coagulation failure	208	0.5
Missing	0	

Failures during the stay (top 10)	N	%
A	1732	4.1
B	1184	2.8
E	677	1.6
AB	562	1.3
G	281	0.7
BE	251	0.6
ABE	229	0.5
C	195	0.5
AE	182	0.4
AC	69	0.2
Missing	0	

Respiratory failure occured	N	%
None	38766	92.9
Intubation for airway maint.	914	2.2
Hypoxic failure	2057	4.9
Hypercapnic failure	442	1.1
Missing	289	

Cardiovascular failure occured	N	%
None	39213	93.9
Cardiogenic shock	637	1.5
Hypovolemic shock	200	0.5
Haemorrhagic/hypovolemic shock	250	0.6
Septic shock	1192	2.9
Anaphylactic shock	4	0.0
Neurogenic shock	140	0.3
Other shock	274	0.7
Missing	289	

Neurological failure occured	N	%
None	41297	98.9
Cerebral coma	281	0.7
Metabolic coma	91	0.2
Postanoxic coma	89	0.2
Missing	289	

Renal failure occured (AKIN)	N	%
None	40102	96.1
Mild	189	0.5
Moderate	269	0.6
Severe	1189	2.8
Missing	289	

Complications during the stay	N	%
Respiratory	2142	5.1
Pleural effusion	776	1.9
Atelectasis	451	1.1
Severe ARDS	295	0.7
Pneumothorax/Pneumomediastinum	223	0.5
Moderate ARDS	169	0.4
Cardiovascular	2838	6.8
Acute severe arrhythmia: tachycardias	1225	2.9
Cardiac arrest	792	1.9
Deep venous thrombosis	195	0.5
Pulmonary edema	181	0.4
Left heart failure w/o pulm. edema	176	0.4
Neurological	2841	6.8
Drowsiness/agitation/delirium	1458	3.5
Seizures	508	1.2
Brain edema	420	1.0
Intracranial hypertension	399	1.0
New ischaemic stroke	146	0.3
Gastrointestinal and hepatic	1292	3.1
Gastrointestinal bleeding: upper tract	208	0.5
Bowel ischaemia	190	0.5
Gastrointestinal perforation	169	0.4
Gastrointestinal bleeding: lower tract	166	0.4
Paralytic Ileus	148	0.4
Other	1167	2.8
Metabolic disorder	441	1.1
Nephrourologic disease	285	0.7
Other disease	271	0.6
Other skin and/or soft tissue pathology	85	0.2
Category/Stage II: Partial Thickness Skin Loss	62	0.1
F.U.O. fever of unknown origin	44	0.1
Category/Stage I: Nonblanchable Erythema	35	0.1
Infections	3971	9.5
Pneumonia	1536	3.7
L.R.T.I. other than pneumonia	837	2.0
Catheter-related UTI	519	1.2
Primary bacteraemia of unknown origin	466	1.1
Catheter-related bacteremia (CR-BSI)	384	0.9
Post-surgical peritonitis	163	0.4
NON-catheter-related UTI	145	0.3
Clinical sepsis	121	0.3
Upper respiratory tract infection	101	0.2
NON-surgical skin/soft tissue infection	93	0.2
Missing	289	

National report for general ICUs - **Year 2023**
Characteristics during the stay - Adult patients

Infections	N	%
None	25960	62.2
Only on admission	11813	28.3
On admission and during ICU stay	1568	3.8
Only during ICU stay	2403	5.8
Missing	294	

Maximum severity of infection	N	%
None	25960	62.2
INFECTION WITHOUT SEPSIS	4517	10.8
SEPSIS	5858	14.0
SEPTIC SHOCK	5411	13.0
Missing	292	

Severity evolution

		During the stay				
	N (R %)	None	INFECTION WITHOUT SEPSIS	SEPSIS	SEPTIC SHOCK	TOT
Admission	None	25960 (91.5%)	1212 (4.3%)	862 (3.0%)	325 (1.1%)	28359
	INFECTION WITHOUT SEPSIS	-	3304 (90.4%)	275 (7.5%)	76 (2.1%)	3655
	SEPSIS	-	-	4720 (92.8%)	367 (7.2%)	5088
	SEPTIC SHOCK	-	-	-	4643 (100.0%)	4644
	TOT	25960	4517	5858	5411	41746

Ventil. Associat. Pneumonia (VAP)	N	%
No	40684	96.9
Yes	1295	3.1
Missing	59	

Catheter Bacteraemia (CR-BSI)	N	%
No	41365	99.1
Yes	384	0.9
Missing	289	

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

Estimate	11.3
CI (95%)	10.7−11.9

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

Estimate	1.9
CI (95%)	1.7−2.1

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

Estimate	9.0%
CI (95%)	8.5−9.5

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

Estimate	2.3%
CI (95%)	2.1−2.5

Catheter-related urinary tract infection (UTI)	N	%
No	41230	98.8
Yes	519	1.2
Missing	289	

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

Estimate	2.2
CI (95%)	2.0−2.4

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

Estimate	2.6%
CI (95%)	2.4−2.9

Process indicators - Adult patients	Use		On admission		On discharge		Length (days)			Days from admission		
Procedures and/or treatments (Missing=204)	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	41353	98.9										
Invasive ventilation	26441	63.2	20145	48.2	5834	13.9	1	1–6	73	0	0–0	8
Non invasive ventilation	7560	18.1	2105	5	1892	4.5	2	1–4	11	0	0–2	2
Tracheostomy	3957	9.5	1160	2.8	3363	8	12	5–21	18	8	5–13	2
iNO (inhaled nitric oxide)	261	0.6	22	0.1	41	0.1	3	2–6	0	1	0–4	0
Central Venous Catheter	27580	65.9	13512	32.3	22488	53.8	4	2–9	86	0	0–0	8
PICC	1722	4.1	645	1.5	1591	3.8	3	1–8	4	4	0–15	0
Arterial Catheter	36387	87.0	19799	47.3	10839	25.9	3	1–7	98	0	0–0	8
Vasoactive drugs	16669	39.8	8692	20.8	3670	8.8	2	1–4	45	0	0–0	4
Antiarrhythmics	2978	7.1	852	2	1613	3.9	3	1–7	8	1	0–3	3
IABP	229	0.5	179	0.4	63	0.2	2	1–4	1	0	0–1	0
Invasive monitoring of C.O.	1330	3.2	289	0.7	292	0.7	4	2–7	1	0	0–1	0
Continous monitoring of ScVO2	118	0.3	73	0.2	11	0	2	1–4	0	0	0–1	0
Temporary pacing	177	0.4	135	0.3	68	0.2	2	1–3	0	0	0–1	0
Ventricular assistance	16	0.0	11	0	9	0	2	1–5	0	0	0–2	0
DC-shock	512	1.2								0	0–1	0
CPR	800	1.9								0	0–0	0
Massive blood transfusion	350	0.8								0	0–0	0
ICP monitoring without CSF drainage	317	0.8	126	0.3	51	0.1	7	4–10	0	0	0–1	0
ICP monitoring with CSF drainage	359	0.9	240	0.6	176	0.4	9	3–16	0	0	0–1	0
EVD without ICP monitoring	130	0.3	83	0.2	76	0.2	5	1–12	0	0	0–1	0
Haemofiltration	1573	3.8	144	0.3	393	0.9	3	2–7	5	1	0–2	0
Haemodialysis	1276	3.1	220	0.5	515	1.2	3	1–7	7	1	0–3	1
ECMO	132	0.3	56	0.1	50	0.1	5	1–10	0	1	0–2	0
Hepatic clearance techniques	19	0.0										
Clearance techniques during sepsis	318	0.8	24	0.1	69	0.2	3	1–4	1	1	0–1	0
IAP (intra-abdominal pressure)	472	1.1										
Hypothermia	197	0.5	50	0.1	30	0.1	1	1–2	0	0	0–0	0
Enteral nutrition	13083	31.3	2465	5.9	9013	21.5	7	3–14	34	1	0–2	7
Parenteral nutrition	5819	13.9	902	2.2	3422	8.2	4	2–8	11	1	0–2	3
SDD (Topical, Topical and systemic)	24	0.1										
Patient restraint	575	1.4										
Peridural catheter	1424	3.4	1228	2.9	1110	2.7	1	1–2	5	1	0–2	1
Electrical cardioversion	310	0.7								2	0–3	0
Vacuum therapy	331	0.8										
Urinary catheter	40077	95.8	33839	80.9	35977	86	3	1–7	117	0	0–0	12
Pronation	598	1.4	31	0.1	32	0.1	2	1–4	0	1	0–4	0
Antivirals	941	2.2	415	1	496	1.2	4	2–8	1	0	0–2	0

Procedures and/or treatments (Missing=204)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Antibiotics	25659	61.3										
Antibiotic prophylaxis	8540	20.4	6550	15.7	3348	8	1	1–2	9	0	0–0	0
Empirical antibiotic therapy (infection diagnosis confirmed)	8415	20.1	4107	9.8	3013	7.2	3	2–5	13	0	0–1	1
Empirical antibiotic therapy (infection diagnosis unconfirmed)	6689	16.0	3340	8	4334	10.4	3	2–5	3	0	0–0	0
Targeted antibiotic therapy	7371	17.6	1534	3.7	4451	10.6	6	3–9	15	3	2–6	4
Antifungal in empirical therapy	1506	3.6	484	1.2	798	1.9	4	2–8	5	0	0–4	0
Antifungal in targeted therapy	954	2.3	188	0.4	567	1.4	8	4–14	3	6	3–12	0
Pre-emptive antifungal	304	0.7	116	0.3	202	0.5	5	2–9	0	1	0–4	0

Antibiotic therapy		
Pt. infected in ICU only (N=2403)	N	%
No therapy	257	10.7
Only empirical	517	21.5
Only targeted	614	25.6
Targeted after empirical	735	30.6
Other	280	11.7
Missing	0	

Antifungal therapy		
Pt. infected in ICU only (N=2403)	N	%
No therapy	2125	88.4
Only empirical	141	5.9
Only targeted	123	5.1
Targeted after empirical	9	0.4
Other	5	0.2
Missing	0	

National report for general ICUs - **Year 2023**
Process indicators - Adult patients

Invasive ventilation (N=26441)	N	%	Length (days) Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	7486	25.2	8.2	11.1	4	1−10	23
For airway mainteinance	11021	37.1	5.8	10.8	2	1−7	34
In weaning	6335	21.3	0.4	0.5	0	0−1	0
Not evaluable	4853	16.3	4.3	12.6	1	0−4	3281
Reintubation within 48 hours	451	1.5	8.9	20.7	5	2−10	0

Non invasive ventilation (N=7560)	N	%
Non invasive ventilation only	4123	54.5
Non invasive ventilation failed	1101	14.6
For weaning	2031	26.9
Other	305	4.0
Missing	0	

Tracheostomy not present on admission (N=2797)	N	%
Surgical	484	17.3
Percutwist	122	4.4
Ciaglia	563	20.1
Monodil. Ciaglia	1167	41.7
Fantoni	7	0.3
Griggs	322	11.5
Other Kind	62	2.2
Unknown	66	2.4
Missing	4	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=2763)	
Mean	9.5
SD	6.8
Median	8
Q1−Q3	5−13
Missing	5

Invasive monitoring of C.O. (N=1330)	N	%
Swan Ganz	326	24.5
PICCO	815	61.3
LIDCO	4	0.3
Vigileo-PRAM	92	6.9
Other	92	6.9
Missing	1	

SDD (N=24)	N	%
Topical	16	66.7
Topical and systemic	8	33.3
Missing	0	

Surgical interventions	N	%
No	39831	95.3
Yes	1982	4.7
Missing	225	

Number of surgical interventions	N	%
0	39831	95.3
1	1456	3.5
2	322	0.8
3	99	0.2
>3	105	0.3
Missing	225	

Surgical interventions Days from admission	
Mean	9.3
SD	10.5
Median	6
Q1−Q3	3−12
Missing	16

Surgical interventions (top 10)	N	%
Gastrointestinal surgery	1144	2.7
Orthopaedic surgery	489	1.2
ENT surgery	259	0.6
Neurosurgery	238	0.6
Other surgery	130	0.3
Thoracic surgery	105	0.3
Maxillo-Facial surgery	81	0.2
Plastic surgery	72	0.2
Nephro/Urological surgery	67	0.2
Organ donation	56	0.1
Missing	225	

Non surgical interventions	N	%
No	40885	97.8
Yes	910	2.2
Missing	243	

Non surgical interventions Days from admission	
Mean	11.9
SD	16.6
Median	7
Q1−Q3	3−15.2
Missing	24

Non surgical interventions	N	%
Interventional endoscopy	575	1.4
Interventional radiology	271	0.6
Interventional cardiology	173	0.4
Interventional neuroradiology	81	0.2
Missing	243	

National report for general ICUs - **Year 2023**
Outcome indicators - Adult patients

ICU outcome	N	%
Dead	6603	15.8
Transferred to same hospital	31067	74.4
Transferred to other hospital	3507	8.4
Discharged home	397	1.0
Disch. terminally ill	158	0.4
Missing	306	

Transferred to (N=34574)	N	%
Ward	27859	80.6
Other ICU	2604	7.5
High dependency care unit	3131	9.1
Rehabilitation	834	2.4
Day hospital or Long-term care	145	0.4
Missing	1	

Reason of transfer to Other ICU (N=2673)	N	%
Specialist expertise	1030	38.6
Step-up care	182	6.8
Logistical/organizational reasons	1379	51.6
Step-down care	80	3.0
Missing	2	

Transferred to Same hospital (N=31067)	N	%
Ward	26990	86.9
Other ICU	903	2.9
High dependency care unit	2939	9.5
Rehabilitation	179	0.6
Day hospital or Long-term care	56	0.2
Missing	0	

Transferred to Other hospital (N=3507)	N	%
Ward	869	24.8
Other ICU	1701	48.5
High dependency care unit	192	5.5
Rehabilitation	655	18.7
Day hospital or Long-term care	89	2.5
Missing	1	

ICU mortality	N	%
Alive	34971	83.8
Dead	6761	16.2
Missing	306	

Timing of ICU mortality (N=6761)	N	%
Daytime (08:00AM - 07:59PM)	4863	71.9
Nighttime (08:00PM - 07:59AM)	1897	28.1
Weekdays (Monday - Friday)	5119	75.7
Weekend (Saturday - Sunday)	1642	24.3
Missing	1	

C.A.M. activation (N=6761)	N	%
Yes, with organ donation	435	6.6
Yes, without organ donation	447	6.8
No, with organ donation	52	0.8
No, without organ donation	5667	85.9
Missing	160	

Tissue removal (N=6761)	N	%
Yes, with C.A.M. activation	217	3.2
Yes, without C.A.M. activation	393	5.8
No	6151	91.0
Missing	0	

Hospital mortality *	N	%
Dead	8098	20.8
Transf. to other acute-care hospital	3775	9.7
Transf. to other type of hosp. stay	6318	16.2
Nursing home	772	2.0
Voluntary discharge	283	0.7
Discharged home	19737	50.6
Missing	461	

To other type of H stay* (N=6318)	N	%
Rehabilitation in the same institute	1257	19.9
Rehabilitation in other institute	3393	53.7
DH/long-term care, same inst.	480	7.6
DH/long-term care, other inst.	1185	18.8
Missing	3	

Disch. terminally ill* (N=30885)	N	%
Yes	544	1.8
No	30335	98.2
Missing	6	

Hospital mortality *	N	%
Alive	30335	77.8
Dead	8642	22.2
Missing	467	

Timing of hosp. mortality * (N=8642)	N	%
In ICU	6364	73.6
Within 24 hours after ICU	168	1.9
24-47 hours after ICU	98	1.1
48-71 hours after ICU	95	1.1
72-95 hours after ICU	97	1.1
After 95 hours after ICU	1819	21.1
Missing	1	

Timing of hosp. mortality (days from ICU disch.) * Discharged alive from ICU (N=2278)	
Mean	19.0
SD	25.9
Median	11
Q1−Q3	5−24
Missing	0

* Statistics computed on patients admitted in months with % of patients in status 4 over the threshold (readmissions excluded) (N=39444).

National report for general ICUs - **Year 2023**
Outcome indicators - Adult patients

Last hospital mortality *	N	%
Alive	30030	77.2
Dead	8871	22.8
Missing	543	

Readmission from ward	N	%
No	40764	97.1
Yes	1233	2.9
Missing	41	

Number of readmissions (N=1233)	N	%
1	1131	91.7
2	85	6.9
>2	17	1.4
Missing	0	

Timing of readmission (N=1233)	N	%
Within 48 hours	248	20.6
48-71 hours	102	8.5
72-95 hours	103	8.6
After 95 hours	750	62.3
Missing	30	

Timing readmission (days)	
N	1233
Mean	11.2
SD	19.7
Median	5.4
Q1−Q3	2.1−13

ICU stay (days)	
Mean	6.1
SD	9.7
Median	2
Q1−Q3	1−7
Missing	295

ICU stay (days) **Alive** (N=34971)	
Mean	5.8
SD	9.5
Median	2
Q1−Q3	1−6
Missing	5

ICU stay (days) **Dead** (N=6761)	
Mean	7.3
SD	10.3
Median	3
Q1−Q3	1−10
Missing	0

Stay after ICU (days) * **Alive** (N=32823)	
Mean	13.0
SD	17.8
Median	8
Q1−Q3	4−16
Missing	213

Hospital stay (days) *	
Mean	19.8
SD	22.5
Median	13
Q1−Q3	7−25
Missing	463

Hospital stay (days) * **Alive** (N=30335)	
Mean	20.8
SD	22.3
Median	14
Q1−Q3	8−26
Missing	2

Hospital stay (days) * **Dead** (N=8642)	
Mean	16.1
SD	22.6
Median	9
Q1−Q3	3−21
Missing	0

* Statistics computed on patients admitted in months with % of patients in status 4 over the threshold (readmissions excluded) (N=39444).

National report for general ICUs - **Year 2023**
Characteristics on admission - Adult patients evaluated in the GiViTI model

Patients (N): 37126

Sex	N	%
Male	22337	60.2
Female	14788	39.8
Missing	1	

Age (years)	N	%
17-45	4278	11.5
46-65	10834	29.2
66-75	9768	26.3
>75	12246	33.0
Missing	0	
Mean	66.1	
SD	16.2	
Median	70	
Q1−Q3	57−78	
Min−Max	17−101	

Body mass Index (BMI)	N	%
Underweight	2133	5.7
Normal	16533	44.5
Overweight	11305	30.5
Obese	7154	19.3
Missing	1	

Pregnancy status **Females** (N=14788)	N	%
Not fertile	7556	51.2
Not pregnant/Unknown	6867	46.5
Currently pregnant	54	0.4
Post partum	284	1.9
Missing	27	

Comorbidities	N	%
No	5240	14.1
Yes	31886	85.9
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	19801	53.3
Arrhythmia	5861	15.8
Diabetes Type II without insulin tr.	5235	14.1
Moderate COPD	4455	12.0
Any tumour without metastasis	4313	11.6
Myocardial infarction	4097	11.0
Peripheral vascular disease	3545	9.5
Cerebrovascular disease	3331	9.0
Moderate or severe renal disease	3240	8.7
NYHA class II-III	2906	7.8
Missing	0	

Stay before ICU (days)	
Mean	3.6
SD	10.2
Median	1
Q1−Q3	0−2
Missing	0

Source of admission	N	%
Same hospital	33388	89.9
Other hospital	3738	10.1
Long-term chronic care hospital	0	0.0
Directly from the community	0	0.0
Missing	0	

Ward of admission **Hospital** (N=37126)	N	%
Medical ward	4870	13.1
Surgical ward	14812	39.9
Emergency room	14519	39.1
Other ICU	2055	5.5
High dependency care unit	870	2.3
Missing	0	

Reason for transfer from **Other ICU** (N=2055)	N	%
Specialist expertise	522	25.4
Step-up care	317	15.4
Logistical/organizational reasons	1147	55.8
Step-down care	69	3.4
Missing	0	

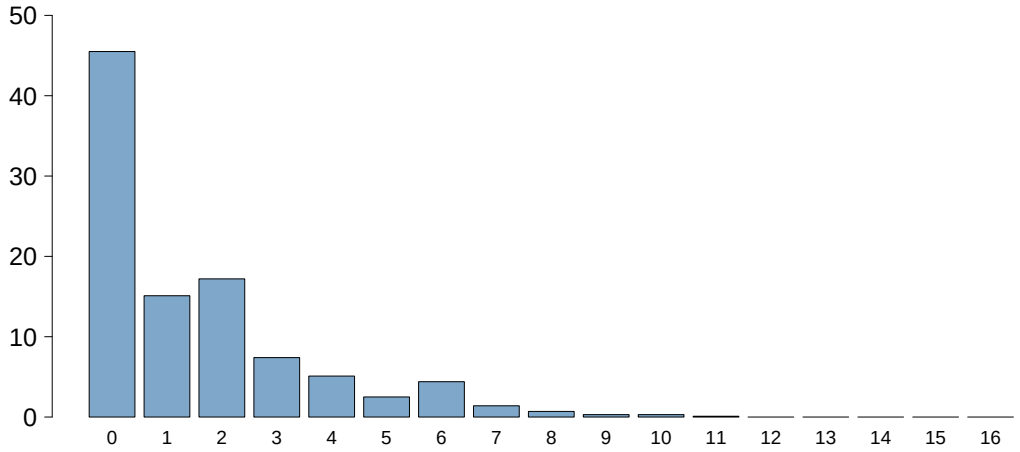
Ward of admission **Same hospital** (N=33388)	N	%
Medical ward	4475	13.4
Surgical ward	14636	43.8
Emergency room	12868	38.5
Other ICU	619	1.9
High dependency care unit	790	2.4
Missing	0	

Ward of admission **Other hospital** (N=3738)	N	%
Medical ward	395	10.6
Surgical ward	176	4.7
Emergency room	1651	44.2
Other ICU	1436	38.4
High dependency care unit	80	2.1
Missing	0	

Scheduled admission	N	%
No	29925	80.6
Yes	7201	19.4
Missing	0	

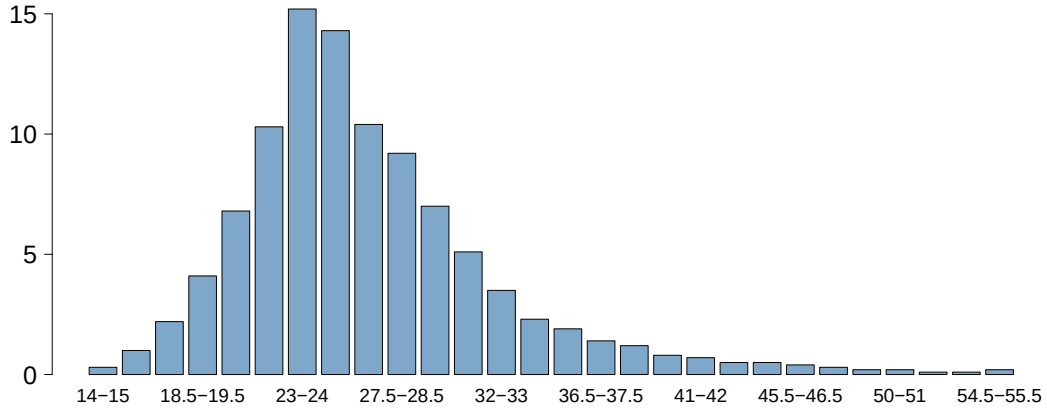
National report for general ICUs - **Year 2023**
Characteristics on admission - Adult patients evaluated in the GiViTI model

Charlson score (%)



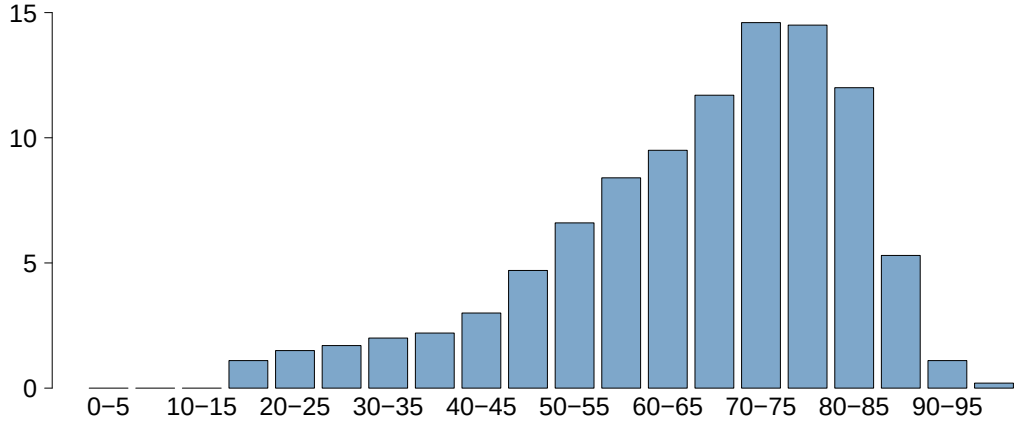
Charlson score	
Mean	1.5
SD	2.0
Median	1
Q1−Q3	0−2
Missing	3

BMI (%)



BMI	
Mean	26.8
SD	6.5
Median	25.7
Q1−Q3	23−29.3
Missing	1

Age (%)



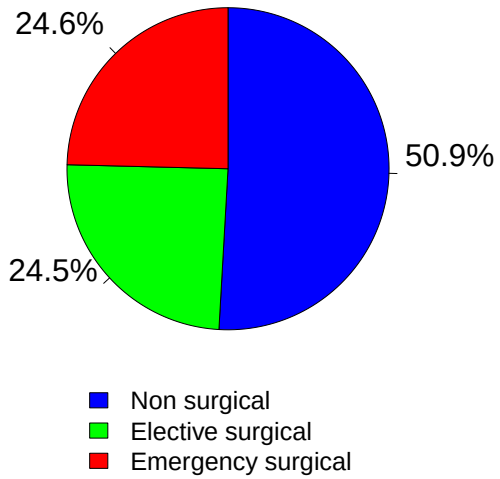
Age	
Mean	66.1
SD	16.2
Median	70
Q1−Q3	57−78
Missing	0

National report for general ICUs - **Year 2023**
Characteristics on admission - Adult patients evaluated in the GiViTI model

Trauma	N	%
No	32571	87.7
Yes	4555	12.3
Multiple trauma	1922	5.2
Missing	0	

Surgical status	N	%
Non surgical	18911	50.9
Elective surgical	9096	24.5
Emergency surgical	9119	24.6
Missing	0	

Surgical status



Source of admission **Surgical pt.** (N=18215)	N	%
Operating theatre of surgical ward	13049	71.6
Operating theatre of emergency room	2278	12.5
Surgical ward	711	3.9
Other	2177	12.0
Missing	0	

Surgical interventions (top 10) **Elective surgical** (N=9096)	N	%
Gastrointestinal surgery	2465	27.1
Nephro/Urological surgery	1111	12.2
Neurosurgery	1060	11.7
Orthopaedic surgery	1004	11.0
ENT surgery	575	6.3
Gynaecological surgery	499	5.5
Thoracic surgery	481	5.3
Hepatic surgery	476	5.2
Pancreatic surgery	439	4.8
Abdominal vascular surgery	400	4.4
Missing	586	

Timing **Elective surgical** (N=9096)	N	%
From -7 to -3 days	122	1.3
From -2 to -1 days	307	3.4
On ICU admission day	9275	102.0
The day after ICU admission	88	1.0
Missing	26	

Surgical interventions (top 10) **Emergency surgical** (N=9119)	N	%
Gastrointestinal surgery	3917	43.0
Neurosurgery	1188	13.0
Orthopaedic surgery	1134	12.4
Nephro/Urological surgery	622	6.8
Abdominal vascular surgery	325	3.6
Peripheral vascular surgery	323	3.5
ENT surgery	318	3.5
Organ/s transplantation	308	3.4
Biliary tract surgery	300	3.3
Obstetric surgery	205	2.2
Missing	479	

Timing **Emergency surgical** (N=9119)	N	%
From -7 to -3 days	210	2.3
From -2 to -1 days	984	10.8
On ICU admission day	8260	90.6
The day after ICU admission	377	4.1
Missing	23	

Non surgical interventions	N	%
None	33506	90.2
Elective	581	1.6
Emergency	3039	8.2
Missing	0	

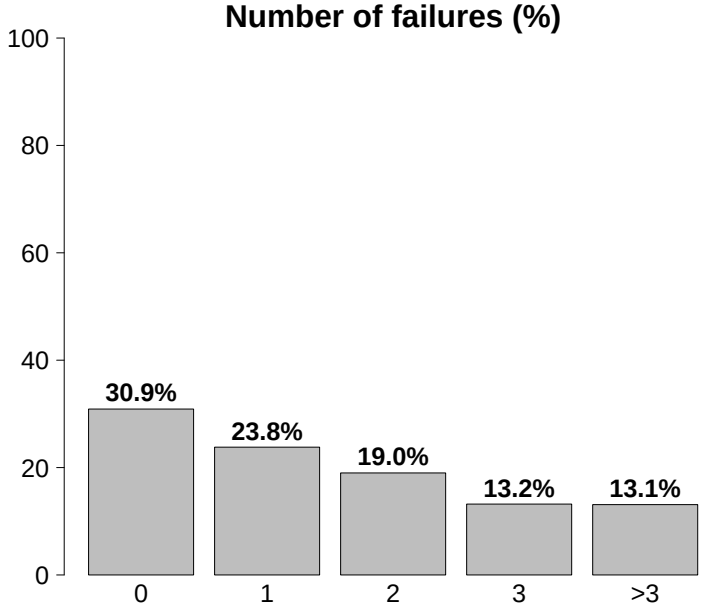
Non surgical interventions **Elective** (N=581)	N	%
Interventional endoscopy	146	25.1
Interventional radiology	135	23.2
Interventional neuroradiology	111	19.1
Interventional cardiology	102	17.6
Missing	87	

Non surgical interventions **Emergency** (N=3039)	N	%
Interventional cardiology	994	32.7
Interventional radiology	805	26.5
Interventional endoscopy	695	22.9
Interventional neuroradiology	514	16.9
Missing	31	

National report for general ICUs - **Year 2023**
Characteristics on admission - Adult patients evaluated in the GiViTI model

Reason for admission	N	%
Monitoring/Weaning	16007	43.1
Post surgical weaning	5350	14.5
Surgical monitoring	5889	15.9
Post interventional weaning	216	0.6
Interventional monitoring	809	2.2
Non surgical monitoring	3599	9.7
Missing	144	
Intensive Treatment	21119	56.9
Only ventilatory support	9657	26.0
Only cardiovascular support	2266	6.1
Ventilatory and cardiovascular support	9196	24.8
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	11481	30.9
Yes	25645	69.1
A: Respiratory failure	18853	50.8
B: Cardiovascular failure	11462	30.9
C: Neurological failure	3877	10.4
D: Hepatic failure	332	0.9
E: Renal failure	13527	36.4
F: Acute skin failure	24	0.1
G: Metabolic failure	9820	26.5
H: Coagulation failure	371	1.0
Missing	0	

Failures on admission (top 10)	N	%
A	4867	13.1
ABEG	3000	8.1
E	2477	6.7
AB	2013	5.4
AE	1534	4.1
ABE	1286	3.5
AC	1195	3.2
EG	990	2.7
BEG	937	2.5
ABCEG	824	2.2
Missing	0	

Respiratory failure	N	%
None	18273	49.2
Only hypoxic failure	6197	16.7
Only hypercapnic failure	796	2.1
Hypoxic-hypercapnic failure	1948	5.2
Intubation for airway maint.	9912	26.7
Missing	0	

Cardiovascular failure	N	%
None	25664	69.1
Without shock	2564	6.9
Cardiogenic shock	1637	4.4
Septic shock	3644	9.8
Haemorrhagic/hypovolemic shock	1431	3.9
Hypovolemic shock	691	1.9
Anaphylactic shock	52	0.1
Neurogenic shock	351	0.9
Other shock	519	1.4
Mixed shock	573	1.5
Missing	0	

Neurologic failure	N	%
None	25604	86.8
Cerebral coma	1987	6.7
Metabolic coma	679	2.3
Postanoxic coma	996	3.4
Toxic coma	215	0.7
Missing or not evaluable	7645	

Renal failure (AKIN)	N	%
None	23599	63.6
Mild	6463	17.4
Moderate	3262	8.8
Severe	3802	10.2
Missing	0	

Metabolic failure	N	%
None	27306	73.5
pH <= 7.3, PaCO2 < 45 mmHg	2642	7.1
Base deficit >= 5 mmol/L, lactate >1.5x	7178	19.3
Missing	0	

National report for general ICUs - Year 2023
Characteristics on admission - Adult patients evaluated in the GiViTI model

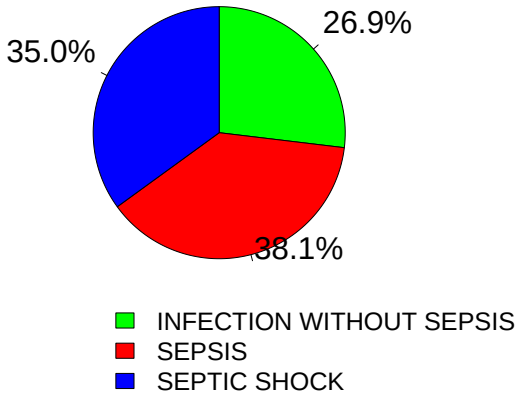
Clinical conditions on admission	N	%
Respiratory	6343	17.1
Acute exacerbation of COPD	1236	3.3
Pleural effusion	1116	3.0
Aspiration pneumonia	776	2.1
Upper respiratory tract disease	633	1.7
Atelectasis	588	1.6
Cardiovascular	6339	17.1
Cardiac arrest	1699	4.6
Left heart failure with pulm. edema	1013	2.7
Left heart failure without pulm. edema	755	2.0
Acute severe arrhythmia: tachycardias	753	2.0
Acute myocardial infarction	546	1.5
Neurological	5277	14.2
Spontaneous Intraparenchymal bleeding	998	2.7
Seizures	902	2.4
Cerebral artery stroke	901	2.4
Brain tumour	900	2.4
Spontaneous Subarachnoid haemorrhage	547	1.5
Gastrointestinal and hepatic	7765	20.9
Digestive tract malignancy	1859	5.0
Gastrointestinal perforation	1348	3.6
Intestinal occlusion	1227	3.3
Bowel ischaemia	565	1.5
Gastrointestinal bleeding: upper tract	561	1.5
Trauma (anatomical districts)	4555	12.3
Pelvis/bone/joint & muscle	2031	5.5
Chest	1832	4.9
Head	1771	4.8
Spine	1078	2.9
Abdomen	817	2.2
Major vessels injury	170	0.5
Miscellaneous	85	0.2
Other	8603	23.2
Nephrourologic disease	1872	5.0
Other disease	1801	4.9
Metabolic disorder	1707	4.6
Acute intoxication	863	2.3
ENT/maxillofacial disease	719	1.9
Post transplantation	575	1.5
Liver transplantation	288	0.8
Renal transplantation	191	0.5
Infections	11875	32.0
Pneumonia	3929	10.6
NON-surgical secondary peritonitis	1153	3.1
NON-catheter-related UTI	919	2.5
L.R.T.I. other than pneumonia	695	1.9
Primary bacteraemia of unknown origin	648	1.7
Positivity to COVID	645	1.7
Cholecystitis/cholangitis	596	1.6
Post-surgical peritonitis	583	1.6
NON-surgical skin/soft tissue infection	559	1.5
Clinical sepsis	458	1.2
Missing	0	

Trauma (anatomical districts)	N	%
Head	1771	4.8
Traumatic subarachnoid haemorrhage	647	1.7
Traumatic Subdural haematoma	644	1.7
Maxillofacial fracture	633	1.7
Cerebral contusion/laceration	561	1.5
Skull fracture	454	1.2
Spine	1078	2.9
Vertebral fracture, without deficit	883	2.4
Cervical injury, incomplete deficit	64	0.2
Tetraplegia	56	0.2
Chest	1832	4.9
Other injuries of the chest	1117	3.0
Traum. haemothorax/pneumothorax	712	1.9
Severe lung contusion/laceration	369	1.0
Abdomen	817	2.2
Spleen: Moderate-Severe laceration	250	0.7
Minor injuries of the abdomen	231	0.6
Liver: Moderate-Severe laceration	167	0.4
Pelvis/bone/joint & muscle	2031	5.5
Long bone fracture	1663	4.5
Multiple fracture of the pelvis	522	1.4
Very severe or open fracture of the pelvis	80	0.2
Major vessels injury	170	0.5
Neck vessels: dissection/transection	56	0.2
Proximal limbs vessels: transection	55	0.1
Aorta: rupture/dissection	31	0.1
Miscellaneous	85	0.2
Burns (>30% BSA)	59	0.2
Inhalation injury	33	0.1
Missing	0	

Infection severity on admission	N	%
None	25251	68.0
INFECTION WITHOUT SEPSIS	3196	8.6
SEPSIS	4528	12.2
SEPTIC SHOCK	4151	11.2
Missing	0	

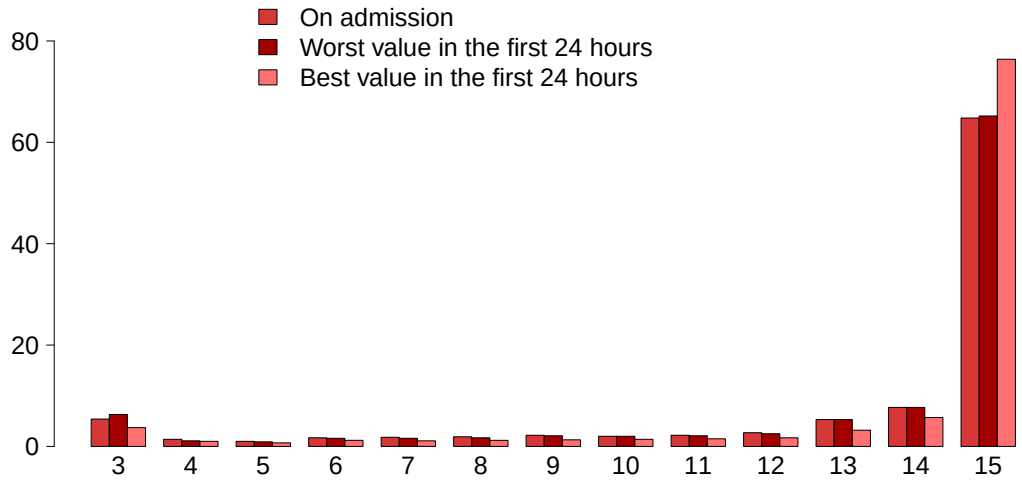
Infection severity on admission

Patients infected (N=11875)



National report for general ICUs - **Year 2023**
Severity scores - Adult patients evaluated in the GiViTI model

Glasgow Coma Scale (%)

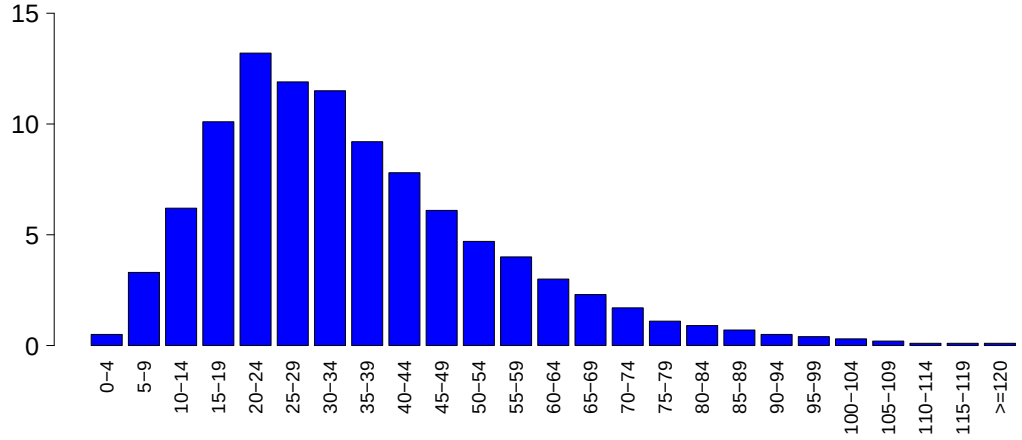


GCS (admission)	
Median	15
Q1–Q3	13–15
Not evaluable	7645
Missing	0

GCS (worst in first 24 hours)	
Median	15
Q1–Q3	13–15
Not evaluable	8290
Missing	0

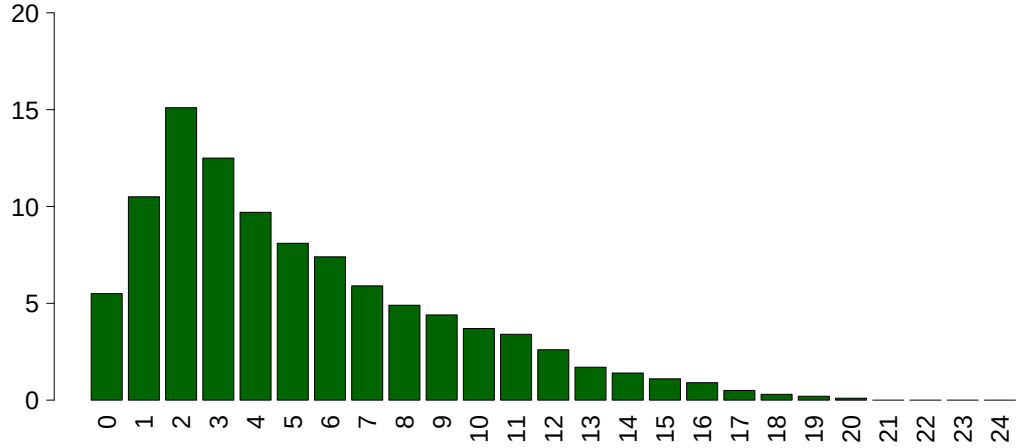
GCS (best in first 24 hours)	
Median	15
Q1–Q3	15–15
Not evaluable	6589
Missing	275

SAPS II (%)



SAPSII	
Mean	35.4
SD	19.3
Median	31
Q1–Q3	21–45
Not evaluable	8290
Missing	0

SOFA (%)



SOFA	
Mean	5.2
SD	4.0
Median	4
Q1–Q3	2–8
Not evaluable	8290
Missing	0

National report for general ICUs - **Year 2023**
Characteristics during the stay - Adult patients evaluated in the GiViTI model

Complications during the stay	N	%
No	25786	69.5
Yes	11339	30.5
Missing	1	

Failures during the stay	N	%
No	31847	85.8
Yes	5279	14.2
A: Respiratory failure	2607	7.0
B: Cardiovascular failure	2250	6.1
C: Neurological failure	411	1.1
D: Hepatic failure	153	0.4
E: Renal failure (AKIN)	1449	3.9
F: Acute skin failure	14	0.0
G: Metabolic failure	392	1.1
H: Coagulation failure	182	0.5
Missing	0	

Failures during the stay (top 10)	N	%
A	1519	4.1
B	1062	2.9
E	599	1.6
AB	491	1.3
G	255	0.7
BE	217	0.6
ABE	199	0.5
C	176	0.5
AE	161	0.4
AC	58	0.2
Missing	0	

Respiratory failure occured	N	%
None	34518	93.0
Intubation for airway maint.	798	2.1
Hypoxic failure	1794	4.8
Hypercapnic failure	394	1.1
Missing	1	

Cardiovascular failure occured	N	%
None	34875	93.9
Cardiogenic shock	583	1.6
Hypovolemic shock	187	0.5
Haemorrhagic/hypovolemic shock	211	0.6
Septic shock	1044	2.8
Anaphylactic shock	4	0.0
Neurogenic shock	124	0.3
Other shock	243	0.7
Missing	1	

Neurological failure occured	N	%
None	36714	98.9
Cerebral coma	252	0.7
Metabolic coma	82	0.2
Postanoxic coma	84	0.2
Missing	1	

Renal failure occured (AKIN)	N	%
None	35676	96.1
Mild	165	0.4
Moderate	237	0.6
Severe	1047	2.8
Missing	1	

Complications during the stay	N	%
Respiratory	1862	5.0
Pleural effusion	654	1.8
Atelectasis	403	1.1
Severe ARDS	260	0.7
Pneumothorax/Pneumomediastinum	186	0.5
Moderate ARDS	150	0.4
Cardiovascular	2447	6.6
Acute severe arrhythmia: tachycardias	999	2.7
Cardiac arrest	714	1.9
Deep venous thrombosis	176	0.5
Pulmonary edema	166	0.4
Left heart failure w/o pulm. edema	159	0.4
Neurological	2506	6.8
Drowsiness/agitation/delirium	1286	3.5
Seizures	450	1.2
Brain edema	378	1.0
Intracranial hypertension	341	0.9
New ischaemic stroke	123	0.3
Gastrointestinal and hepatic	1111	3.0
Gastrointestinal bleeding: upper tract	178	0.5
Bowel ischaemia	167	0.4
Gastrointestinal bleeding: lower tract	141	0.4
Gastrointestinal perforation	140	0.4
Paralytic Ileus	129	0.3
Other	1020	2.7
Metabolic disorder	392	1.1
Nephrourologic disease	256	0.7
Other disease	232	0.6
Other skin and/or soft tissue pathology	72	0.2
Category/Stage II: Partial Thickness Skin Loss	50	0.1
F.U.O. fever of unknown origin	41	0.1
Category/Stage I: Nonblanchable Erythema	33	0.1
Infections	3506	9.4
Pneumonia	1368	3.7
L.R.T.I. other than pneumonia	738	2.0
Catheter-related UTI	470	1.3
Primary bacteraemia of unknown origin	411	1.1
Catheter-related bacteremia (CR-BSI)	340	0.9
Post-surgical peritonitis	138	0.4
NON-catheter-related UTI	130	0.4
Clinical sepsis	97	0.3
Upper respiratory tract infection	89	0.2
NON-surgical skin/soft tissue infection	86	0.2
Missing	1	

National report for general ICUs - **Year 2023**
Characteristics during the stay - Adult patients evaluated in the GiViTI model

Infections	N	%
None	23108	62.2
Only on admission	10511	28.3
On admission and during ICU stay	1363	3.7
Only during ICU stay	2143	5.8
Missing	1	

Maximum severity of infection	N	%
None	23108	62.2
INFECTION WITHOUT SEPSIS	3982	10.7
SEPSIS	5209	14.0
SEPTIC SHOCK	4823	13.0
Missing	4	

Severity evolution		**During the stay**				
	N (R %)	None	INFECTION WITHOUT SEPSIS	SEPSIS	SEPTIC SHOCK	TOT
Admission	None	23108 (91.5%)	1092 (4.3%)	767 (3.0%)	282 (1.1%)	25249
	INFECTION WITHOUT SEPSIS	-	2890 (90.4%)	234 (7.3%)	72 (2.3%)	3196
	SEPSIS	-	-	4208 (93.0%)	319 (7.0%)	4527
	SEPTIC SHOCK	-	-	-	4150 (100.0%)	4150
	TOT	23108	3982	5209	4823	37122

Ventil. Associat. Pneumonia (VAP)	N	%
No	35960	96.9
Yes	1165	3.1
Missing	1	

Catheter Bacteraemia (CR-BSI)	N	%
No	36785	99.1
Yes	340	0.9
Missing	1	

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

Estimate	11.4
CI (95%)	10.8−12.1

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

Estimate	1.9
CI (95%)	1.7−2.1

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

Estimate	9.1%
CI (95%)	8.6−9.7

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

Estimate	2.3%
CI (95%)	2.0−2.5

Catheter-related urinary tract infection (UTI)	N	%
No	36655	98.7
Yes	470	1.3
Missing	1	

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

Estimate	2.2
CI (95%)	2.0−2.5

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

Estimate	2.7%
CI (95%)	2.5−3.0

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)	36717	98.9										
Invasive ventilation	23158	62.4	17613	47.4	5111	13.8	1	1–6	1	0	0–0	0
Non invasive ventilation	6703	18.1	1891	5.1	1668	4.5	2	1–4	0	0	0–2	0
Tracheostomy	3454	9.3	989	2.7	2937	7.9	12	5–21	0	8	5–13	0
iNO (inhaled nitric oxide)	201	0.5	8	0	35	0.1	3	2–6	0	1	0–4	0
Central Venous Catheter	24096	64.9	11212	30.2	19594	52.8	4	2–9	1	0	0–0	0
PICC	1557	4.2	554	1.5	1448	3.9	3	1–8	0	4	0–15	0
Arterial Catheter	32279	86.9	17298	46.6	9531	25.7	3	1–7	1	0	0–0	0
Vasoactive drugs	14575	39.3	7462	20.1	3229	8.7	2	1–4	1	0	0–0	0
Antiarrhythmics	2586	7.0	764	2.1	1423	3.8	3	1–6	0	1	0–3	0
IABP	180	0.5	140	0.4	52	0.1	2	1–3	0	0	0–1	0
Invasive monitoring of C.O.	1157	3.1	260	0.7	254	0.7	4	2–7	0	0	0–1	0
Continous monitoring of ScVO2	103	0.3	67	0.2	9	0	1	1–4	0	0	0–1	0
Temporary pacing	88	0.2	53	0.1	37	0.1	1	1–3	0	0	0–1	0
Ventricular assistance	14	0.0	10	0	7	0	2	1–6	0	1	0–2	0
DC-shock	454	1.2								0	0–1	0
CPR	721	1.9								0	0–0	0
Massive blood transfusion	304	0.8								0	0–0	0
ICP monitoring without CSF drainage	281	0.8	119	0.3	46	0.1	7	4–10	0	0	0–1	0
ICP monitoring with CSF drainage	318	0.9	215	0.6	154	0.4	9	3–16	0	0	0–1	0
EVD without ICP monitoring	117	0.3	74	0.2	67	0.2	5	1–12	0	0	0–1	0
Haemofiltration	1402	3.8	127	0.3	352	0.9	3	2–7	0	1	0–2	0
Haemodialysis	1120	3.0	187	0.5	455	1.2	3	1–7	0	1	0–2	0
ECMO	111	0.3	50	0.1	41	0.1	5	1–10	0	1	0–2	0
Hepatic clearance techniques	19	0.1										
Clearance techniques during sepsis	293	0.8	23	0.1	65	0.2	3	1–4	0	1	0–1	0
IAP (intra-abdominal pressure)	426	1.1										
Hypothermia	188	0.5	49	0.1	29	0.1	1	1–2	0	0	0–0	0
Enteral nutrition	11690	31.5	2121	5.7	8054	21.7	7	3–14	0	1	0–2	0
Parenteral nutrition	5161	13.9	733	2	3040	8.2	4	2–8	0	1	0–2	0
SDD (Topical, Topical and systemic)	18	0.0										
Patient restraint	531	1.4										
Peridural catheter	1308	3.5	1121	3	1024	2.8	1	1–2	0	1	0–2	0
Electrical cardioversion	254	0.7								1	0–3	0
Vacuum therapy	272	0.7										
Urinary catheter	35574	95.8	29885	80.5	31988	86.2	3	1–7	1	0	0–0	0
Pronation	539	1.5	29	0.1	32	0.1	2	1–4	0	1	0–4	0
Antivirals	835	2.2	365	1	446	1.2	4	2–8	0	0	0–2	0

National report for general ICUs - **Year 2023**
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	22580	60.8										
Antibiotic prophylaxis	7308	19.7	5477	14.8	3080	8.3	1	1–2	1	0	0–0	0
Empirical antibiotic therapy (infection diagnosis confirmed)	7558	20.4	3654	9.8	2731	7.4	3	2–5	2	0	0–1	0
Empirical antibiotic therapy (infection diagnosis unconfirmed)	6029	16.2	2973	8	3891	10.5	3	2–5	0	0	0–0	0
Targeted antibiotic therapy	6450	17.4	1231	3.3	3885	10.5	6	3–9	1	3	2–7	1
Antifungal in empirical therapy	1287	3.5	401	1.1	675	1.8	4	2–8	0	0	0–4	0
Antifungal in targeted therapy	783	2.1	128	0.3	464	1.2	8	4–14	0	6	3–13	0
Pre-emptive antifungal	257	0.7	101	0.3	164	0.4	4	2–9	0	0	0–4	0

Antibiotic therapy

Pt. infected in ICU only (N=2143)	N	%
No therapy	232	10.8
Only empirical	449	21.0
Only targeted	549	25.6
Targeted after empirical	657	30.7
Other	256	11.9
Missing	0	

Antifungal therapy

Pt. infected in ICU only (N=2143)	N	%
No therapy	1908	89.0
Only empirical	121	5.6
Only targeted	103	4.8
Targeted after empirical	7	0.3
Other	4	0.2
Missing	0	

National report for general ICUs - **Year 2023**
Process indicators - Adult patients evaluated in the GiViTI model

Invasive ventilation (N=23158)	N	%	Length (days) Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	6657	25.4	8.1	11.1	4	1−10	1
For airway mainteinance	9668	36.9	5.9	8.9	2	1−7	0
In weaning	5639	21.5	0.4	0.5	0	0−1	0
Not evaluable	4237	16.2	4.5	9.5	1	0−4	3053
Reintubation within 48 hours	389	1.5	7.8	11.0	5	2−9	0

Non invasive ventilation (N=6703)	N	%
Non invasive ventilation only	3722	55.5
Non invasive ventilation failed	973	14.5
For weaning	1750	26.1
Other	258	3.8
Missing	0	

Tracheostomy not present on admission (N=2465)	N	%
Surgical	424	17.2
Percutwist	103	4.2
Ciaglia	499	20.2
Monodil. Ciaglia	1034	41.9
Fantoni	7	0.3
Griggs	289	11.7
Other Kind	56	2.3
Unknown	52	2.1
Missing	1	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=2437)	
Mean	9.5
SD	6.7
Median	8
Q1−Q3	5−13
Missing	3

Invasive monitoring of C.O. (N=1157)	N	%
Swan Ganz	270	23.3
PICCO	721	62.3
LIDCO	4	0.3
Vigileo-PRAM	81	7.0
Other	80	6.9
Missing	1	

SDD (N=18)	N	%
Topical	12	66.7
Topical and systemic	6	33.3
Missing	0	

Surgical interventions	N	%
No	35424	95.4
Yes	1702	4.6
Missing	0	

Number of surgical interventions	N	%
0	35424	95.4
1	1261	3.4
2	273	0.7
3	88	0.2
>3	80	0.2
Missing	0	

Surgical interventions Days from admission	
Mean	9.4
SD	10.6
Median	6
Q1−Q3	3−12
Missing	14

Surgical interventions (top 10)	N	%
Gastrointestinal surgery	947	2.6
Orthopaedic surgery	468	1.3
ENT surgery	218	0.6
Neurosurgery	195	0.5
Other surgery	118	0.3
Thoracic surgery	91	0.2
Maxillo-Facial surgery	77	0.2
Plastic surgery	65	0.2
Nephro/Urological surgery	58	0.2
Organ donation	44	0.1
Missing	0	

Non surgical interventions	N	%
No	36335	97.9
Yes	791	2.1
Missing	0	

Non surgical interventions Days from admission	
Mean	11.7
SD	12.9
Median	7
Q1−Q3	3−16
Missing	22

Non surgical interventions	N	%
Interventional endoscopy	506	1.4
Interventional radiology	222	0.6
Interventional cardiology	151	0.4
Interventional neuroradiology	70	0.2
Missing	0	

National report for general ICUs - **Year 2023**
Outcome indicators - Adult patients evaluated in the GiViTI model

ICU outcome	N	%
Dead	5735	15.4
Transferred to same hospital	27697	74.6
Transferred to other hospital	3184	8.6
Discharged home	363	1.0
Disch. terminally ill	146	0.4
Missing	1	

Transferred to (N=30881)	N	%
Ward	25145	81.4
Other ICU	2275	7.4
High dependency care unit	2580	8.4
Rehabilitation	755	2.4
Day hospital or Long-term care	126	0.4
Missing	0	

Reason of transfer to Other ICU (N=2339)	N	%
Specialist expertise	925	39.5
Step-up care	167	7.1
Logistical/organizational reasons	1171	50.1
Step-down care	76	3.2
Missing	0	

Transferred to Same hospital (N=27697)	N	%
Ward	24336	87.9
Other ICU	753	2.7
High dependency care unit	2405	8.7
Rehabilitation	153	0.6
Day hospital or Long-term care	50	0.2
Missing	0	

Transferred to Other hospital (N=3184)	N	%
Ward	809	25.4
Other ICU	1522	47.8
High dependency care unit	175	5.5
Rehabilitation	602	18.9
Day hospital or Long-term care	76	2.4
Missing	0	

ICU mortality	N	%
Alive	31244	84.2
Dead	5881	15.8
Missing	1	

Timing of ICU mortality (N=5881)	N	%
Daytime (08:00AM - 07:59PM)	4237	72.0
Nighttime (08:00PM - 07:59AM)	1644	28.0
Weekdays (Monday - Friday)	4465	75.9
Weekend (Saturday - Sunday)	1416	24.1
Missing	0	

C.A.M. activation (N=5881)	N	%
Yes, with organ donation	344	6.0
Yes, without organ donation	369	6.4
No, with organ donation	34	0.6
No, without organ donation	4988	87.0
Missing	146	

Tissue removal (N=5881)	N	%
Yes, with C.A.M. activation	173	2.9
Yes, without C.A.M. activation	347	5.9
No	5361	91.2
Missing	0	

Hospital mortality	N	%
Dead	7582	20.4
Transf. to other acute-care hospital	3612	9.7
Transf. to other type of hosp. stay	5545	14.9
Nursing home	748	2.0
Voluntary discharge	280	0.8
Discharged home	19359	52.1
Missing	0	

To other type of H stay (N=5545)	N	%
Rehabilitation in the same institute	792	14.3
Rehabilitation in other institute	3137	56.6
DH/long-term care, same inst.	464	8.4
DH/long-term care, other inst.	1151	20.8
Missing	1	

Disch. terminally ill (N=29544)	N	%
Yes	531	1.8
No	29013	98.2
Missing	0	

Hospital mortality	N	%
Alive	29013	78.1
Dead	8113	21.9
Missing	0	

Timing of hosp. mortality (N=8113)	N	%
In ICU	5881	72.5
Within 24 hours after ICU	166	2.0
24-47 hours after ICU	96	1.2
48-71 hours after ICU	91	1.1
72-95 hours after ICU	96	1.2
After 95 hours after ICU	1782	22.0
Missing	1	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=2232)	
Mean	19.0
SD	26.0
Median	11
Q1−Q3	5−24
Missing	0

National report for general ICUs - **Year 2023**
Outcome indicators - Adult patients evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	28787	77.5
Dead	8339	22.5
Missing	0	

ICU stay (days)	
Mean	6.0
SD	9.6
Median	2
Q1−Q3	1−7
Missing	0

ICU stay (days) **Alive** (N=31244)	
Mean	5.8
SD	9.5
Median	2
Q1−Q3	1−6
Missing	0

ICU stay (days) **Dead** (N=5881)	
Mean	7.5
SD	10.4
Median	4
Q1−Q3	1−10
Missing	0

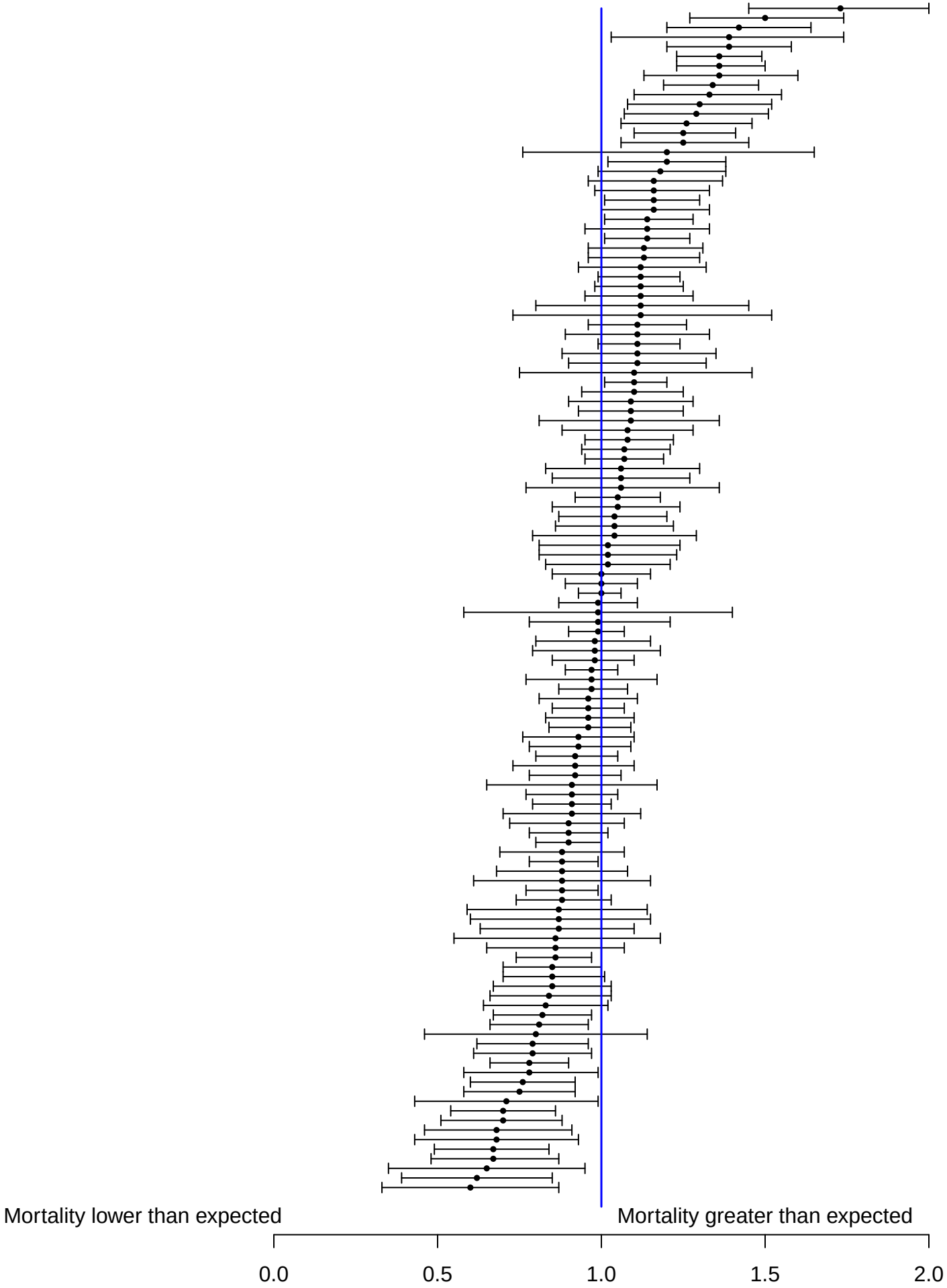
Stay after ICU (days) **Alive** (N=31244)	
Mean	13.2
SD	17.7
Median	8
Q1−Q3	4−16
Missing	4

Hospital stay (days)	
Mean	19.9
SD	22.3
Median	13
Q1−Q3	7−25
Missing	0

Hospital stay (days) **Alive** (N=29013)	
Mean	20.9
SD	22.2
Median	14
Q1−Q3	8−26
Missing	0

Hospital stay (days) **Dead** (N=8113)	
Mean	16.4
SD	22.4
Median	9
Q1−Q3	3−21
Missing	0

National report for general ICUs - **Year 2023**
Analysis of hospital mortality - Adult patients evaluated in the GiViTI model
Predictive model: **GiViTI 2023**



National report for general ICUs - **Year 2023**
Characteristics on admission - Adult non surgical patients eval. in the GiViTI model

Patients (N): 18911

Sex	N	%
Male	11734	62.0
Female	7177	38.0
Missing	0	

Age (years)	N	%
17-45	2302	12.2
46-65	5671	30.0
66-75	4950	26.2
>75	5988	31.7
Missing	0	
Mean	65.4	
SD	16.3	
Median	69	
Q1−Q3	56−78	
Min−Max	17−100	

Body mass Index (BMI)	N	%
Underweight	1103	5.8
Normal	8331	44.1
Overweight	5809	30.7
Obese	3668	19.4
Missing	0	

Pregnancy status **Females** (N=7177)	N	%
Not fertile	3679	51.4
Not pregnant/Unknown	3412	47.6
Currently pregnant	26	0.4
Post partum	45	0.6
Missing	15	

Comorbidities	N	%
No	2539	13.4
Yes	16372	86.6
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	9723	51.4
Arrhythmia	3044	16.1
Diabetes Type II without insulin tr.	2792	14.8
Moderate COPD	2340	12.4
Myocardial infarction	2110	11.2
Cerebrovascular disease	1918	10.1
Moderate or severe renal disease	1826	9.7
NYHA class II-III	1742	9.2
Peripheral vascular disease	1666	8.8
Antiplatelet therapy	1381	7.3
Missing	0	

Stay before ICU (days)	
Mean	3.7
SD	11.1
Median	0
Q1−Q3	0−2
Missing	0

Source of admission	N	%
Same hospital	15957	84.4
Other hospital	2954	15.6
Long-term chronic care hospital	0	0.0
Directly from the community	0	0.0
Missing	0	

Ward of admission **Hospital** (N=18911)	N	%
Medical ward	4022	21.3
Surgical ward	1052	5.6
Emergency room	11410	60.3
Other ICU	1722	9.1
High dependency care unit	705	3.7
Missing	0	

Reason for transfer from **Other ICU** (N=1722)	N	%
Specialist expertise	398	23.1
Step-up care	226	13.1
Logistical/organizational reasons	1032	59.9
Step-down care	66	3.8
Missing	0	

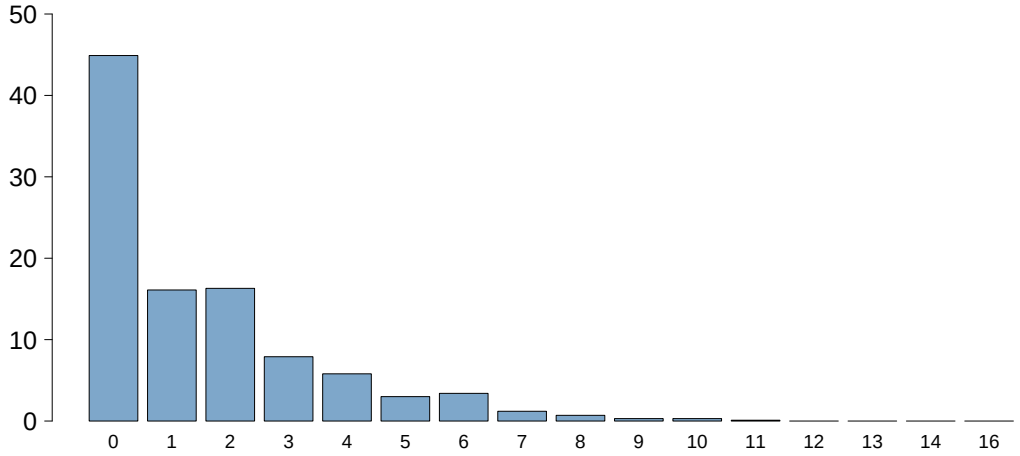
Ward of admission **Same hospital** (N=15957)	N	%
Medical ward	3672	23.0
Surgical ward	989	6.2
Emergency room	10228	64.1
Other ICU	436	2.7
High dependency care unit	632	4.0
Missing	0	

Ward of admission **Other hospital** (N=2954)	N	%
Medical ward	350	11.8
Surgical ward	63	2.1
Emergency room	1182	40.0
Other ICU	1286	43.5
High dependency care unit	73	2.5
Missing	0	

Scheduled admission	N	%
No	18744	99.1
Yes	167	0.9
Missing	0	

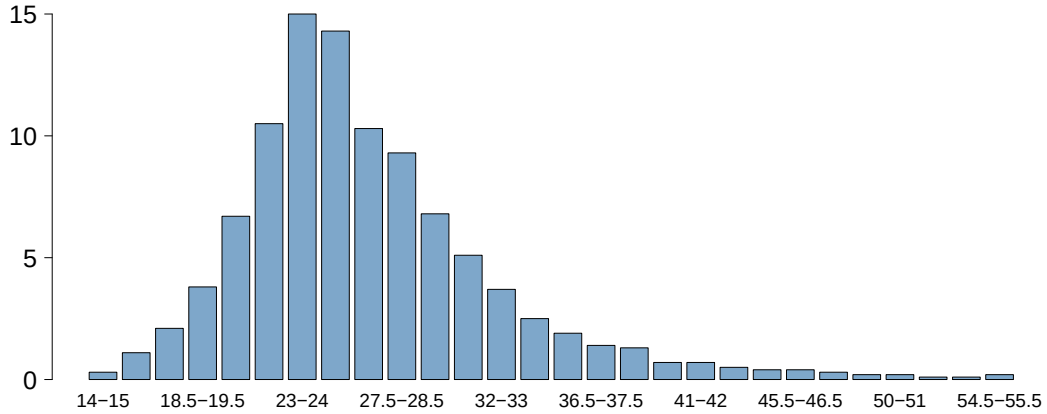
National report for general ICUs - **Year 2023**
Characteristics on admission - Adult non surgical patients eval. in the GiViTI model

Charlson score (%)



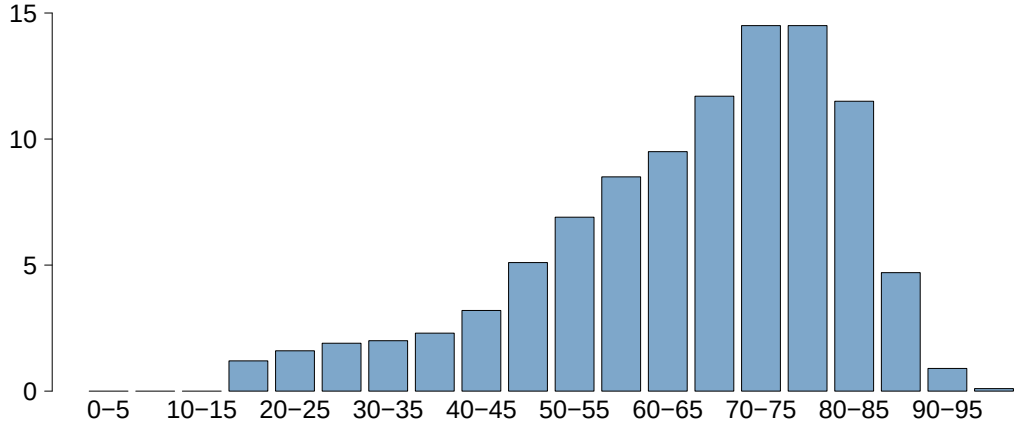
Charlson score	
Mean	1.5
SD	2.0
Median	1
Q1−Q3	0−2
Missing	1

BMI (%)



BMI	
Mean	26.8
SD	6.4
Median	25.7
Q1−Q3	23.1−29.3
Missing	0

Age (%)



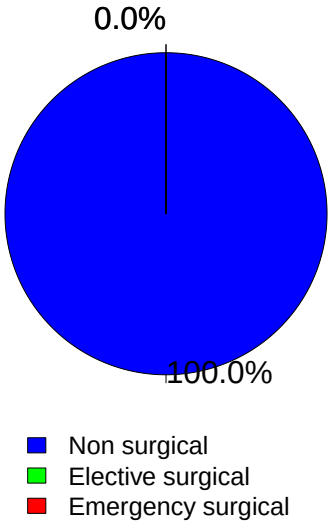
Age	
Mean	65.4
SD	16.3
Median	69
Q1−Q3	56−78
Missing	0

National report for general ICUs - **Year 2023**
Characteristics on admission - Adult non surgical patients eval. in the GiViTI model

Trauma	N	%
No	16618	87.9
Yes	2293	12.1
Multiple trauma	1052	5.6
Missing	0	

Surgical status	N	%
Non surgical	18911	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	16075	85.0
Elective	373	2.0
Emergency	2463	13.0
Missing	0	

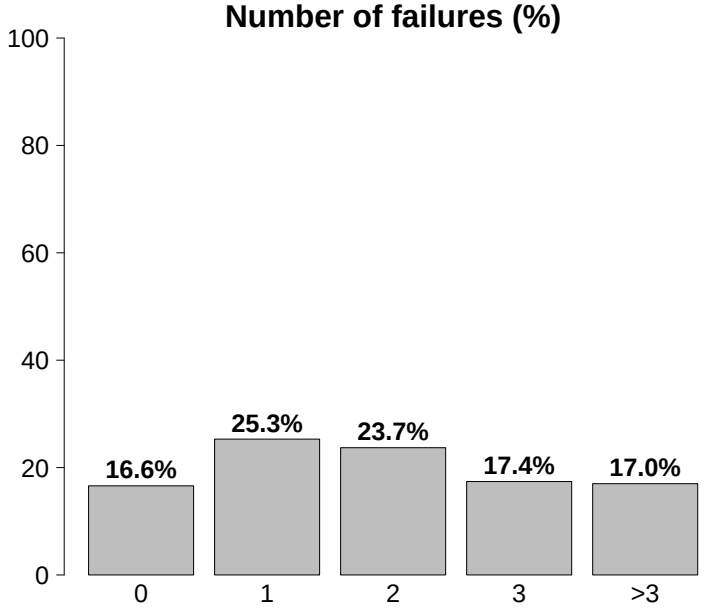
Non surgical interventions **Elective** (N=373)	N	%
Interventional endoscopy	113	30.3
Interventional cardiology	91	24.4
Interventional neuroradiology	88	23.6
Interventional radiology	85	22.8
Missing	0	

Non surgical interventions **Emergency** (N=2463)	N	%
Interventional cardiology	961	39.0
Interventional radiology	587	23.8
Interventional endoscopy	579	23.5
Interventional neuroradiology	370	15.0
Missing	0	

National report for general ICUs - **Year 2023**
Characteristics on admission - Adult non surgical patients eval. in the GiViTI model

Reason for admission	N	%
Monitoring/Weaning	4720	25.0
Post surgical weaning	0	0.0
Surgical monitoring	0	0.0
Post interventional weaning	200	1.1
Interventional monitoring	788	4.2
Non surgical monitoring	3599	19.2
Missing	133	
Intensive Treatment	14191	75.0
Only ventilatory support	7296	38.6
Only cardiovascular support	1355	7.2
Ventilatory and cardiovascular support	5540	29.3
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	3143	16.6
Yes	15768	83.4
A: Respiratory failure	12836	67.9
B: Cardiovascular failure	6895	36.5
C: Neurological failure	3169	16.8
D: Hepatic failure	269	1.4
E: Renal failure	7951	42.0
F: Acute skin failure	18	0.1
G: Metabolic failure	5998	31.7
H: Coagulation failure	248	1.3
Missing	0	

Failures on admission (top 10)	N	%
A	3458	18.3
ABEG	1723	9.1
AE	1169	6.2
AB	1063	5.6
AC	1011	5.3
E	750	4.0
ABE	700	3.7
BEG	665	3.5
ABCEG	646	3.4
AEG	623	3.3
Missing	0	

Respiratory failure	N	%
None	6075	32.1
Only hypoxic failure	4791	25.3
Only hypercapnic failure	714	3.8
Hypoxic-hypercapnic failure	1790	9.5
Intubation for airway maint.	5541	29.3
Missing	0	

Cardiovascular failure	N	%
None	12016	63.5
Without shock	1612	8.5
Cardiogenic shock	1492	7.9
Septic shock	2079	11.0
Haemorrhagic/hypovolemic shock	439	2.3
Hypovolemic shock	345	1.8
Anaphylactic shock	37	0.2
Neurogenic shock	178	0.9
Other shock	365	1.9
Mixed shock	348	1.8
Missing	0	

Neurologic failure	N	%
None	12604	79.9
Cerebral coma	1487	9.4
Metabolic coma	547	3.5
Postanoxic coma	928	5.9
Toxic coma	207	1.3
Missing or not evaluable	3138	

Renal failure (AKIN)	N	%
None	10960	58.0
Mild	3342	17.7
Moderate	1999	10.6
Severe	2610	13.8
Missing	0	

Metabolic failure	N	%
None	12913	68.3
pH <= 7.3, PaCO2 < 45 mmHg	1612	8.5
Base deficit >= 5 mmol/L, lactate >1.5x	4386	23.2
Missing	0	

National report for general ICUs - Year 2023
Characteristics on admission - Adult non surgical patients eval. in the GiViTI model

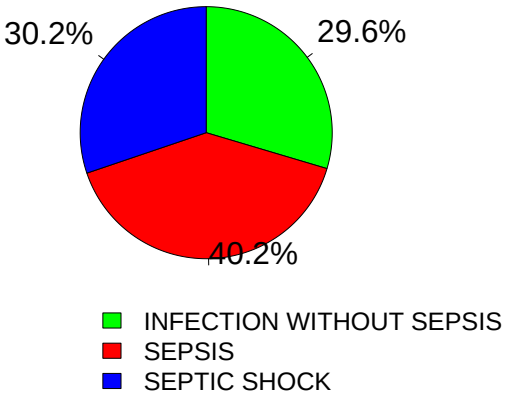
Clinical conditions on admission	N	%
Respiratory	4713	24.9
Acute exacerbation of COPD	1171	6.2
Pleural effusion	844	4.5
Aspiration pneumonia	626	3.3
Pulmonary embolism	425	2.2
Atelectasis	424	2.2
Cardiovascular	4519	23.9
Cardiac arrest	1539	8.1
Left heart failure with pulm. edema	955	5.0
Left heart failure without pulm. edema	652	3.4
Acute severe arrhythmia: tachycardias	538	2.8
Acute myocardial infarction	516	2.7
Neurological	3430	18.1
Seizures	813	4.3
Cerebral artery stroke	777	4.1
Spontaneous Intraparenchymal bleeding	688	3.6
Metabolic/postanoxic encephalopathy	492	2.6
Spontaneous Subarachnoid haemorrhage	331	1.8
Gastrointestinal and hepatic	1595	8.4
Gastrointestinal bleeding: upper tract	430	2.3
Acute pancreatitis	246	1.3
Liver Dysfunction Syndrome	167	0.9
Ascites	137	0.7
Acute bile-duct disease	131	0.7
Trauma (anatomical districts)	2293	12.1
Chest	1161	6.1
Head	1123	5.9
Pelvis/bone/joint & muscle	611	3.2
Spine	579	3.1
Abdomen	364	1.9
Miscellaneous	74	0.4
Major vessels injury	63	0.3
Other	3651	19.3
Metabolic disorder	1313	6.9
Acute intoxication	844	4.5
Other disease	619	3.3
Nephrourologic disease	611	3.2
Haematological disease	249	1.3
Post transplantation	140	0.7
Renal transplantation	51	0.3
Bone marrow transplantation	36	0.2
Infections	7846	41.5
Pneumonia	3575	18.9
L.R.T.I. other than pneumonia	598	3.2
NON-catheter-related UTI	567	3.0
Primary bacteraemia of unknown origin	552	2.9
Positivity to COVID	540	2.9
Interstitial pneumonia from COVID	437	2.3
Clinical sepsis	369	2.0
Cholecystitis/cholangitis	321	1.7
NON-surgical skin/soft tissue infection	290	1.5
NON-surgical CNS infection	264	1.4
Missing	0	

Trauma (anatomical districts)	N	%
Head	1123	5.9
Traumatic subarachnoid haemorrhage	453	2.4
Maxillofacial fracture	382	2.0
Cerebral contusion/laceration	381	2.0
Traumatic Subdural haematoma	376	2.0
Skull fracture	292	1.5
Spine	579	3.1
Vertebral fracture, without deficit	504	2.7
Tetraplegia	24	0.1
Cervical injury, incomplete deficit	21	0.1
Chest	1161	6.1
Other injuries of the chest	733	3.9
Traum. haemothorax/pneumothorax	448	2.4
Severe lung contusion/laceration	223	1.2
Abdomen	364	1.9
Minor injuries of the abdomen	131	0.7
Spleen: Moderate-Severe laceration	124	0.7
Liver: Moderate-Severe laceration	87	0.5
Pelvis/bone/joint & muscle	611	3.2
Long bone fracture	418	2.2
Multiple fracture of the pelvis	284	1.5
Very severe or open fracture of the pelvis	17	0.1
Major vessels injury	63	0.3
Neck vessels: dissection/transection	27	0.1
Proximal limbs vessels: transection	14	0.1
Aorta: rupture/dissection	13	0.1
Miscellaneous	74	0.4
Burns (>30% BSA)	50	0.3
Inhalation injury	30	0.2
Missing	0	

Infection severity on admission	N	%
None	11065	58.5
INFECTION WITHOUT SEPSIS	2323	12.3
SEPSIS	3153	16.7
SEPTIC SHOCK	2370	12.5
Missing	0	

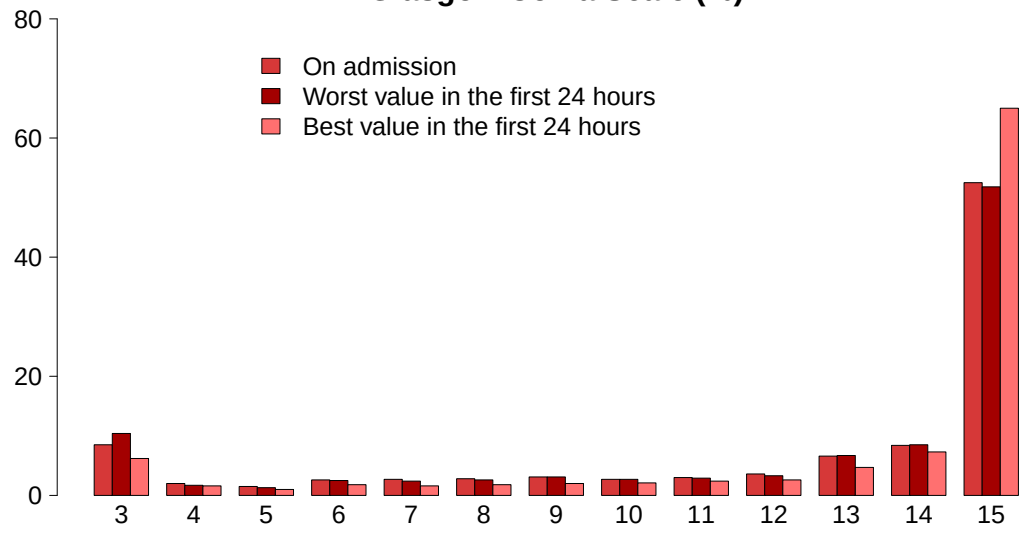
Infection severity on admission

Patients infected (N=7846)



National report for general ICUs - **Year 2023**
Severity scores - Adult non surgical patients eval. in the GiViTI model

Glasgow Coma Scale (%)

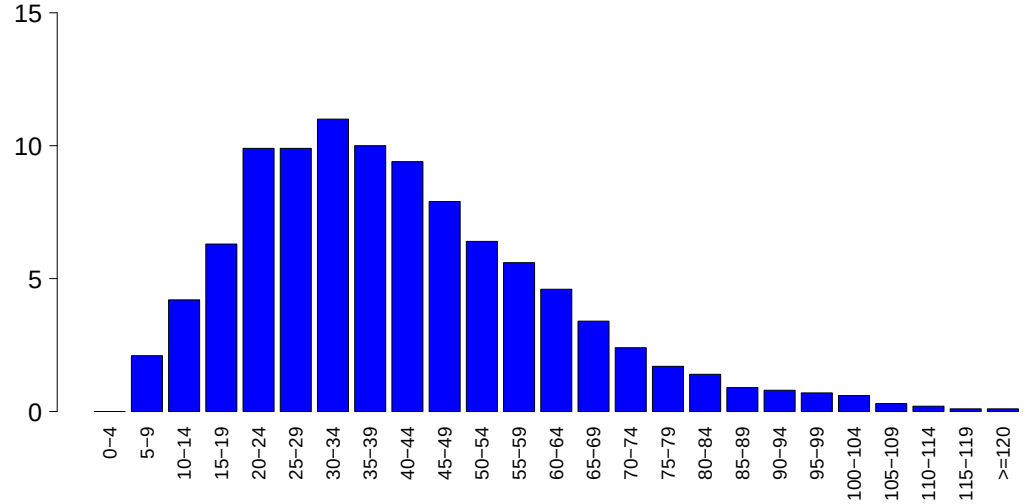


GCS (admission)	
Median	15
Q1−Q3	10−15
Not evaluable	3138
Missing	0

GCS (worst in first 24 hours)	
Median	15
Q1−Q3	10−15
Not evaluable	4525
Missing	0

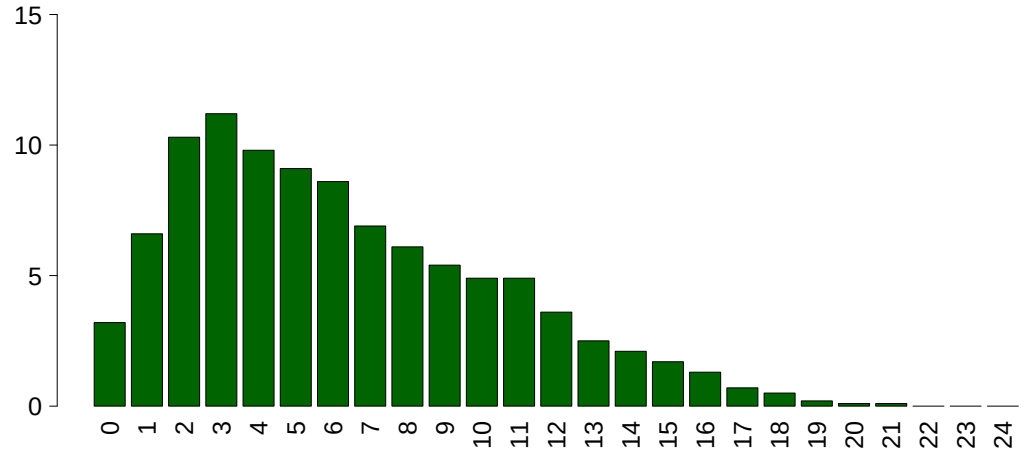
GCS (best in first 24 hours)	
Median	15
Q1−Q3	13−15
Not evaluable	4086
Missing	122

SAPS II (%)



SAPSII	
Mean	41.0
SD	20.3
Median	38
Q1−Q3	26−53
Not evaluable	4525
Missing	0

SOFA (%)



SOFA	
Mean	6.3
SD	4.2
Median	5
Q1−Q3	3−9
Not evaluable	4525
Missing	0

National report for general ICUs - **Year 2023**
Characteristics during the stay - Adult non surgical patients eval. in the GiViTI model

Complications during the stay	N	%
No	11441	60.5
Yes	7469	39.5
Missing	1	

Failures during the stay	N	%
No	15363	81.2
Yes	3548	18.8
A: Respiratory failure	1771	9.4
B: Cardiovascular failure	1547	8.2
C: Neurological failure	335	1.8
D: Hepatic failure	109	0.6
E: Renal failure (AKIN)	922	4.9
F: Acute skin failure	8	0.0
G: Metabolic failure	250	1.3
H: Coagulation failure	126	0.7
Missing	0	

Failures during the stay (top 10)	N	%
A	1019	5.4
B	731	3.9
E	338	1.8
AB	332	1.8
G	162	0.9
C	146	0.8
BE	145	0.8
ABE	135	0.7
AE	115	0.6
AC	46	0.2
Missing	0	

Respiratory failure occured	N	%
None	17139	90.6
Intubation for airway maint.	517	2.7
Hypoxic failure	1245	6.6
Hypercapnic failure	299	1.6
Missing	1	

Cardiovascular failure occured	N	%
None	17363	91.8
Cardiogenic shock	472	2.5
Hypovolemic shock	110	0.6
Haemorrhagic/hypovolemic shock	104	0.5
Septic shock	687	3.6
Anaphylactic shock	4	0.0
Neurogenic shock	92	0.5
Other shock	174	0.9
Missing	1	

Neurological failure occured	N	%
None	18575	98.2
Cerebral coma	199	1.1
Metabolic coma	65	0.3
Postanoxic coma	75	0.4
Missing	1	

Renal failure occured (AKIN)	N	%
None	17988	95.1
Mild	95	0.5
Moderate	140	0.7
Severe	687	3.6
Missing	1	

Complications during the stay	N	%
Respiratory	1208	6.4
Pleural effusion	398	2.1
Atelectasis	224	1.2
Severe ARDS	216	1.1
Pneumothorax/Pneumomediastinum	123	0.7
Moderate ARDS	117	0.6
Cardiovascular	1676	8.9
Acute severe arrhythmia: tachycardias	610	3.2
Cardiac arrest	583	3.1
Pulmonary edema	139	0.7
Left heart failure w/o pulm. edema	123	0.7
Acute severe arrhythmia: bradycardias	111	0.6
Neurological	1658	8.8
Drowsiness/agitation/delirium	841	4.4
Seizures	309	1.6
Brain edema	276	1.5
Intracranial hypertension	219	1.2
CrIMyNe	81	0.4
Gastrointestinal and hepatic	518	2.7
Gastrointestinal bleeding: upper tract	117	0.6
Liver Dysfunction Syndrome	84	0.4
Gastrointestinal bleeding: lower tract	68	0.4
Paralytic Ileus	68	0.4
Bowel ischaemia	48	0.3
Other	619	3.3
Metabolic disorder	250	1.3
Nephrourologic disease	158	0.8
Other disease	137	0.7
Category/Stage II: Partial Thickness Skin Loss	34	0.2
Other skin and/or soft tissue pathology	33	0.2
Category/Stage I: Nonblanchable Erythema	26	0.1
F.U.O. fever of unknown origin	22	0.1
Infections	2250	11.9
Pneumonia	884	4.7
L.R.T.I. other than pneumonia	504	2.7
Catheter-related UTI	344	1.8
Primary bacteraemia of unknown origin	294	1.6
Catheter-related bacteremia (CR-BSI)	231	1.2
NON-catheter-related UTI	101	0.5
Clinical sepsis	65	0.3
Upper respiratory tract infection	59	0.3
NON-surgical skin/soft tissue infection	42	0.2
Gastroenteritis	40	0.2
Missing	1	

National report for general ICUs - **Year 2023**
Characteristics during the stay - Adult non surgical patients eval. in the GiViTI model

Infections	N	%
None	9771	51.7
Only on admission	6889	36.4
On admission and during ICU stay	956	5.1
Only during ICU stay	1294	6.8
Missing	1	

Maximum severity of infection	N	%
None	9771	51.7
INFECTION WITHOUT SEPSIS	2741	14.5
SEPSIS	3552	18.8
SEPTIC SHOCK	2845	15.0
Missing	2	

Severity evolution

		During the stay				
	N (R %)	None	INFECTION WITHOUT SEPSIS	SEPSIS	SEPTIC SHOCK	TOT
Admission	None	9771 (88.3%)	673 (6.1%)	463 (4.2%)	157 (1.4%)	11064
	INFECTION WITHOUT SEPSIS	-	2068 (89.0%)	192 (8.3%)	63 (2.7%)	2323
	SEPSIS	-	-	2897 (91.9%)	255 (8.1%)	3152
	SEPTIC SHOCK	-	-	-	2370 (100.0%)	2370
	TOT	9771	2741	3552	2845	18909

Ventil. Associat. Pneumonia (VAP)	N	%
No	18163	96.0
Yes	747	4.0
Missing	1	

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

Estimate	10.3
CI (95%)	9.6−11.1

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

Estimate	8.3%
CI (95%)	7.7−8.9

Catheter Bacteraemia (CR-BSI)	N	%
No	18679	98.8
Yes	231	1.2
Missing	1	

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

Estimate	1.9
CI (95%)	1.7−2.2

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

Estimate	2.3%
CI (95%)	2.0−2.6

Catheter-related urinary tract infection (UTI)	N	%
No	18566	98.2
Yes	344	1.8
Missing	1	

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

Estimate	2.5
CI (95%)	2.3−2.8

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

Estimate	3.0%
CI (95%)	2.7−3.4

Process indicators - Adult non surgical patients eval. Use 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)	18677	98.8										
Invasive ventilation	11152	59.0	6875	36.4	3762	19.9	4	1–9	1	0	0–0	0
Non invasive ventilation	5014	26.5	1579	8.3	1224	6.5	2	1–4	0	0	0–2	0
Tracheostomy	2276	12.0	633	3.3	1912	10.1	13	6–22	0	9	5–14	0
iNO (inhaled nitric oxide)	162	0.9	7	0	29	0.2	3	2–6	0	1	0–4	0
Central Venous Catheter	13858	73.3	4449	23.5	10851	57.4	5	2–11	0	0	0–0	0
PICC	944	5.0	255	1.3	865	4.6	4	2–9	0	4	0–14	0
Arterial Catheter	16711	88.4	5422	28.7	6420	33.9	4	2–10	0	0	0–0	0
Vasoactive drugs	8403	44.4	3310	17.5	2362	12.5	2	1–5	0	0	0–0	0
Antiarrhythmics	1738	9.2	541	2.9	977	5.2	3	1–7	0	1	0–2	0
IABP	176	0.9	138	0.7	52	0.3	2	1–3	0	0	0–1	0
Invasive monitoring of C.O.	654	3.5	67	0.4	184	1	5	3–7	0	0	0–1	0
Continous monitoring of ScVO2	30	0.2	1	0	7	0	4	2–9	0	0	0–1	0
Temporary pacing	78	0.4	49	0.3	35	0.2	1	1–3	0	0	0–1	0
Ventricular assistance	13	0.1	9	0	7	0	2	1–5	0	1	0–2	0
DC-shock	386	2.0								0	0–0	0
CPR	608	3.2								0	0–0	0
Massive blood transfusion	109	0.6								0	0–0	0
ICP monitoring without CSF drainage	98	0.5	24	0.1	18	0.1	7	5–11	0	0	0–1	0
ICP monitoring with CSF drainage	38	0.2	16	0.1	20	0.1	9	4–14	0	1	0–2	0
EVD without ICP monitoring	13	0.1	5	0	4	0	9	7–14	0	2	1–3	0
Haemofiltration	1028	5.4	95	0.5	247	1.3	3	2–7	0	0	0–2	0
Haemodialysis	821	4.3	142	0.8	343	1.8	3	2–8	0	0	0–2	0
ECMO	97	0.5	43	0.2	39	0.2	6	1–11	0	0	0–1	0
Hepatic clearance techniques	12	0.1										
Clearance techniques during sepsis	187	1.0	15	0.1	43	0.2	3	1–4	0	0	0–1	0
IAP (intra-abdominal pressure)	174	0.9										
Hypothermia	165	0.9	39	0.2	23	0.1	1	1–2	0	0	0–0	0
Enteral nutrition	8400	44.4	1689	8.9	5705	30.2	7	3–14	0	1	0–2	0
Parenteral nutrition	2446	12.9	364	1.9	1195	6.3	5	2–9	0	1	0–2	0
SDD (Topical, Topical and systemic)	13	0.1										
Patient restraint	323	1.7										
Peridural catheter	116	0.6	19	0.1	78	0.4	4	2–7	0	1	0–2	0
Electrical cardioversion	156	0.8								1	0–4	0
Vacuum therapy	28	0.1										
Urinary catheter	18039	95.4	13762	72.8	15740	83.2	4	2–10	0	0	0–0	0
Pronation	485	2.6	27	0.1	29	0.2	3	1–4	0	1	0–3	0
Antivirals	746	3.9	311	1.6	371	2	4	2–8	0	0	0–2	0

National report for general ICUs - **Year 2023**
Process indicators - Adult non surgical patients 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	11287	59.7										
Antibiotic prophylaxis	1350	7.1	481	2.5	566	3	2	1–4	0	0	0–0	0
Empirical antibiotic therapy (infection diagnosis confirmed)	4707	24.9	2046	10.8	1477	7.8	3	1–5	0	0	0–1	0
Empirical antibiotic therapy (infection diagnosis unconfirmed)	3692	19.5	1530	8.1	2198	11.6	3	2–6	0	0	0–0	0
Targeted antibiotic therapy	4447	23.5	908	4.8	2601	13.8	6	3–10	0	3	1–6	0
Antifungal in empirical therapy	530	2.8	139	0.7	248	1.3	5	2–8	0	1	0–8	0
Antifungal in targeted therapy	478	2.5	92	0.5	267	1.4	8	5–15	0	7	3–14	0
Pre-emptive antifungal	86	0.5	35	0.2	46	0.2	7	3–13	0	1	0–9	0

Antibiotic therapy

Pt. infected in ICU only (N=1294)	N	%
No therapy	152	11.7
Only empirical	267	20.6
Only targeted	345	26.7
Targeted after empirical	366	28.3
Other	164	12.7
Missing	0	

Antifungal therapy

Pt. infected in ICU only (N=1294)	N	%
No therapy	1178	91.0
Only empirical	51	3.9
Only targeted	62	4.8
Targeted after empirical	2	0.2
Other	1	0.1
Missing	0	

National report for general ICUs - **Year 2023**
Process indicators - Adult non surgical patients eval. in the GiViTI model

Invasive ventilation (N=11152)	N	%	Length (days) Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	5090	39.5	8.6	11.3	5	2−11	1
For airway mainteinance	5375	41.7	6.3	9.3	3	1−8	0
In weaning	344	2.7	0.5	0.5	1	0−1	0
Not evaluable	2075	16.1	10.1	13.9	5	2−12	1738
Reintubation within 48 hours	217	1.7	9.7	13.4	6	3−11	0

Non invasive ventilation (N=5014)	N	%
Non invasive ventilation only	3031	60.5
Non invasive ventilation failed	870	17.4
For weaning	944	18.8
Other	169	3.4
Missing	0	

Tracheostomy not present on admission (N=1643)	N	%
Surgical	283	17.2
Percutwist	80	4.9
Ciaglia	323	19.7
Monodil. Ciaglia	716	43.6
Fantoni	1	0.1
Griggs	165	10.0
Other Kind	44	2.7
Unknown	30	1.8
Missing	1	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=1626)	
Mean	9.8
SD	6.8
Median	9
Q1−Q3	5−13
Missing	3

Invasive monitoring of C.O. (N=654)	N	%
Swan Ganz	115	17.6
PICCO	433	66.2
LIDCO	3	0.5
Vigileo-PRAM	45	6.9
Other	57	8.7
Missing	1	

SDD (N=13)	N	%
Topical	9	69.2
Topical and systemic	4	30.8
Missing	0	

Surgical interventions	N	%
No	18131	95.9
Yes	780	4.1
Missing	0	

Number of surgical interventions	N	%
0	18131	95.9
1	635	3.4
2	102	0.5
3	25	0.1
>3	18	0.1
Missing	0	

Surgical interventions Days from admission	
Mean	10.3
SD	12.1
Median	6
Q1−Q3	3−12.5
Missing	8

Surgical interventions (top 10)	N	%
Orthopaedic surgery	230	1.2
Gastrointestinal surgery	219	1.2
ENT surgery	152	0.8
Neurosurgery	89	0.5
Thoracic surgery	56	0.3
Maxillo-Facial surgery	45	0.2
Other surgery	40	0.2
Organ donation	32	0.2
Plastic surgery	29	0.2
Nephro/Urological surgery	28	0.1
Missing	0	

Non surgical interventions	N	%
No	18351	97.0
Yes	560	3.0
Missing	0	

Non surgical interventions Days from admission	
Mean	11.7
SD	13.1
Median	7
Q1−Q3	3−16
Missing	18

Non surgical interventions	N	%
Interventional endoscopy	362	1.9
Interventional radiology	133	0.7
Interventional cardiology	130	0.7
Interventional neuroradiology	26	0.1
Missing	0	

National report for general ICUs - **Year 2023**
Outcome indicators - Adult non surgical patients eval. in the GiViTI model

ICU outcome	N	%
Dead	4383	23.2
Transferred to same hospital	11687	61.8
Transferred to other hospital	2481	13.1
Discharged home	244	1.3
Disch. terminally ill	115	0.6
Missing	1	

Transferred to (N=14168)	N	%
Ward	9851	69.5
Other ICU	1721	12.1
High dependency care unit	1918	13.5
Rehabilitation	581	4.1
Day hospital or Long-term care	97	0.7
Missing	0	

Reason of transfer to Other ICU (N=1772)	N	%
Specialist expertise	765	43.2
Step-up care	133	7.5
Logistical/organizational reasons	823	46.4
Step-down care	51	2.9
Missing	0	

Transferred to Same hospital (N=11687)	N	%
Ward	9188	78.6
Other ICU	597	5.1
High dependency care unit	1760	15.1
Rehabilitation	107	0.9
Day hospital or Long-term care	35	0.3
Missing	0	

Transferred to Other hospital (N=2481)	N	%
Ward	663	26.7
Other ICU	1124	45.3
High dependency care unit	158	6.4
Rehabilitation	474	19.1
Day hospital or Long-term care	62	2.5
Missing	0	

ICU mortality	N	%
Alive	14412	76.2
Dead	4498	23.8
Missing	1	

Timing of ICU mortality (N=4498)	N	%
Daytime (08:00AM - 07:59PM)	3267	72.6
Nighttime (08:00PM - 07:59AM)	1231	27.4
Weekdays (Monday - Friday)	3425	76.1
Weekend (Saturday - Sunday)	1073	23.9
Missing	0	

C.A.M. activation (N=4498)	N	%
Yes, with organ donation	276	6.3
Yes, without organ donation	297	6.8
No, with organ donation	29	0.7
No, without organ donation	3781	86.3
Missing	115	

Tissue removal (N=4498)	N	%
Yes, with C.A.M. activation	138	3.1
Yes, without C.A.M. activation	260	5.8
No	4100	91.2
Missing	0	

Hospital mortality	N	%
Dead	5389	28.5
Transf. to other acute-care hospital	2608	13.8
Transf. to other type of hosp. stay	3262	17.2
Nursing home	381	2.0
Voluntary discharge	208	1.1
Discharged home	7063	37.3
Missing	0	

To other type of H stay (N=3262)	N	%
Rehabilitation in the same institute	456	14.0
Rehabilitation in other institute	1858	57.0
DH/long-term care, same inst.	258	7.9
DH/long-term care, other inst.	689	21.1
Missing	1	

Disch. terminally ill (N=13522)	N	%
Yes	310	2.3
No	13212	97.7
Missing	0	

Hospital mortality	N	%
Alive	13212	69.9
Dead	5699	30.1
Missing	0	

Timing of hosp. mortality (N=5699)	N	%
In ICU	4498	78.9
Within 24 hours after ICU	80	1.4
24-47 hours after ICU	49	0.9
48-71 hours after ICU	51	0.9
72-95 hours after ICU	53	0.9
After 95 hours after ICU	967	17.0
Missing	1	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=1201)	
Mean	17.9
SD	24.1
Median	10
Q1−Q3	5−23
Missing	0

National report for general ICUs - **Year 2023**
Outcome indicators - Adult non surgical patients eval. in the GiViTI model

Last hospital mortality	N	%
Alive	13036	68.9
Dead	5875	31.1
Missing	0	

ICU stay (days)	
Mean	7.9
SD	10.9
Median	4
Q1−Q3	2−9
Missing	0

ICU stay (days) **Alive** (N=14412)	
Mean	8.0
SD	11.1
Median	4
Q1−Q3	2−9
Missing	0

ICU stay (days) **Dead** (N=4498)	
Mean	7.4
SD	10.5
Median	4
Q1−Q3	1−10
Missing	0

Stay after ICU (days) **Alive** (N=14412)	
Mean	13.0
SD	17.5
Median	8
Q1−Q3	2−17
Missing	3

Hospital stay (days)	
Mean	20.0
SD	22.5
Median	14
Q1−Q3	6−26
Missing	0

Hospital stay (days) **Alive** (N=13212)	
Mean	22.3
SD	22.9
Median	16
Q1−Q3	8−29
Missing	0

Hospital stay (days) **Dead** (N=5699)	
Mean	14.8
SD	20.5
Median	8
Q1−Q3	3−19
Missing	0

National report for general ICUs - **Year 2023**
Characteristics on admission - Adult elective surgical pts. eval. in the GiViTI model

Patients (N): 9096

Sex	N	%
Male	5355	58.9
Female	3741	41.1
Missing	0	

Age (years)	N	%
17-45	712	7.8
46-65	2734	30.1
66-75	2698	29.7
>75	2952	32.5
Missing	0	
Mean	67.4	
SD	14.1	
Median	70	
Q1−Q3	59−78	
Min−Max	17−99	

Body mass Index (BMI)	N	%
Underweight	480	5.3
Normal	3945	43.4
Overweight	2706	29.7
Obese	1965	21.6
Missing	0	

Pregnancy status **Females** (N=3741)	N	%
Not fertile	1755	47.0
Not pregnant/Unknown	1956	52.3
Currently pregnant	4	0.1
Post partum	22	0.6
Missing	4	

Comorbidities	N	%
No	1047	11.5
Yes	8049	88.5
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	5362	58.9
Any tumour without metastasis	1968	21.6
Arrhythmia	1392	15.3
Diabetes Type II without insulin tr.	1295	14.2
Moderate COPD	1264	13.9
Myocardial infarction	1093	12.0
Peripheral vascular disease	988	10.9
Antiplatelet therapy	730	8.0
Metastatic cancer	728	8.0
Moderate or severe renal disease	682	7.5
Missing	0	

Stay before ICU (days)	
Mean	3.7
SD	10.4
Median	1
Q1−Q3	0−2
Missing	0

Source of admission	N	%
Same hospital	8989	98.8
Other hospital	107	1.2
Long-term chronic care hospital	0	0.0
Directly from the community	0	0.0
Missing	0	

Ward of admission **Hospital** (N=9096)	N	%
Medical ward	197	2.2
Surgical ward	8730	96.0
Emergency room	55	0.6
Other ICU	85	0.9
High dependency care unit	29	0.3
Missing	0	

Reason for transfer from **Other ICU** (N=85)	N	%
Specialist expertise	32	37.6
Step-up care	25	29.4
Logistical/organizational reasons	27	31.8
Step-down care	1	1.2
Missing	0	

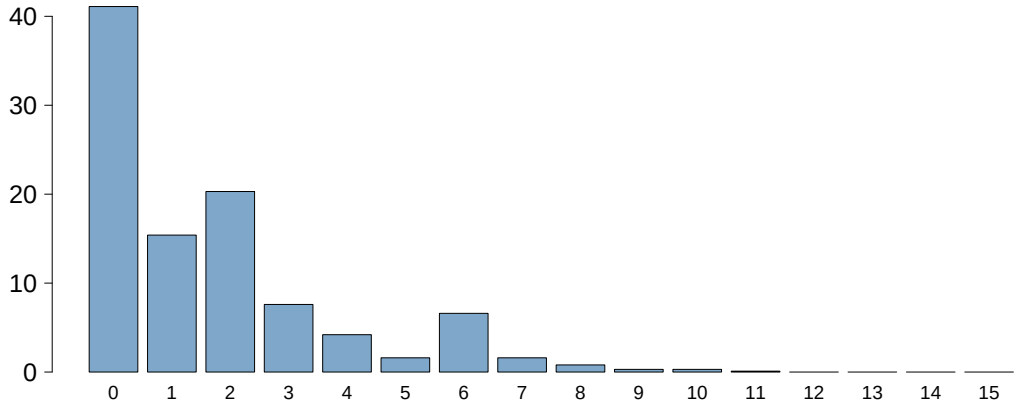
Ward of admission **Same hospital** (N=8989)	N	%
Medical ward	195	2.2
Surgical ward	8677	96.5
Emergency room	41	0.5
Other ICU	49	0.5
High dependency care unit	27	0.3
Missing	0	

Ward of admission **Other hospital** (N=107)	N	%
Medical ward	2	1.9
Surgical ward	53	49.5
Emergency room	14	13.1
Other ICU	36	33.6
High dependency care unit	2	1.9
Missing	0	

Scheduled admission	N	%
No	2079	22.9
Yes	7017	77.1
Missing	0	

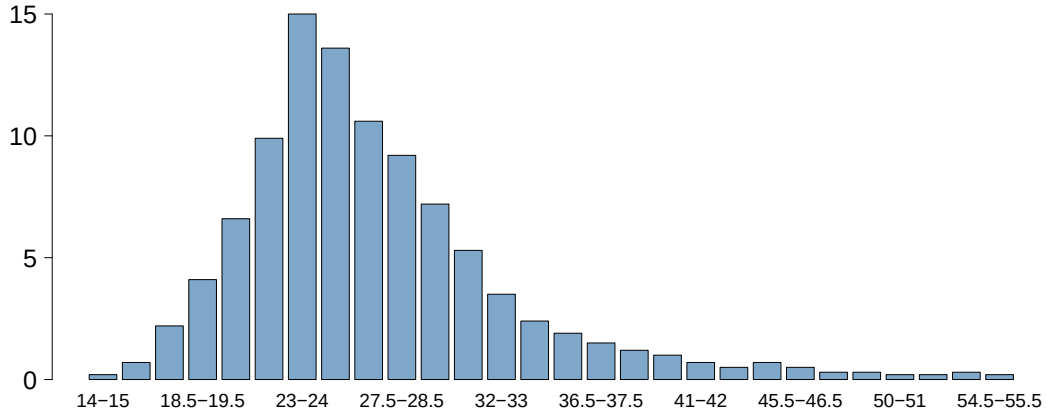
National report for general ICUs - **Year 2023**
Characteristics on admission - Adult elective surgical pts. eval. in the GiViTI model

Charlson score (%)



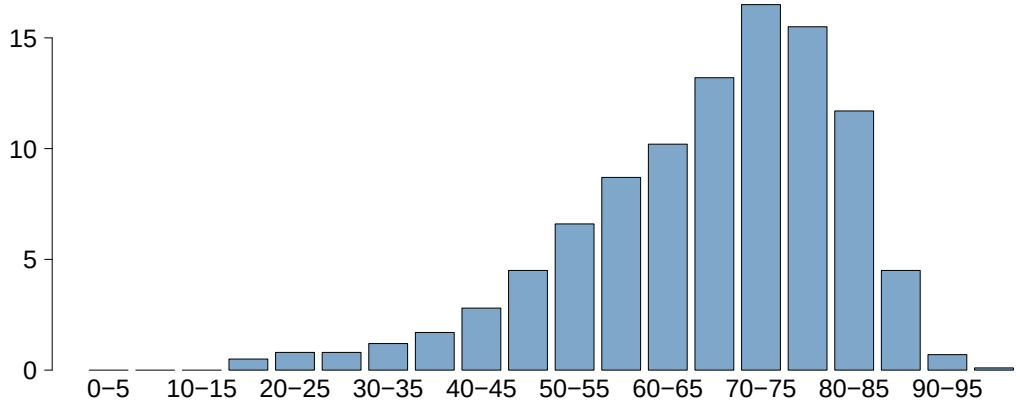
Charlson score	
Mean	1.7
SD	2.1
Median	1
Q1−Q3	0−2
Missing	0

BMI (%)



BMI	
Mean	27.4
SD	7.2
Median	25.9
Q1−Q3	23.2−29.4
Missing	0

Age (%)



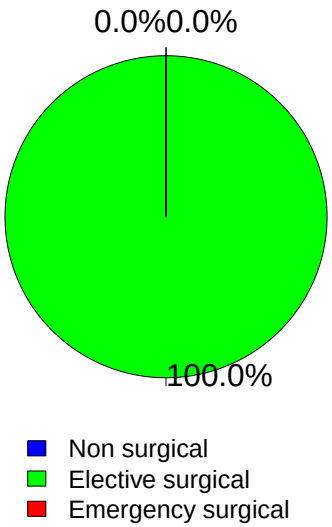
Age	
Mean	67.4
SD	14.1
Median	70
Q1−Q3	59−78
Missing	0

National report for general ICUs - **Year 2023**
Characteristics on admission - Adult elective surgical pts. eval. in the GiViTI model

Trauma	N	%
No	8713	95.8
Yes	383	4.2
Multiple trauma	60	0.7
Missing	0	

Surgical status	N	%
Non surgical	0	0.0
Elective surgical	9096	100.0
Emergency surgical	0	0.0
Missing	0	

Surgical status



Source of admission **Surgical pt.** (N=9096)	N	%
Operating theatre of surgical ward	8365	92.0
Operating theatre of emergency room	25	0.3
Surgical ward	365	4.0
Other	341	3.7
Missing	0	

Surgical interventions (top 10) **Elective surgical** (N=9096)	N	%
Gastrointestinal surgery	2465	27.1
Nephro/Urological surgery	1111	12.2
Neurosurgery	1060	11.7
Orthopaedic surgery	1004	11.0
ENT surgery	575	6.3
Gynaecological surgery	499	5.5
Thoracic surgery	481	5.3
Hepatic surgery	476	5.2
Pancreatic surgery	439	4.8
Abdominal vascular surgery	400	4.4
Missing	586	

Timing **Elective surgical** (N=9096)	N	%
From -7 to -3 days	122	1.3
From -2 to -1 days	307	3.4
On ICU admission day	9275	102.0
The day after ICU admission	88	1.0
Missing	26	

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	8868	97.5
Elective	150	1.6
Emergency	78	0.9
Missing	0	

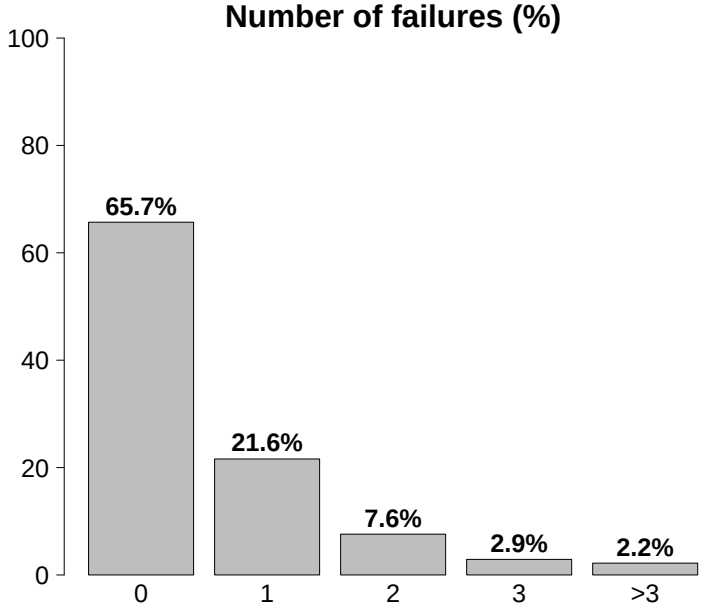
Non surgical interventions **Elective** (N=150)	N	%
Interventional radiology	36	24.0
Interventional endoscopy	19	12.7
Interventional neuroradiology	14	9.3
Interventional cardiology	6	4.0
Missing	75	

Non surgical interventions **Emergency** (N=78)	N	%
Interventional radiology	35	44.9
Interventional endoscopy	14	17.9
Interventional cardiology	12	15.4
Interventional neuroradiology	3	3.8
Missing	14	

National report for general ICUs - **Year 2023**
Characteristics on admission - Adult elective surgical pts. eval. in the GiViTI model

Reason for admission	N	%
Monitoring/Weaning	7620	83.8
Post surgical weaning	3542	39.0
Surgical monitoring	4052	44.6
Post interventional weaning	11	0.1
Interventional monitoring	12	0.1
Non surgical monitoring	0	0.0
Missing	3	
Intensive Treatment	1476	16.2
Only ventilatory support	687	7.6
Only cardiovascular support	292	3.2
Ventilatory and cardiovascular support	497	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	5972	65.7
Yes	3124	34.3
A: Respiratory failure	1184	13.0
B: Cardiovascular failure	789	8.7
C: Neurological failure	86	0.9
D: Hepatic failure	24	0.3
E: Renal failure	1818	20.0
F: Acute skin failure	2	0.0
G: Metabolic failure	1039	11.4
H: Coagulation failure	33	0.4
Missing	0	

Failures on admission (top 10)	N	%
E	1005	11.0
A	467	5.1
G	338	3.7
EG	260	2.9
AB	162	1.8
ABEG	154	1.7
B	126	1.4
AE	86	0.9
ABE	85	0.9
BE	67	0.7
Missing	0	

Respiratory failure	N	%
None	7912	87.0
Only hypoxic failure	297	3.3
Only hypercapnic failure	39	0.4
Hypoxic-hypercapnic failure	42	0.5
Intubation for airway maint.	806	8.9
Missing	0	

Cardiovascular failure	N	%
None	8307	91.3
Without shock	207	2.3
Cardiogenic shock	54	0.6
Septic shock	101	1.1
Haemorrhagic/hypovolemic shock	249	2.7
Hypovolemic shock	84	0.9
Anaphylactic shock	12	0.1
Neurogenic shock	9	0.1
Other shock	41	0.5
Mixed shock	32	0.4
Missing	0	

Neurologic failure	N	%
None	7139	98.8
Cerebral coma	44	0.6
Metabolic coma	22	0.3
Postanoxic coma	20	0.3
Toxic coma	0	0.0
Missing or not evaluable	1871	

Renal failure (AKIN)	N	%
None	7278	80.0
Mild	1198	13.2
Moderate	345	3.8
Severe	275	3.0
Missing	0	

Metabolic failure	N	%
None	8057	88.6
pH <= 7.3, PaCO2 < 45 mmHg	336	3.7
Base deficit >= 5 mmol/L, lactate >1.5x	703	7.7
Missing	0	

National report for general ICUs - Year 2023
Characteristics on admission - Adult elective surgical pts. eval. in the GiViTI model

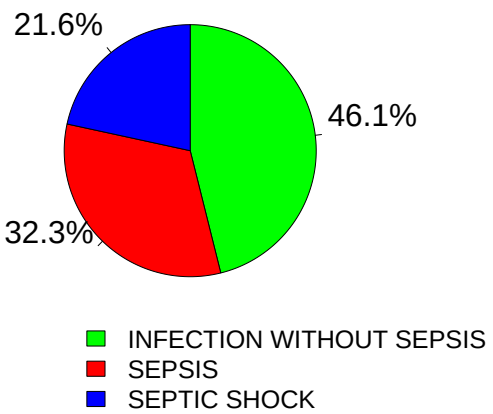
Clinical conditions on admission	N	%
Respiratory	931	10.2
Lung cancer	338	3.7
Upper respiratory tract disease	195	2.1
Atelectasis	80	0.9
Pleural effusion	77	0.8
Acute asthma/bronchospasm	76	0.8
Cardiovascular	917	10.1
Non-ruptured aneurysm	363	4.0
Peripheral vascular disease	173	1.9
Acute severe arrhythmia: tachycardias	85	0.9
Cardiac arrest	57	0.6
Left heart failure without pulm. edema	43	0.5
Neurological	1004	11.0
Brain tumour	772	8.5
Neuropathy/myopathy	61	0.7
Cerebral Aneurysm	52	0.6
Seizures	38	0.4
Cerebral artery stroke	37	0.4
Gastrointestinal and hepatic	2734	30.1
Digestive tract malignancy	1545	17.0
Pancreatic malignancy	404	4.4
Hepatic malignancy	376	4.1
Acute bile-duct disease	139	1.5
Intestinal occlusion	98	1.1
Trauma (anatomical districts)	383	4.2
Pelvis/bone/joint & muscle	326	3.6
Spine	52	0.6
Chest	46	0.5
Head	35	0.4
Abdomen	7	0.1
Major vessels injury	1	0.0
Miscellaneous	1	0.0
Other	3543	39.0
Other disease	991	10.9
Nephrourologic disease	903	9.9
ENT/maxillofacial disease	521	5.7
Orthopaedic disease	479	5.3
Gynaecological disease	424	4.7
Post transplantation	104	1.1
Liver transplantation	57	0.6
Renal transplantation	40	0.4
Infections	601	6.6
Pneumonia	89	1.0
NON-catheter-related UTI	63	0.7
Post-surgical peritonitis	59	0.6
Orthopaedic prosthesis infection	52	0.6
NON-surgical skin/soft tissue infection	44	0.5
Catheter-related UTI	38	0.4
Cholecystitis/cholangitis	32	0.4
Post-surgical bone and joint infection	26	0.3
Primary bacteraemia of unknown origin	23	0.3
L.R.T.I. other than pneumonia	23	0.3
Missing	0	

Trauma (anatomical districts)	N	%
Head	35	0.4
Maxillofacial fracture	20	0.2
Traumatic subarachnoid haemorrhage	11	0.1
Skull fracture	8	0.1
Cerebral contusion/laceration	7	0.1
Traumatic Subdural haematoma	6	0.1
Spine	52	0.6
Vertebral fracture, without deficit	41	0.5
Cervical injury, incomplete deficit	7	0.1
Tetraplegia	2	0.0
Chest	46	0.5
Other injuries of the chest	33	0.4
Traum. haemothorax/pneumothorax	18	0.2
Flail chest	3	0.0
Abdomen	7	0.1
Spleen: Moderate-Severe laceration	3	0.0
Minor injuries of the abdomen	3	0.0
Spleen: Massive rupture	1	0.0
Pelvis/bone/joint & muscle	326	3.6
Long bone fracture	316	3.5
Multiple fracture of the pelvis	24	0.3
Very severe or open fracture of the pelvis	4	0.0
Major vessels injury	1	0.0
Proximal limbs vessels: transection	1	0.0
-	0	0.0
-	0	0.0
Miscellaneous	1	0.0
Burns (>30% BSA)	1	0.0
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	8495	93.4
INFECTION WITHOUT SEPSIS	277	3.0
SEPSIS	194	2.1
SEPTIC SHOCK	130	1.4
Missing	0	

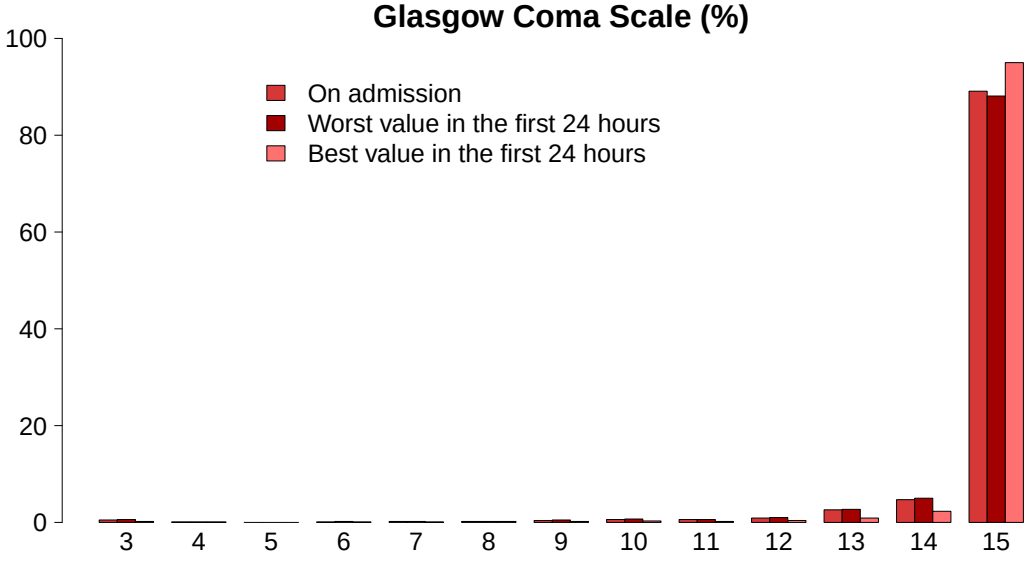
Infection severity on admission

Patients infected (N=601)



National report for general ICUs - **Year 2023**
Severity scores - Adult elective surgical pts. eval. in the GiViTI model

Glasgow Coma Scale (%)

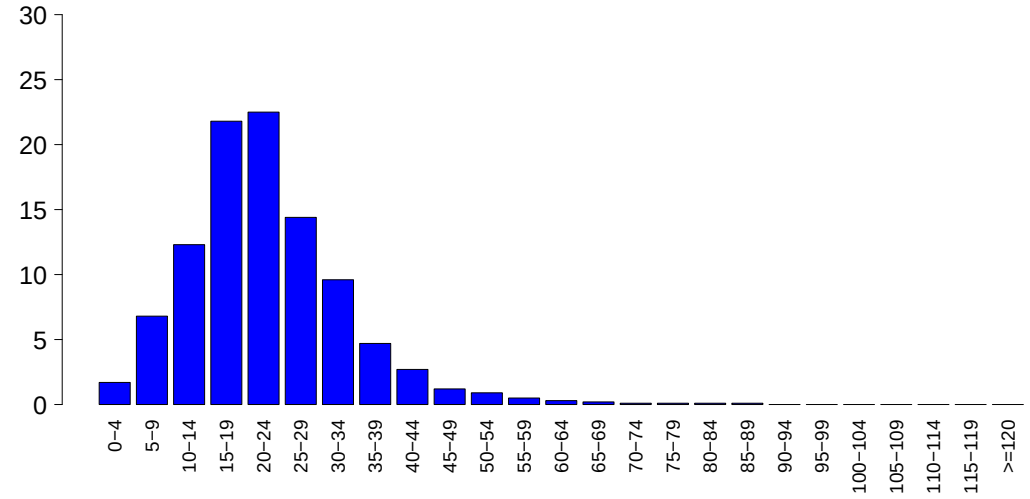


GCS (admission)	
Median	15
Q1–Q3	15–15
Not evaluable	1871
Missing	0

GCS (worst in first 24 hours)	
Median	15
Q1–Q3	15–15
Not evaluable	1159
Missing	0

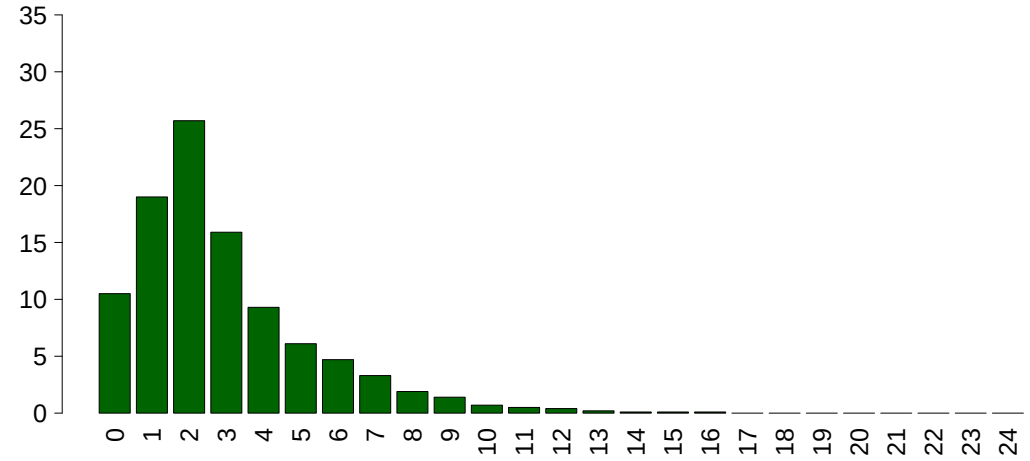
GCS (best in first 24 hours)	
Median	15
Q1–Q3	15–15
Not evaluable	531
Missing	94

SAPS II (%)



SAPSII	
Mean	22.3
SD	10.7
Median	21
Q1–Q3	15–28
Not evaluable	1159
Missing	0

SOFA (%)



SOFA	
Mean	2.9
SD	2.5
Median	2
Q1–Q3	1–4
Not evaluable	1159
Missing	0

National report for general ICUs - **Year 2023**
Characteristics during the stay - Adult elective surgical pts. eval. in the GiViTI model

Complications during the stay	N	%
No	8198	90.1
Yes	898	9.9
Missing	0	

Failures during the stay	N	%
No	8691	95.5
Yes	405	4.5
A: Respiratory failure	227	2.5
B: Cardiovascular failure	150	1.6
C: Neurological failure	13	0.1
D: Hepatic failure	9	0.1
E: Renal failure (AKIN)	112	1.2
F: Acute skin failure	0	0.0
G: Metabolic failure	26	0.3
H: Coagulation failure	6	0.1
Missing	0	

Failures during the stay (top 10)	N	%
A	142	1.6
B	70	0.8
E	61	0.7
AB	40	0.4
G	18	0.2
ABE	16	0.2
AE	13	0.1
BE	12	0.1
AC	5	0.1
C	5	0.1
Missing	0	

Respiratory failure occured	N	%
None	8869	97.5
Intubation for airway maint.	91	1.0
Hypoxic failure	133	1.5
Hypercapnic failure	21	0.2
Missing	0	

Cardiovascular failure occured	N	%
None	8946	98.4
Cardiogenic shock	24	0.3
Hypovolemic shock	21	0.2
Haemorrhagic/hypovolemic shock	33	0.4
Septic shock	66	0.7
Anaphylactic shock	0	0.0
Neurogenic shock	2	0.0
Other shock	11	0.1
Missing	0	

Neurological failure occured	N	%
None	9083	99.9
Cerebral coma	10	0.1
Metabolic coma	2	0.0
Postanoxic coma	2	0.0
Missing	0	

Renal failure occured (AKIN)	N	%
None	8984	98.8
Mild	23	0.3
Moderate	27	0.3
Severe	62	0.7
Missing	0	

Complications during the stay	N	%
Respiratory	167	1.8
Pleural effusion	56	0.6
Atelectasis	45	0.5
Upper resp. tract disease	17	0.2
Pneumothorax/Pneumomediastinum	15	0.2
Mild ARDS	12	0.1
Cardiovascular	182	2.0
Acute severe arrhythmia: tachycardias	85	0.9
Cardiac arrest	25	0.3
Acute severe arrhythmia: bradycardias	14	0.2
Hypertensive crisis	13	0.1
Peripheral vascular disease	13	0.1
Neurological	156	1.7
Drowsiness/agitation/delirium	94	1.0
Seizures	32	0.4
New ischaemic stroke	15	0.2
Brain edema	13	0.1
Post-surgical intracranial bleeding	13	0.1
Gastrointestinal and hepatic	133	1.5
Intrabdominal bleeding	24	0.3
Anastomotic dehiscence	21	0.2
Gastrointestinal perforation	20	0.2
Gastrointestinal bleeding: lower tract	17	0.2
Bowel ischaemia	16	0.2
Other	103	1.1
Other disease	32	0.4
Metabolic disorder	26	0.3
Nephrourologic disease	26	0.3
Other skin and/or soft tissue pathology	13	0.1
F.U.O. fever of unknown origin	7	0.1
Category/Stage II: Partial Thickness Skin Loss	4	0.0
Category/Stage III: Full Thickness Skin Loss	2	0.0
Infections	216	2.4
Pneumonia	67	0.7
L.R.T.I. other than pneumonia	39	0.4
Post-surgical peritonitis	35	0.4
Catheter-related UTI	19	0.2
Catheter-related bacteremia (CR-BSI)	17	0.2
Primary bacteraemia of unknown origin	10	0.1
Clinical sepsis	10	0.1
Post-surgical skin/soft tissue infection	8	0.1
NON-surgical skin/soft tissue infection	7	0.1
NON-surgical secondary peritonitis	5	0.1
Missing	0	

National report for general ICUs - **Year 2023**
Characteristics during the stay - Adult elective surgical pts. eval. in the GiViTI model

Infections	N	%
None	8332	91.6
Only on admission	548	6.0
On admission and during ICU stay	53	0.6
Only during ICU stay	163	1.8
Missing	0	

Maximum severity of infection	N	%
None	8332	91.6
INFECTION WITHOUT SEPSIS	341	3.7
SEPSIS	234	2.6
SEPTIC SHOCK	188	2.1
Missing	1	

Severity evolution

		During the stay				
	N (R %)	None	INFECTION WITHOUT SEPSIS	SEPSIS	SEPTIC SHOCK	TOT
Admission	None	8332 (98.1%)	80 (0.9%)	42 (0.5%)	40 (0.5%)	8494
	INFECTION WITHOUT SEPSIS	-	261 (94.2%)	13 (4.7%)	3 (1.1%)	277
	SEPSIS	-	-	179 (92.3%)	15 (7.7%)	194
	SEPTIC SHOCK	-	-	-	130 (100.0%)	130
	TOT	8332	341	234	188	9095

Ventil. Associat. Pneumonia (VAP)	N	%
No	9047	99.5
Yes	49	0.5
Missing	0	

Catheter Bacteraemia (CR-BSI)	N	%
No	9079	99.8
Yes	17	0.2
Missing	0	

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

Estimate	12.7
CI (95%)	9.4−16.8

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

Estimate	1.5
CI (95%)	0.8−2.3

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

Estimate	10.1%
CI (95%)	7.5−13.4

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

Estimate	1.8%
CI (95%)	1.0−2.8

Catheter-related urinary tract infection (UTI)	N	%
No	9077	99.8
Yes	19	0.2
Missing	0	

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

Estimate	1.0
CI (95%)	0.6−1.6

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

Estimate	1.2%
CI (95%)	0.7−1.9

Process indicators - Adult elective surgical pts. eval. 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)	8963	98.5										
Invasive ventilation	4956	54.5	4605	50.6	233	2.6	0	0–1	0	0	0–0	0
Non invasive ventilation	705	7.8	187	2.1	224	2.5	1	1–2	0	0	0–1	0
Tracheostomy	330	3.6	220	2.4	305	3.4	2	1–7	0	8	4–13	0
iNO (inhaled nitric oxide)	10	0.1	0	0	2	0	2	2–2	0	3	1–4	0
Central Venous Catheter	3652	40.1	2810	30.9	3247	35.7	1	1–3	0	0	0–0	0
PICC	273	3.0	187	2.1	269	3	1	1–2	0	0	0–2	0
Arterial Catheter	7563	83.1	6285	69.1	1003	11	1	1–2	0	0	0–0	0
Vasoactive drugs	1543	17.0	1057	11.6	125	1.4	1	1–2	0	0	0–0	0
Antiarrhythmics	234	2.6	87	1	133	1.5	2	1–4	0	1	0–2	0
IABP	3	0.0	2	0	0	0	3	2–4	0	1	1–1	0
Invasive monitoring of C.O.	75	0.8	28	0.3	9	0.1	3	2–6	0	1	0–1	0
Continous monitoring of ScVO2	8	0.1	8	0.1	1	0	1	1–2	0			
Temporary pacing	3	0.0	2	0	1	0	1	1–4	0	0	0–0	0
Ventricular assistance	0	0.0										
DC-shock	18	0.2								0	0–1	0
CPR	24	0.3								0	0–0	0
Massive blood transfusion	43	0.5								0	0–0	0
ICP monitoring without CSF drainage	8	0.1	3	0	2	0	6	1–9	0	0	0–3	0
ICP monitoring with CSF drainage	36	0.4	33	0.4	16	0.2	2	1–3	0	0	0–0	0
EVD without ICP monitoring	25	0.3	21	0.2	20	0.2	1	1–2	0	0	0–4	0
Haemofiltration	73	0.8	5	0.1	15	0.2	5	3–10	0	1	1–4	0
Haemodialysis	65	0.7	14	0.2	25	0.3	2	1–5	0	1	0–3	0
ECMO	6	0.1	3	0	2	0	2	0–3	0	5	4–5	0
Hepatic clearance techniques	0	0.0										
Clearance techniques during sepsis	13	0.1	1	0	2	0	3	1–4	0	3	1–7	0
IAP (intra-abdominal pressure)	51	0.6										
Hypothermia	7	0.1	4	0	1	0	1	0–1	0	0	0–0	0
Enteral nutrition	623	6.8	79	0.9	463	5.1	3	1–9	0	1	1–2	0
Parenteral nutrition	743	8.2	125	1.4	534	5.9	2	1–5	0	1	0–1	0
SDD (Topical, Topical and systemic)	0	0.0										
Patient restraint	86	0.9										
Peridural catheter	1000	11.0	975	10.7	824	9.1	1	1–2	0	0	0–0	0
Electrical cardioversion	26	0.3								1	0–2	0
Vacuum therapy	26	0.3										
Urinary catheter	8639	95.0	8039	88.4	8015	88.1	1	1–2	0	0	0–0	0
Pronation	13	0.1	2	0	0	0	1	1–3	0	6	2–8	0
Antivirals	9	0.1	6	0.1	8	0.1	1	1–3	0	0	0–0	0

National report for general ICUs - **Year 2023**
Process indicators - Adult elective surgical 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	4415	48.5										
Antibiotic prophylaxis	3447	37.9	3043	33.5	1485	16.3	1	1–1	0	0	0–0	0
Empirical antibiotic therapy (infection diagnosis confirmed)	351	3.9	157	1.7	158	1.7	3	2–5	1	1	0–3	0
Empirical antibiotic therapy (infection diagnosis unconfirmed)	557	6.1	303	3.3	429	4.7	2	1–4	0	0	0–2	0
Targeted antibiotic therapy	342	3.8	141	1.6	246	2.7	3	2–7	0	4	2–7	0
Antifungal in empirical therapy	77	0.8	19	0.2	38	0.4	5	2–9	0	0	0–3	0
Antifungal in targeted therapy	38	0.4	6	0.1	21	0.2	10	3–15	0	6	3–10	0
Pre-emptive antifungal	20	0.2	10	0.1	16	0.2	2	2–6	0	1	0–4	0

Antibiotic therapy

Pt. infected in ICU only (N=163)	N	%
No therapy	20	12.3
Only empirical	55	33.7
Only targeted	24	14.7
Targeted after empirical	51	31.3
Other	13	8.0
Missing	0	

Antifungal therapy

Pt. infected in ICU only (N=163)	N	%
No therapy	129	79.1
Only empirical	25	15.3
Only targeted	9	5.5
Targeted after empirical	0	0.0
Other	0	0.0
Missing	0	

National report for general ICUs - **Year 2023**
Process indicators - Adult elective surgical pts. eval. in the GiViTI model

Invasive ventilation (N=4956)	N	%	Length (days) Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	313	5.4	5.1	8.4	2	1−6	0
For airway mainteinance	797	13.7	3.1	6.5	1	1−3	0
In weaning	3501	60.1	0.4	0.5	0	0−1	0
Not evaluable	1212	20.8	1.6	3.7	1	0−1	867
Reintubation within 48 hours	42	0.7	5.3	6.2	3	1−8	0

Non invasive ventilation (N=705)	N	%
Non invasive ventilation only	400	56.7
Non invasive ventilation failed	43	6.1
For weaning	232	32.9
Other	30	4.3
Missing	0	

Tracheostomy not present on admission (N=110)	N	%
Surgical	27	24.5
Percutwist	5	4.5
Ciaglia	19	17.3
Monodil. Ciaglia	36	32.7
Fantoni	2	1.8
Griggs	10	9.1
Other Kind	4	3.6
Unknown	7	6.4
Missing	0	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=107)	
Mean	8.4
SD	5.6
Median	7
Q1−Q3	4−12
Missing	0

Invasive monitoring of C.O. (N=75)	N	%
Swan Ganz	17	22.7
PICCO	41	54.7
LIDCO	0	0.0
Vigileo-PRAM	8	10.7
Other	9	12.0
Missing	0	

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

Surgical interventions	N	%
No	8974	98.7
Yes	122	1.3
Missing	0	

Number of surgical interventions	N	%
0	8974	98.7
1	91	1.0
2	18	0.2
3	6	0.1
>3	7	0.1
Missing	0	

Surgical interventions Days from admission	
Mean	9.3
SD	12.1
Median	6
Q1−Q3	3−11
Missing	0

Surgical interventions (top 10)	N	%
Gastrointestinal surgery	90	1.0
Orthopaedic surgery	16	0.2
Other surgery	14	0.2
ENT surgery	12	0.1
Neurosurgery	9	0.1
Nephro/Urological surgery	6	0.1
Maxillo-Facial surgery	5	0.1
Biliary tract surgery	5	0.1
Thoracic surgery	4	0.0
Abdominal vascular surgery	4	0.0
Missing	0	

Non surgical interventions	N	%
No	9044	99.4
Yes	52	0.6
Missing	0	

Non surgical interventions Days from admission	
Mean	11.4
SD	10.7
Median	7
Q1−Q3	4−17
Missing	1

Non surgical interventions	N	%
Interventional endoscopy	27	0.3
Interventional radiology	26	0.3
Interventional cardiology	8	0.1
Interventional neuroradiology	3	0.0
Missing	0	

National report for general ICUs - **Year 2023**
Outcome indicators - Adult elective surgical pts. eval. in the GiViTI model

ICU outcome	N	%
Dead	161	1.8
Transferred to same hospital	8693	95.6
Transferred to other hospital	146	1.6
Discharged home	87	1.0
Disch. terminally ill	9	0.1
Missing	0	

Transferred to (N=8839)	N	%
Ward	8523	96.4
Other ICU	116	1.3
High dependency care unit	164	1.9
Rehabilitation	25	0.3
Day hospital or Long-term care	11	0.1
Missing	0	

Reason of transfer to Other ICU (N=118)	N	%
Specialist expertise	64	54.2
Step-up care	6	5.1
Logistical/organizational reasons	40	33.9
Step-down care	8	6.8
Missing	0	

Transferred to Same hospital (N=8693)	N	%
Ward	8459	97.3
Other ICU	57	0.7
High dependency care unit	161	1.9
Rehabilitation	10	0.1
Day hospital or Long-term care	6	0.1
Missing	0	

Transferred to Other hospital (N=146)	N	%
Ward	64	43.8
Other ICU	59	40.4
High dependency care unit	3	2.1
Rehabilitation	15	10.3
Day hospital or Long-term care	5	3.4
Missing	0	

ICU mortality	N	%
Alive	8926	98.1
Dead	170	1.9
Missing	0	

Timing of ICU mortality (N=170)	N	%
Daytime (08:00AM - 07:59PM)	125	73.5
Nighttime (08:00PM - 07:59AM)	45	26.5
Weekdays (Monday - Friday)	127	74.7
Weekend (Saturday - Sunday)	43	25.3
Missing	0	

C.A.M. activation (N=170)	N	%
Yes, with organ donation	5	3.1
Yes, without organ donation	9	5.6
No, with organ donation	1	0.6
No, without organ donation	146	90.7
Missing	9	

Tissue removal (N=170)	N	%
Yes, with C.A.M. activation	4	2.4
Yes, without C.A.M. activation	12	7.1
No	154	90.6
Missing	0	

Hospital mortality	N	%
Dead	445	4.9
Transf. to other acute-care hospital	286	3.1
Transf. to other type of hosp. stay	742	8.2
Nursing home	139	1.5
Voluntary discharge	30	0.3
Discharged home	7454	81.9
Missing	0	

To other type of H stay (N=742)	N	%
Rehabilitation in the same institute	144	19.4
Rehabilitation in other institute	399	53.8
DH/long-term care, same inst.	66	8.9
DH/long-term care, other inst.	133	17.9
Missing	0	

Disch. terminally ill (N=8651)	N	%
Yes	84	1.0
No	8567	99.0
Missing	0	

Hospital mortality	N	%
Alive	8567	94.2
Dead	529	5.8
Missing	0	

Timing of hosp. mortality (N=529)	N	%
In ICU	170	32.1
Within 24 hours after ICU	41	7.8
24-47 hours after ICU	15	2.8
48-71 hours after ICU	12	2.3
72-95 hours after ICU	8	1.5
After 95 hours after ICU	283	53.5
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=359)	
Mean	22.2
SD	32.1
Median	13
Q1−Q3	4−29
Missing	0

National report for general ICUs - **Year 2023**
Outcome indicators - Adult elective surgical pts. eval. in the GiViTI model

Last hospital mortality	N	%
Alive	8555	94.1
Dead	541	5.9
Missing	0	

ICU stay (days)	
Mean	2.1
SD	4.2
Median	1
Q1−Q3	1−2
Missing	0

ICU stay (days) **Alive** (N=8926)	
Mean	2.0
SD	3.9
Median	1
Q1−Q3	1−1
Missing	0

ICU stay (days) **Dead** (N=170)	
Mean	8.6
SD	10.1
Median	4
Q1−Q3	1−12
Missing	0

Stay after ICU (days) **Alive** (N=8926)	
Mean	11.4
SD	16.0
Median	7
Q1−Q3	4−13
Missing	0

Hospital stay (days)	
Mean	17.0
SD	20.7
Median	10
Q1−Q3	6−20
Missing	0

Hospital stay (days) **Alive** (N=8567)	
Mean	16.3
SD	19.5
Median	10
Q1−Q3	6−20
Missing	0

Hospital stay (days) **Dead** (N=529)	
Mean	27.6
SD	33.4
Median	18
Q1−Q3	8−37
Missing	0

National report for general ICUs - **Year 2023**
Characteristics on admission - Adult emergency surgical pts. eval. in the GiViTI model

Patients (N): 9119

Sex	N	%
Male	5248	57.6
Female	3870	42.4
Missing	1	

Age (years)	N	%
17-45	1264	13.9
46-65	2429	26.6
66-75	2120	23.2
>75	3306	36.3
Missing	0	
Mean	66.2	
SD	17.6	
Median	70	
Q1−Q3	56−80	
Min−Max	17−101	

Body mass Index (BMI)	N	%
Underweight	550	6.0
Normal	4257	46.7
Overweight	2790	30.6
Obese	1521	16.7
Missing	1	

Pregnancy status **Females** (N=3870)	N	%
Not fertile	2122	54.9
Not pregnant/Unknown	1499	38.8
Currently pregnant	24	0.6
Post partum	217	5.6
Missing	8	

Comorbidities	N	%
No	1654	18.1
Yes	7465	81.9
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	4716	51.7
Arrhythmia	1425	15.6
Diabetes Type II without insulin tr.	1148	12.6
Any tumour without metastasis	997	10.9
Myocardial infarction	894	9.8
Peripheral vascular disease	891	9.8
Moderate COPD	851	9.3
Cerebrovascular disease	773	8.5
Moderate or severe renal disease	732	8.0
Antiplatelet therapy	658	7.2
Missing	0	

Stay before ICU (days)	
Mean	3.3
SD	8.0
Median	1
Q1−Q3	0−3
Missing	0

Source of admission	N	%
Same hospital	8442	92.6
Other hospital	677	7.4
Long-term chronic care hospital	0	0.0
Directly from the community	0	0.0
Missing	0	

Ward of admission **Hospital** (N=9119)	N	%
Medical ward	651	7.1
Surgical ward	5030	55.2
Emergency room	3054	33.5
Other ICU	248	2.7
High dependency care unit	136	1.5
Missing	0	

Reason for transfer from **Other ICU** (N=248)	N	%
Specialist expertise	92	37.1
Step-up care	66	26.6
Logistical/organizational reasons	88	35.5
Step-down care	2	0.8
Missing	0	

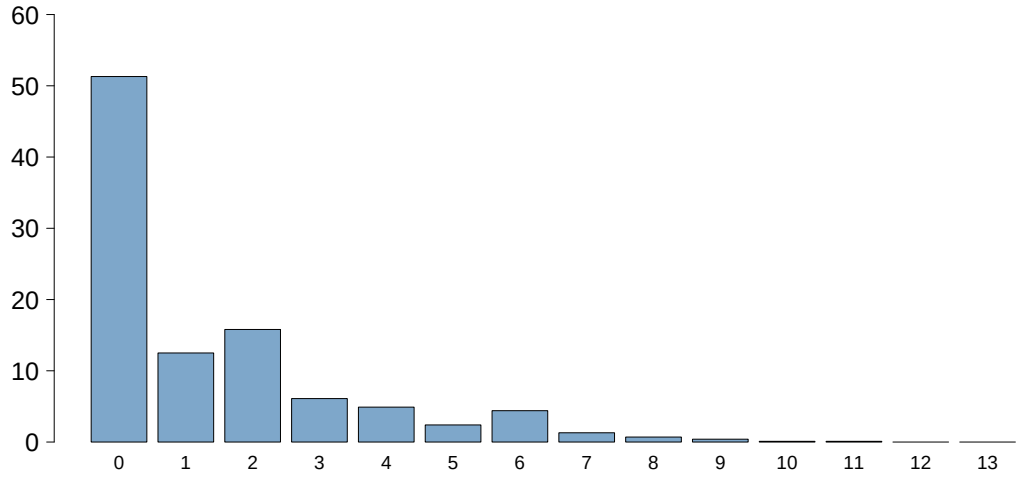
Ward of admission **Same hospital** (N=8442)	N	%
Medical ward	608	7.2
Surgical ward	4970	58.9
Emergency room	2599	30.8
Other ICU	134	1.6
High dependency care unit	131	1.6
Missing	0	

Ward of admission **Other hospital** (N=677)	N	%
Medical ward	43	6.4
Surgical ward	60	8.9
Emergency room	455	67.2
Other ICU	114	16.8
High dependency care unit	5	0.7
Missing	0	

Scheduled admission	N	%
No	9102	99.8
Yes	17	0.2
Missing	0	

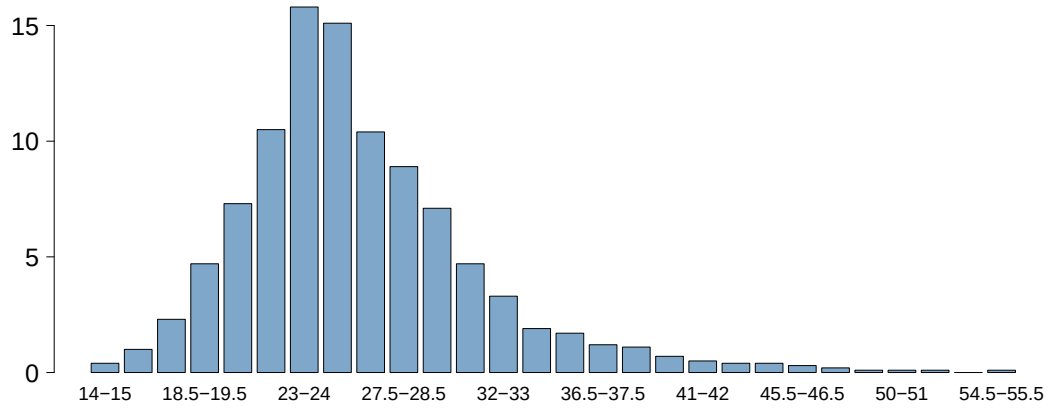
National report for general ICUs - **Year 2023**
Characteristics on admission - Adult emergency surgical pts. eval. in the GiViTI model

Charlson score (%)



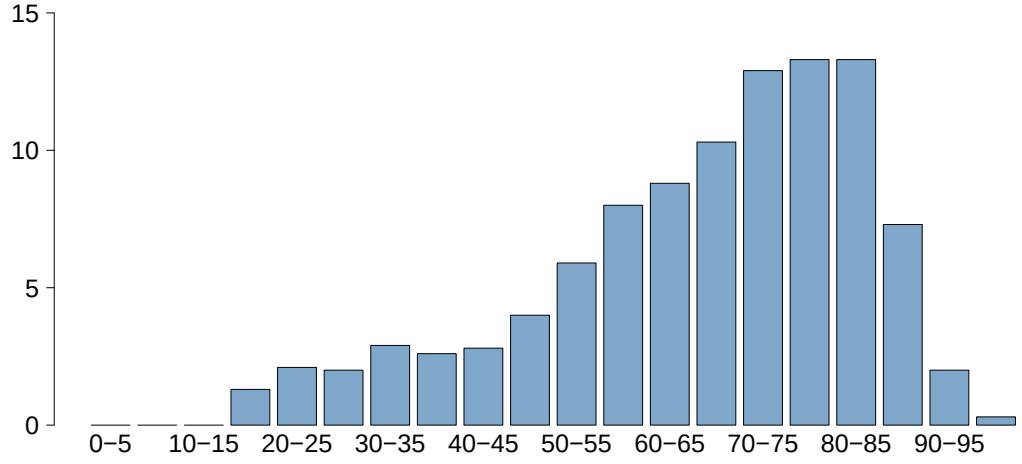
Charlson score	
Mean	1.4
SD	2.0
Median	0
Q1−Q3	0−2
Missing	2

BMI (%)



BMI	
Mean	26.3
SD	5.8
Median	25.4
Q1−Q3	22.9−28.6
Missing	1

Age (%)



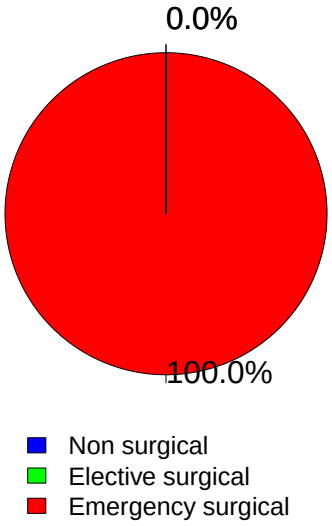
Age	
Mean	66.2
SD	17.6
Median	70
Q1−Q3	56−80
Missing	0

National report for general ICUs - **Year 2023**
Characteristics on admission - Adult emergency surgical pts. eval. in the GiViTI model

Trauma	N	%
No	7240	79.4
Yes	1879	20.6
Multiple trauma	810	8.9
Missing	0	

Surgical status	N	%
Non surgical	0	0.0
Elective surgical	0	0.0
Emergency surgical	9119	100.0
Missing	0	

Surgical status



Source of admission **Surgical pt.** (N=9119)	N	%
Operating theatre of surgical ward	4684	51.4
Operating theatre of emergency room	2253	24.7
Surgical ward	346	3.8
Other	1836	20.1
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=9119)	N	%
Gastrointestinal surgery	3917	43.0
Neurosurgery	1188	13.0
Orthopaedic surgery	1134	12.4
Nephro/Urological surgery	622	6.8
Abdominal vascular surgery	325	3.6
Peripheral vascular surgery	323	3.5
ENT surgery	318	3.5
Organ/s transplantation	308	3.4
Biliary tract surgery	300	3.3
Obstetric surgery	205	2.2
Missing	479	

Timing **Emergency surgical** (N=9119)	N	%
From -7 to -3 days	210	2.3
From -2 to -1 days	984	10.8
On ICU admission day	8260	90.6
The day after ICU admission	377	4.1
Missing	23	

Non surgical interventions	N	%
None	8563	93.9
Elective	58	0.6
Emergency	498	5.5
Missing	0	

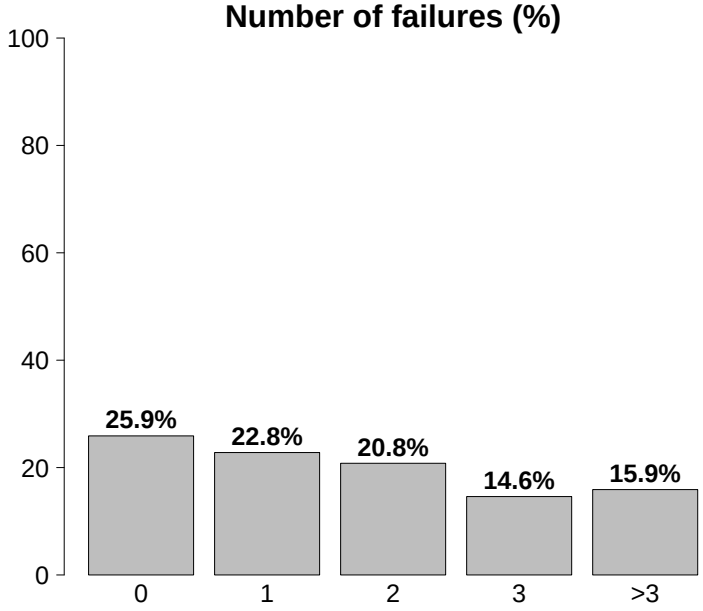
Non surgical interventions **Elective** (N=58)	N	%
Interventional radiology	14	24.1
Interventional endoscopy	14	24.1
Interventional neuroradiology	9	15.5
Interventional cardiology	5	8.6
Missing	16	

Non surgical interventions **Emergency** (N=498)	N	%
Interventional radiology	183	36.7
Interventional neuroradiology	141	28.3
Interventional endoscopy	102	20.5
Interventional cardiology	21	4.2
Missing	51	

National report for general ICUs - **Year 2023**
Characteristics on admission - Adult emergency surgical pts. eval. in the GiViTI model

Reason for admission	N	%
Monitoring/Weaning	3667	40.2
Post surgical weaning	1808	19.8
Surgical monitoring	1837	20.2
Post interventional weaning	5	0.1
Interventional monitoring	9	0.1
Non surgical monitoring	0	0.0
Missing	8	
Intensive Treatment	5452	59.8
Only ventilatory support	1674	18.4
Only cardiovascular support	619	6.8
Ventilatory and cardiovascular support	3159	34.6
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	2366	25.9
Yes	6753	74.1
A: Respiratory failure	4833	53.0
B: Cardiovascular failure	3778	41.4
C: Neurological failure	622	6.8
D: Hepatic failure	39	0.4
E: Renal failure	3758	41.2
F: Acute skin failure	4	0.0
G: Metabolic failure	2783	30.5
H: Coagulation failure	90	1.0
Missing	0	

Failures on admission (top 10)	N	%
ABEG	1123	12.3
A	942	10.3
AB	788	8.6
E	722	7.9
ABE	501	5.5
EG	322	3.5
ABG	302	3.3
AE	279	3.1
BEG	217	2.4
G	217	2.4
Missing	0	

Respiratory failure	N	%
None	4286	47.0
Only hypoxic failure	1109	12.2
Only hypercapnic failure	43	0.5
Hypoxic-hypercapnic failure	116	1.3
Intubation for airway maint.	3565	39.1
Missing	0	

Cardiovascular failure	N	%
None	5341	58.6
Without shock	745	8.2
Cardiogenic shock	91	1.0
Septic shock	1464	16.1
Haemorrhagic/hypovolemic shock	743	8.1
Hypovolemic shock	262	2.9
Anaphylactic shock	3	0.0
Neurogenic shock	164	1.8
Other shock	113	1.2
Mixed shock	193	2.1
Missing	0	

Neurologic failure	N	%
None	5861	90.4
Cerebral coma	456	7.0
Metabolic coma	110	1.7
Postanoxic coma	48	0.7
Toxic coma	8	0.1
Missing or not evaluable	2636	

Renal failure (AKIN)	N	%
None	5361	58.8
Mild	1923	21.1
Moderate	918	10.1
Severe	917	10.1
Missing	0	

Metabolic failure	N	%
None	6336	69.5
pH <= 7.3, PaCO2 < 45 mmHg	694	7.6
Base deficit >= 5 mmol/L, lactate >1.5x	2089	22.9
Missing	0	

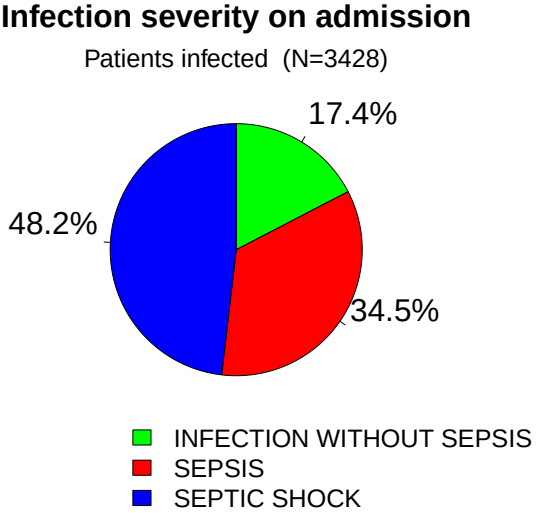
National report for general ICUs - Year 2023
Characteristics on admission - Adult emergency surgical pts. eval. in the GiViTI model

Clinical conditions on admission	N	%
Respiratory	699	7.7
Pleural effusion	195	2.1
Upper respiratory tract disease	123	1.3
Aspiration pneumonia	106	1.2
Atelectasis	84	0.9
Pulmonary embolism	76	0.8
Cardiovascular	903	9.9
Ruptured or fissured aneurysm	233	2.6
Peripheral vascular disease	198	2.2
Acute severe arrhythmia: tachycardias	130	1.4
Cardiac arrest	103	1.1
Non-ruptured aneurysm	62	0.7
Neurological	843	9.2
Spontaneous Intraparenchymal bleeding	298	3.3
Spontaneous Subarachnoid haemorrhage	210	2.3
Cerebral Aneurysm	165	1.8
Cerebral artery stroke	87	1.0
Spontaneous Hydrocephalus	72	0.8
Gastrointestinal and hepatic	3436	37.7
Gastrointestinal perforation	1238	13.6
Intestinal occlusion	1053	11.5
Bowel ischaemia	475	5.2
Digestive tract malignancy	256	2.8
Intrabdominal bleeding (non traumatic)	236	2.6
Trauma (anatomical districts)	1879	20.6
Pelvis/bone/joint & muscle	1094	12.0
Chest	625	6.9
Head	613	6.7
Spine	447	4.9
Abdomen	446	4.9
Major vessels injury	106	1.2
Miscellaneous	10	0.1
Other	1409	15.5
Nephrourologic disease	358	3.9
Metabolic disorder	225	2.5
Other disease	191	2.1
ENT/maxillofacial disease	141	1.5
Orthopaedic disease	132	1.4
Post transplantation	331	3.6
Liver transplantation	199	2.2
Renal transplantation	100	1.1
Infections	3428	37.6
NON-surgical secondary peritonitis	1054	11.6
Post-surgical peritonitis	476	5.2
Primary peritonitis	348	3.8
NON-catheter-related UTI	289	3.2
Pneumonia	265	2.9
Cholecystitis/cholangitis	243	2.7
NON-surgical skin/soft tissue infection	225	2.5
Positivity to COVID	87	1.0
L.R.T.I. other than pneumonia	74	0.8
Primary bacteraemia of unknown origin	73	0.8
Missing	0	

Trauma (anatomical districts)	N	%
Head	613	6.7
Traumatic Subdural haematoma	262	2.9
Maxillofacial fracture	231	2.5
Traumatic subarachnoid haemorrhage	183	2.0
Cerebral contusion/laceration	173	1.9
Skull fracture	154	1.7
Spine	447	4.9
Vertebral fracture, without deficit	338	3.7
Cervical injury, incomplete deficit	36	0.4
Tetraplegia	30	0.3
Chest	625	6.9
Other injuries of the chest	351	3.8
Traum. haemothorax/pneumothorax	246	2.7
Severe lung contusion/laceration	144	1.6
Abdomen	446	4.9
Spleen: Moderate-Severe laceration	123	1.3
Minor injuries of the abdomen	97	1.1
Spleen: Massive rupture	96	1.1
Pelvis/bone/joint & muscle	1094	12.0
Long bone fracture	929	10.2
Multiple fracture of the pelvis	214	2.3
Massive crush/amputation	65	0.7
Major vessels injury	106	1.2
Proximal limbs vessels: transection	40	0.4
Neck vessels: dissection/transection	29	0.3
Major abdominal vessels: transection	19	0.2
Miscellaneous	10	0.1
Burns (>30% BSA)	8	0.1
Inhalation injury	3	0.0
Missing	0	

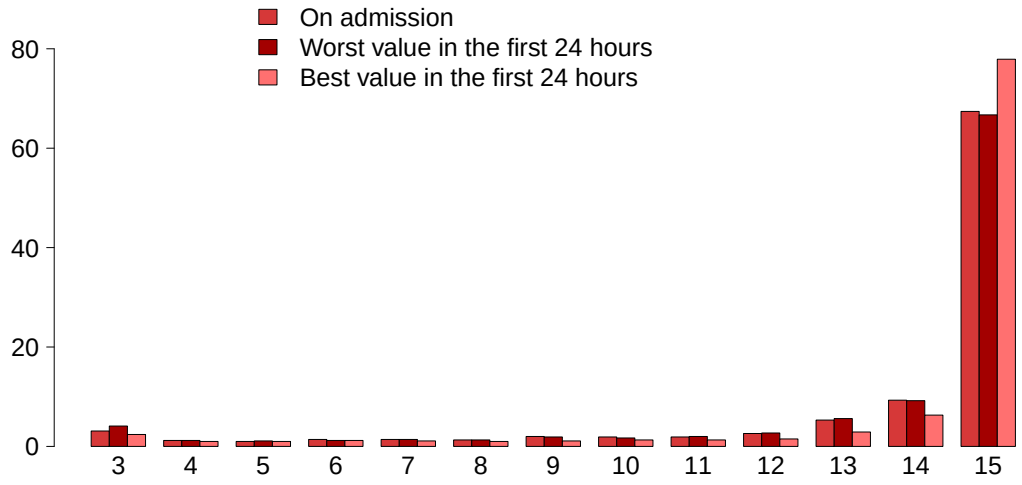
Infection severity on admission	N	%
None	5691	62.4
INFECTION WITHOUT SEPSIS	596	6.5
SEPSIS	1181	13.0
SEPTIC SHOCK	1651	18.1
Missing	0	

Infection severity on admission



National report for general ICUs - **Year 2023**
Severity scores - Adult emergency surgical pts. eval. in the GiViTI model

Glasgow Coma Scale (%)

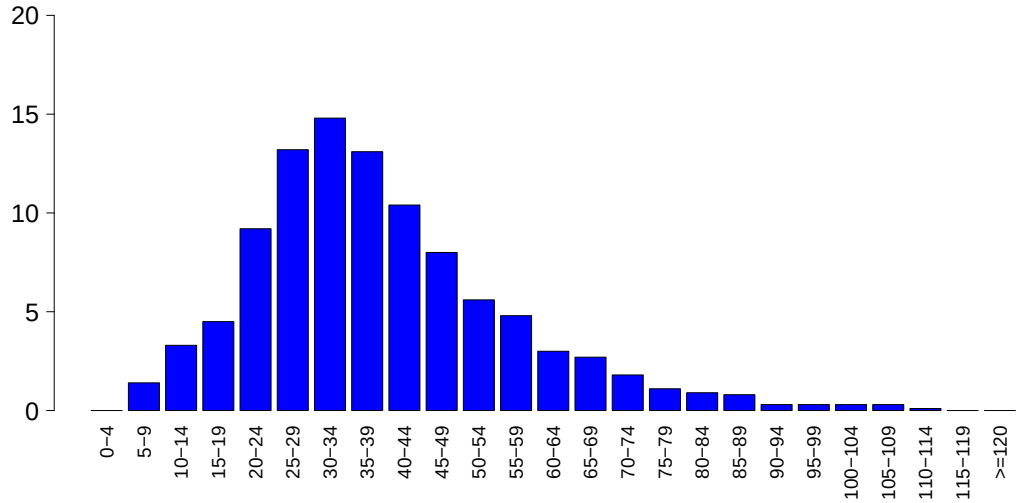


GCS (admission)	
Median	15
Q1−Q3	14−15
Not evaluable	2636
Missing	0

GCS (worst in first 24 hours)	
Median	15
Q1−Q3	14−15
Not evaluable	2606
Missing	0

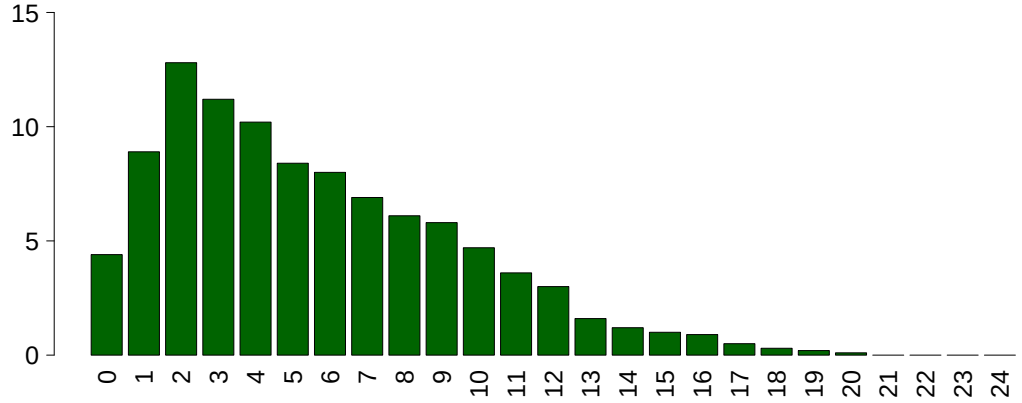
GCS (best in first 24 hours)	
Median	15
Q1−Q3	15−15
Not evaluable	1972
Missing	59

SAPS II (%)



SAPSII	
Mean	38.8
SD	17.5
Median	36
Q1−Q3	27−48
Not evaluable	2606
Missing	0

SOFA (%)



SOFA	
Mean	5.6
SD	4.0
Median	5
Q1−Q3	2−8
Not evaluable	2606
Missing	0

National report for general ICUs - **Year 2023**
Characteristics during the stay - Adult emergency surgical pts. eval. in the GiViTI model

Complications during the stay	N	%
No	6147	67.4
Yes	2972	32.6
Missing	0	

Failures during the stay	N	%
No	7793	85.5
Yes	1326	14.5
A: Respiratory failure	609	6.7
B: Cardiovascular failure	553	6.1
C: Neurological failure	63	0.7
D: Hepatic failure	35	0.4
E: Renal failure (AKIN)	415	4.6
F: Acute skin failure	6	0.1
G: Metabolic failure	116	1.3
H: Coagulation failure	50	0.5
Missing	0	

Failures during the stay (top 10)	N	%
A	358	3.9
B	261	2.9
E	200	2.2
AB	119	1.3
G	75	0.8
BE	60	0.7
ABE	48	0.5
AE	33	0.4
C	25	0.3
D	13	0.1
Missing	0	

Respiratory failure occured	N	%
None	8510	93.3
Intubation for airway maint.	190	2.1
Hypoxic failure	416	4.6
Hypercapnic failure	74	0.8
Missing	0	

Cardiovascular failure occured	N	%
None	8566	93.9
Cardiogenic shock	87	1.0
Hypovolemic shock	56	0.6
Haemorrhagic/hypovolemic shock	74	0.8
Septic shock	291	3.2
Anaphylactic shock	0	0.0
Neurogenic shock	30	0.3
Other shock	58	0.6
Missing	0	

Neurological failure occured	N	%
None	9056	99.3
Cerebral coma	43	0.5
Metabolic coma	15	0.2
Postanoxic coma	7	0.1
Missing	0	

Renal failure occured (AKIN)	N	%
None	8704	95.4
Mild	47	0.5
Moderate	70	0.8
Severe	298	3.3
Missing	0	

Complications during the stay	N	%
Respiratory	487	5.3
Pleural effusion	200	2.2
Atelectasis	134	1.5
Pulmonary embolism	53	0.6
Pneumothorax/Pneumomediastinum	48	0.5
Severe ARDS	36	0.4
Cardiovascular	589	6.5
Acute severe arrhythmia: tachycardias	304	3.3
Cardiac arrest	106	1.2
Deep venous thrombosis	72	0.8
Peripheral vascular disease	37	0.4
Left heart failure w/o pulm. edema	31	0.3
Neurological	692	7.6
Drowsiness/agitation/delirium	351	3.8
Intracranial hypertension	116	1.3
Seizures	109	1.2
Brain edema	89	1.0
Hydrocephalus	48	0.5
Gastrointestinal and hepatic	460	5.0
Bowel ischaemia	103	1.1
Anastomotic dehiscence	83	0.9
Gastrointestinal perforation	81	0.9
Gastrointestinal bleeding: lower tract	56	0.6
Paralytic Ileus	52	0.6
Other	298	3.3
Metabolic disorder	116	1.3
Nephrourologic disease	72	0.8
Other disease	63	0.7
Other skin and/or soft tissue pathology	26	0.3
Category/Stage II: Partial Thickness Skin Loss	12	0.1
F.U.O. fever of unknown origin	12	0.1
Extremity compartment syndrome (severe)	8	0.1
Infections	1040	11.4
Pneumonia	417	4.6
L.R.T.I. other than pneumonia	195	2.1
Primary bacteraemia of unknown origin	107	1.2
Catheter-related UTI	107	1.2
Catheter-related bacteremia (CR-BSI)	92	1.0
Post-surgical peritonitis	90	1.0
Post-surgical skin/soft tissue infection	38	0.4
NON-surgical skin/soft tissue infection	37	0.4
NON-surgical secondary peritonitis	32	0.4
Upper respiratory tract infection	25	0.3
Missing	0	

National report for general ICUs - **Year 2023**
Characteristics during the stay - Adult emergency surgical pts. eval. in the GiViTI model

Infections	N	%
None	5005	54.9
Only on admission	3074	33.7
On admission and during ICU stay	354	3.9
Only during ICU stay	686	7.5
Missing	0	

Maximum severity of infection	N	%
None	5005	54.9
INFECTION WITHOUT SEPSIS	900	9.9
SEPSIS	1423	15.6
SEPTIC SHOCK	1790	19.6
Missing	1	

Severity evolution

		During the stay				
	N (R %)	None	INFECTION WITHOUT SEPSIS	SEPSIS	SEPTIC SHOCK	TOT
Admission	None	5005 (87.9%)	339 (6.0%)	262 (4.6%)	85 (1.5%)	5691
	INFECTION WITHOUT SEPSIS	-	561 (94.1%)	29 (4.9%)	6 (1.0%)	596
	SEPSIS	-	-	1132 (95.9%)	49 (4.1%)	1181
	SEPTIC SHOCK	-	-	-	1650 (100.0%)	1650
	TOT	5005	900	1423	1790	9118

Ventil. Associat. Pneumonia (VAP)	N	%
No	8750	96.0
Yes	369	4.0
Missing	0	

Catheter Bacteraemia (CR-BSI)	N	%
No	9027	99.0
Yes	92	1.0
Missing	0	

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

Estimate	14.2
CI (95%)	12.8−15.7

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

Estimate	2.0
CI (95%)	1.6−2.4

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

Estimate	11.4%
CI (95%)	10.2−12.6

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

Estimate	2.4%
CI (95%)	1.9−2.9

Catheter-related urinary tract infection (UTI)	N	%
No	9012	98.8
Yes	107	1.2
Missing	0	

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

Estimate	2.0
CI (95%)	1.6−2.4

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

Estimate	2.4%
CI (95%)	2.0−2.9

Process indicators - Adult emergency surgical pts. evaluated in the GiViTI model	Use on the first day		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)	9077	99.5										
Invasive ventilation	7050	77.3	6133	67.3	1116	12.2	1	1–5	0	0	0–0	0
Non invasive ventilation	984	10.8	125	1.4	220	2.4	2	1–3	0	1	0–5	0
Tracheostomy	848	9.3	136	1.5	720	7.9	12	5–22	0	8	4–12	0
iNO (inhaled nitric oxide)	29	0.3	1	0	4	0	2	2–8	0	1	0–3	0
Central Venous Catheter	6586	72.2	3953	43.3	5496	60.3	4	2–9	1	0	0–0	0
PICC	340	3.7	112	1.2	314	3.4	3	1–8	0	11	2–19	0
Arterial Catheter	8005	87.8	5591	61.3	2108	23.1	3	1–7	1	0	0–0	0
Vasoactive drugs	4629	50.8	3095	33.9	742	8.1	2	1–4	1	0	0–0	0
Antiarrhythmics	614	6.7	136	1.5	313	3.4	2	1–5	0	1	0–3	0
IABP	1	0.0	0	0	0	0	2	2–2	0	0	0–0	0
Invasive monitoring of C.O.	428	4.7	165	1.8	61	0.7	3	1–7	0	0	0–1	0
Continous monitoring of ScVO2	65	0.7	58	0.6	1	0	1	1–2	0	0	0–0	0
Temporary pacing	7	0.1	2	0	1	0	2	0–4	0	1	1–2	0
Ventricular assistance	1	0.0	1	0	0	0	6	6–6	0			
DC-shock	50	0.5								1	0–2	0
CPR	89	1.0								0	0–1	0
Massive blood transfusion	152	1.7								0	0–0	0
ICP monitoring without CSF drainage	175	1.9	92	1	26	0.3	6	4–9	0	0	0–1	0
ICP monitoring with CSF drainage	244	2.7	166	1.8	118	1.3	10	5–17	0	0	0–1	0
EVD without ICP monitoring	79	0.9	48	0.5	43	0.5	9	2–14	0	0	0–0	0
Haemofiltration	301	3.3	27	0.3	90	1	3	2–8	0	1	0–3	0
Haemodialysis	234	2.6	31	0.3	87	1	3	1–7	0	1	0–2	0
ECMO	8	0.1	4	0	0	0	4	1–7	0	3	1–6	0
Hepatic clearance techniques	7	0.1										
Clearance techniques during sepsis	93	1.0	7	0.1	20	0.2	3	1–4	0	0	0–1	0
IAP (intra-abdominal pressure)	201	2.2										
Hypothermia	16	0.2	6	0.1	5	0.1	2	1–4	0	2	2–5	0
Enteral nutrition	2667	29.2	353	3.9	1886	20.7	6	3–14	0	2	1–3	0
Parenteral nutrition	1972	21.6	244	2.7	1311	14.4	4	2–8	0	1	0–2	0
SDD (Topical, Topical and systemic)	5	0.1										
Patient restraint	122	1.3										
Peridural catheter	192	2.1	127	1.4	122	1.3	2	1–4	0	1	1–4	0
Electrical cardioversion	72	0.8								2	1–4	0
Vacuum therapy	218	2.4										
Urinary catheter	8896	97.6	8084	88.7	8233	90.3	3	1–7	1	0	0–0	0
Pronation	41	0.4	0	0	3	0	1	1–3	0	5	3–9	0
Antivirals	80	0.9	48	0.5	67	0.7	4	1–6	0	1	0–10	0

National report for general ICUs - **Year 2023**
Process indicators - Adult emergency surgical 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	6878	75.4										
Antibiotic prophylaxis	2511	27.5	1953	21.4	1029	11.3	1	1–2	1	0	0–0	0
Empirical antibiotic therapy (infection diagnosis confirmed)	2500	27.4	1451	15.9	1096	12	3	2–5	1	0	0–1	0
Empirical antibiotic therapy (infection diagnosis unconfirmed)	1780	19.5	1140	12.5	1264	13.9	3	1–5	0	0	0–1	0
Targeted antibiotic therapy	1661	18.2	182	2	1038	11.4	5	3–9	1	4	2–7	1
Antifungal in empirical therapy	680	7.5	243	2.7	389	4.3	4	2–7	0	0	0–2	0
Antifungal in targeted therapy	267	2.9	30	0.3	176	1.9	7	4–13	0	5	3–10	0
Pre-emptive antifungal	151	1.7	56	0.6	102	1.1	4	2–8	0	0	0–2	0

Antibiotic therapy

Pt. infected in ICU only (N=686)	N	%
No therapy	60	8.7
Only empirical	127	18.5
Only targeted	180	26.2
Targeted after empirical	240	35.0
Other	79	11.5
Missing	0	

Antifungal therapy

Pt. infected in ICU only (N=686)	N	%
No therapy	601	87.6
Only empirical	45	6.6
Only targeted	32	4.7
Targeted after empirical	5	0.7
Other	3	0.4
Missing	0	

National report for general ICUs - **Year 2023**
Process indicators - Adult emergency surgical pts. eval. in the GiViTI model

Invasive ventilation (N=7050)	N	%	Length (days) Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	1254	16.7	7.1	10.6	3	1−8	0
For airway mainteinance	3496	46.7	5.8	8.5	2	1−7	0
In weaning	1794	23.9	0.5	0.5	0	0−1	0
Not evaluable	950	12.7	2.7	6.6	1	0−1	448
Reintubation within 48 hours	130	1.7	5.5	5.9	3.5	1−8	0

Non invasive ventilation (N=984)	N	%
Non invasive ventilation only	291	29.6
Non invasive ventilation failed	60	6.1
For weaning	574	58.3
Other	59	6.0
Missing	0	

Tracheostomy not present on admission (N=712)	N	%
Surgical	114	16.0
Percutwist	18	2.5
Ciaglia	157	22.1
Monodil. Ciaglia	282	39.6
Fantoni	4	0.6
Griggs	114	16.0
Other Kind	8	1.1
Unknown	15	2.1
Missing	0	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=704)	
Mean	8.9
SD	6.7
Median	8
Q1−Q3	4−12
Missing	0

Invasive monitoring of C.O. (N=428)	N	%
Swan Ganz	138	32.2
PICCO	247	57.7
LIDCO	1	0.2
Vigileo-PRAM	28	6.5
Other	14	3.3
Missing	0	

SDD (N=5)	N	%
Topical	3	60.0
Topical and systemic	2	40.0
Missing	0	

Surgical interventions	N	%
No	8319	91.2
Yes	800	8.8
Missing	0	

Number of surgical interventions	N	%
0	8319	91.2
1	535	5.9
2	153	1.7
3	57	0.6
>3	55	0.6
Missing	0	

Surgical interventions Days from admission	
Mean	8.8
SD	8.8
Median	6
Q1−Q3	3−12
Missing	6

Surgical interventions (top 10)	N	%
Gastrointestinal surgery	638	7.0
Orthopaedic surgery	222	2.4
Neurosurgery	97	1.1
Other surgery	64	0.7
ENT surgery	54	0.6
Plastic surgery	34	0.4
Thoracic surgery	31	0.3
Maxillo-Facial surgery	27	0.3
Nephro/Urological surgery	24	0.3
Peripheral vascular surgery	17	0.2
Missing	0	

Non surgical interventions	N	%
No	8940	98.0
Yes	179	2.0
Missing	0	

Non surgical interventions Days from admission	
Mean	11.7
SD	12.9
Median	8
Q1−Q3	4−15
Missing	3

Non surgical interventions	N	%
Interventional endoscopy	117	1.3
Interventional radiology	63	0.7
Interventional neuroradiology	41	0.4
Interventional cardiology	13	0.1
Missing	0	

National report for general ICUs - **Year 2023**
Outcome indicators - Adult emergency surgical pts. eval. in the GiViTI model

ICU outcome	N	%
Dead	1191	13.1
Transferred to same hospital	7317	80.2
Transferred to other hospital	557	6.1
Discharged home	32	0.4
Disch. terminally ill	22	0.2
Missing	0	

Transferred to (N=7874)	N	%
Ward	6771	86.0
Other ICU	438	5.6
High dependency care unit	498	6.3
Rehabilitation	149	1.9
Day hospital or Long-term care	18	0.2
Missing	0	

Reason of transfer to Other ICU (N=449)	N	%
Specialist expertise	96	21.4
Step-up care	28	6.2
Logistical/organizational reasons	308	68.6
Step-down care	17	3.8
Missing	0	

Transferred to Same hospital (N=7317)	N	%
Ward	6689	91.4
Other ICU	99	1.4
High dependency care unit	484	6.6
Rehabilitation	36	0.5
Day hospital or Long-term care	9	0.1
Missing	0	

Transferred to Other hospital (N=557)	N	%
Ward	82	14.7
Other ICU	339	60.9
High dependency care unit	14	2.5
Rehabilitation	113	20.3
Day hospital or Long-term care	9	1.6
Missing	0	

ICU mortality	N	%
Alive	7906	86.7
Dead	1213	13.3
Missing	0	

Timing of ICU mortality (N=1213)	N	%
Daytime (08:00AM - 07:59PM)	845	69.7
Nighttime (08:00PM - 07:59AM)	368	30.3
Weekdays (Monday - Friday)	913	75.3
Weekend (Saturday - Sunday)	300	24.7
Missing	0	

C.A.M. activation (N=1213)	N	%
Yes, with organ donation	63	5.3
Yes, without organ donation	63	5.3
No, with organ donation	4	0.3
No, without organ donation	1061	89.1
Missing	22	

Tissue removal (N=1213)	N	%
Yes, with C.A.M. activation	31	2.6
Yes, without C.A.M. activation	75	6.2
No	1107	91.3
Missing	0	

Hospital mortality	N	%
Dead	1748	19.2
Transf. to other acute-care hospital	718	7.9
Transf. to other type of hosp. stay	1541	16.9
Nursing home	228	2.5
Voluntary discharge	42	0.5
Discharged home	4842	53.1
Missing	0	

To other type of H stay (N=1541)	N	%
Rehabilitation in the same institute	192	12.5
Rehabilitation in other institute	880	57.1
DH/long-term care, same inst.	140	9.1
DH/long-term care, other inst.	329	21.3
Missing	0	

Disch. terminally ill (N=7371)	N	%
Yes	137	1.9
No	7234	98.1
Missing	0	

Hospital mortality	N	%
Alive	7234	79.3
Dead	1885	20.7
Missing	0	

Timing of hosp. mortality (N=1885)	N	%
In ICU	1213	64.4
Within 24 hours after ICU	45	2.4
24-47 hours after ICU	32	1.7
48-71 hours after ICU	28	1.5
72-95 hours after ICU	35	1.9
After 95 hours after ICU	532	28.2
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=672)	
Mean	19.3
SD	25.4
Median	11
Q1−Q3	4−24
Missing	0

National report for general ICUs - **Year 2023**
Outcome indicators - Adult emergency surgical pts. eval. in the GiViTI model

Last hospital mortality	N	%
Alive	7196	78.9
Dead	1923	21.1
Missing	0	

ICU stay (days)	
Mean	6.2
SD	9.5
Median	3
Q1−Q3	1−7
Missing	0

ICU stay (days) **Alive** (N=7906)	
Mean	6.0
SD	9.4
Median	2
Q1−Q3	1−6
Missing	0

ICU stay (days) **Dead** (N=1213)	
Mean	7.5
SD	10.0
Median	3
Q1−Q3	1−10
Missing	0

Stay after ICU (days) **Alive** (N=7906)	
Mean	15.5
SD	19.4
Median	10
Q1−Q3	5−19
Missing	1

Hospital stay (days)	
Mean	22.7
SD	23.3
Median	15
Q1−Q3	8−29
Missing	0

Hospital stay (days) **Alive** (N=7234)	
Mean	23.8
SD	23.2
Median	17
Q1−Q3	9−30
Missing	0

Hospital stay (days) **Dead** (N=1885)	
Mean	18.3
SD	23.1
Median	11
Q1−Q3	4−24
Missing	0

National report for general ICUs - **Year 2023**
Characteristics on admission - Pediatric patients evaluated with PIM 3

Patients (N): 425

Sex	N	%
Male	252	59.3
Female	173	40.7
Missing	0	

Age	N	%
Newborn (0-4 weeks)	2	0.5
1-6 months	0	0.0
6-12 months	13	3.1
12-24 months	22	5.2
2-4 years	67	15.8
5-8 years	69	16.3
9-16 years	250	59.1
Missing	2	
Mean	9.8	
SD	5.4	
Median	11	
Q1−Q3	4−15	
Min−Max	0−16	

Weight (kg)	
Newborns (N=2)	
Mean	47.5
SD	31.8
Median	47.5
Q1−Q3	36.2−58.8
Missing	0

Gestational age		
Newborns (N=2)	N	%
At term	1	50.0
Not at term	1	50.0
Missing	0	

Comorbidities	N	%
No	250	58.8
Yes	175	41.2
Missing	0	

Comorbidities (top 10)	N	%
Epilepsy	32	7.5
Encephalopathy	29	6.8
Genetic diseases	22	5.2
Malignant haematological disease	22	5.2
Brain and skull malformations	14	3.3
Skeletal malformations/disorders	14	3.3
Asthma	12	2.8
Gastrointestinal malformations	12	2.8
Severe psychosis	12	2.8
Upper airway abnormalities	12	2.8
Missing	0	

Previous ICU admissions	N	%
None	296	69.6
<=2	62	14.6
>2	13	3.1
Unknown	54	12.7
Missing	0	

Previous ICU admissions (N=75)	N	%
Paediatric	29	38.7
Neonatal	18	24.0
General - adult	36	48.0
Other/Unknown	3	4.0
Missing	0	

Stay before ICU (days)	
Mean	2.9
SD	11.1
Median	0
Q1−Q3	0−1
Missing	0

Source of admission	N	%
Same hospital	366	86.1
Other hospital	37	8.7
Long-term chronic care hospital	1	0.2
Directly from the community	21	4.9
Missing	0	

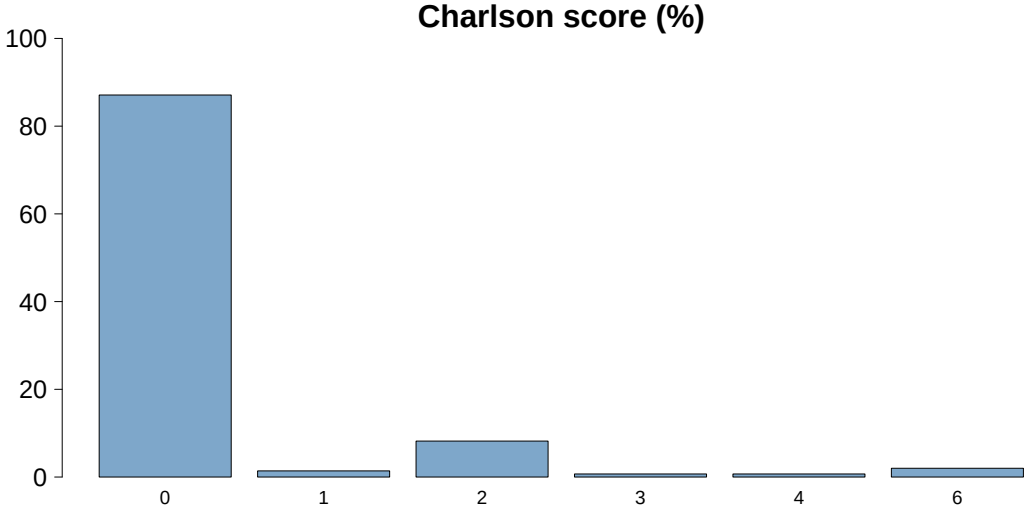
Ward of admission		
Hospital (N=403)	N	%
Medical ward	90	22.3
Surgical ward	112	27.8
Emergency room	187	46.4
Other ICU	11	2.7
High dependency care unit	3	0.7
Neonatology	0	0.0
Missing	0	

Reason for transfer from		
Other ICU (N=11)	N	%
Specialist expertise	3	27.3
Step-up care	1	9.1
Logistical/organizational reasons	6	54.5
Step-down care	1	9.1
Missing	0	

Scheduled admission	N	%
No	349	82.1
Yes	76	17.9
Missing	0	

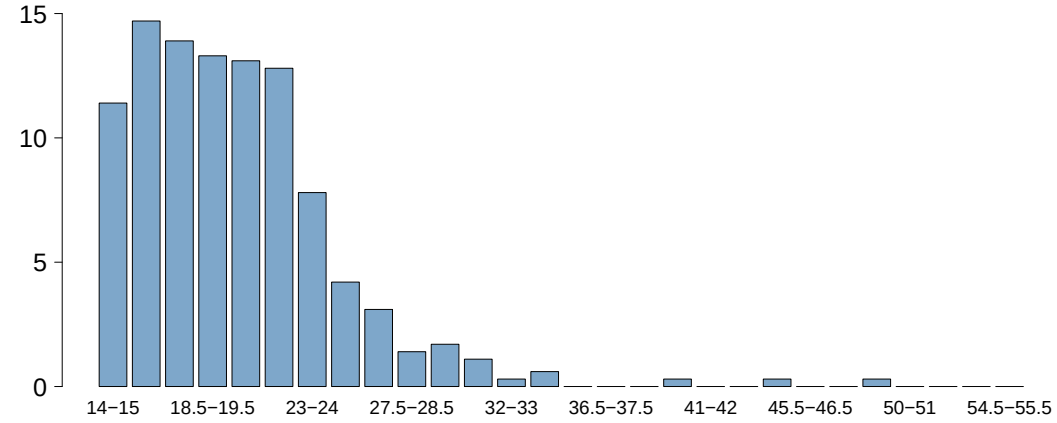
National report for general ICUs - **Year 2023**
Characteristics on admission - Pediatric patients evaluated with PIM 3

Charlson score (%)



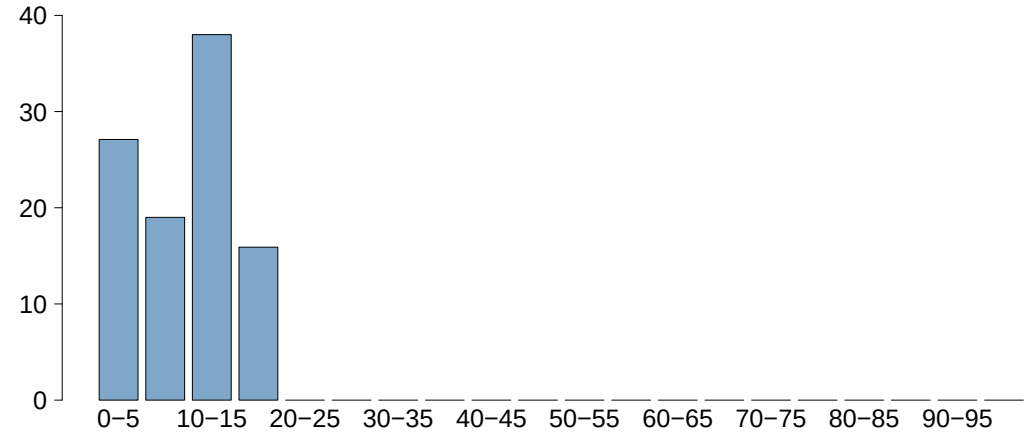
Charlson score	
Mean	0.3
SD	1.1
Median	0
Q1−Q3	0−0
Missing	278

BMI (%)



BMI	
Mean	19.3
SD	5.6
Median	18.8
Q1−Q3	15.6−22.2
Missing	8

Age (%)



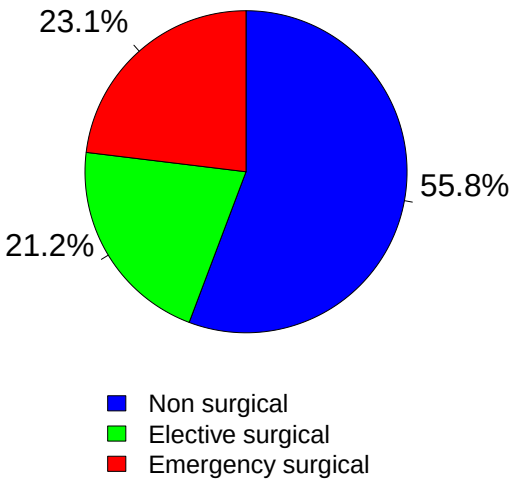
Age	
Mean	9.8
SD	5.4
Median	11
Q1−Q3	4−15
Missing	0

National report for general ICUs - **Year 2023**
Characteristics on admission - Pediatric patients evaluated with PIM 3

Trauma	N	%
No	304	71.5
Yes	121	28.5
Multiple trauma	56	13.2
Missing	0	

Surgical status	N	%
Non surgical	237	55.8
Elective surgical	90	21.2
Emergency surgical	98	23.1
Missing	0	

Surgical status



Source of admission **Surgical pt.** (N=188)	N	%
Operating theatre of surgical ward	99	54.1
Operating theatre of emergency room	33	18.0
Surgical ward	7	3.8
Other	44	24.0
Missing	5	

Surgical interventions (top 10) **Elective surgical** (N=90)	N	%
ENT surgery	32	35.6
Neurosurgery	16	17.8
Maxillo-Facial surgery	14	15.6
Gastrointestinal surgery	8	8.9
Orthopaedic surgery	6	6.7
Hepatic surgery	5	5.6
Nephro/Urological surgery	5	5.6
Thoracic surgery	4	4.4
Other surgery	3	3.3
Plastic surgery	1	1.1
Missing	0	

Timing **Elective surgical** (N=90)	N	%
From -7 to -3 days	1	1.1
From -2 to -1 days	3	3.3
On ICU admission day	87	96.7
The day after ICU admission	3	3.3
Missing	0	

Surgical interventions (top 10) **Emergency surgical** (N=98)	N	%
Neurosurgery	23	23.5
Gastrointestinal surgery	20	20.4
Orthopaedic surgery	17	17.3
ENT surgery	13	13.3
Splenectomy	12	12.2
Thoracic surgery	7	7.1
Nephro/Urological surgery	5	5.1
Maxillo-Facial surgery	3	3.1
Peripheral vascular surgery	3	3.1
Other surgery	2	2.0
Missing	0	

Timing **Emergency surgical** (N=98)	N	%
From -7 to -3 days	0	0.0
From -2 to -1 days	8	8.2
On ICU admission day	93	94.9
The day after ICU admission	7	7.1
Missing	0	

Non surgical interventions	N	%
None	400	94.1
Elective	7	1.6
Emergency	18	4.2
Missing	0	

Non surgical interventions **Elective** (N=7)	N	%
Interventional radiology	2	28.6
Interventional neuroradiology	1	14.3
Therapeutic endoscopy (bronchoscopy excluded)	1	14.3
Interventional cardiology	0	0.0
Interventional endoscopy	0	0.0
Therapeutic bronchoscopy	0	0.0
Missing	3	

Non surgical interventions **Emergency** (N=18)	N	%
Interventional radiology	12	66.7
Therapeutic endoscopy (bronchoscopy excluded)	3	16.7
Therapeutic bronchoscopy	2	11.1
Interventional neuroradiology	1	5.6
Interventional cardiology	0	0.0
Interventional endoscopy	0	0.0
Missing	0	

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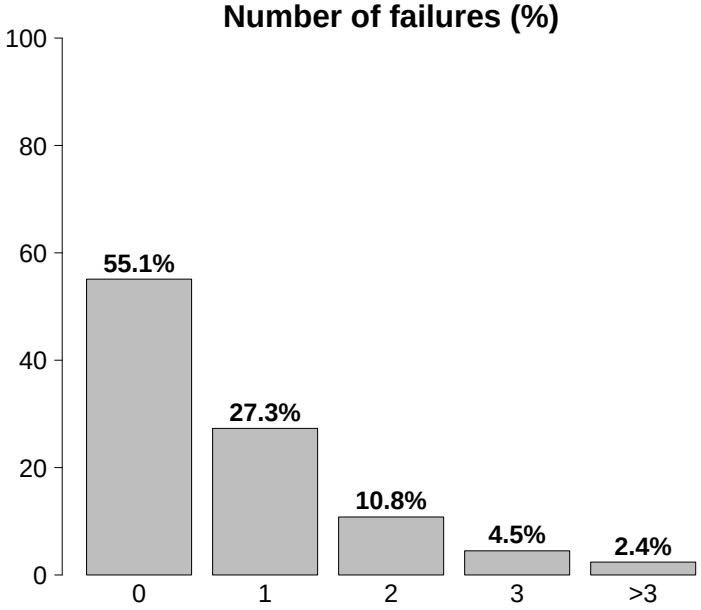
Characteristics on admission - Pediatric patients evaluated with PIM 3

Reason for admission	N	%
Monitoring/Weaning	263	63.5
Post surgical weaning	65	16.0
Surgical monitoring	84	20.6
Post interventional weaning	3	0.7
Interventional monitoring	11	2.7
Non surgical monitoring	93	22.9
Missing	7	
Admission for procedures/treatments	0	0.0
Intensive Treatment	150	36.2
Ventilatory support	137	32.2
Cardiovascular support	36	8.5
Metabolic support	16	3.8
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	1	0.2
Missing	11	

Number of failures (%)



Failures on admission	N	%
No	234	55.1
Yes	191	44.9
A: Respiratory failure	119	28.0
B: Cardiovascular failure	61	14.4
C: Neurological failure	36	8.5
D: Hepatic failure	47	11.1
E: Renal failure	29	6.8
F: Acute skin failure	0	0.0
G: Metabolic failure	17	4.0
H: Coagulation failure	2	0.5
Missing	0	

Failures on admission (top 10)	N	%
A	65	15.3
AB	13	3.1
B	13	3.1
C	13	3.1
D	13	3.1
ABC	9	2.1
AD	8	1.9
E	7	1.6
G	5	1.2
ABCDE	4	0.9
Missing	0	

Respiratory failure	N	%
None	288	67.8
Only hypoxic failure	40	9.4
Only hypercapnic failure	6	1.4
Hypoxic-hypercapnic failure	11	2.6
Intubation for airway maint.	80	18.8
Missing	0	

Cardiovascular failure	N	%
None	389	91.5
Without shock	9	2.1
Cardiogenic shock	7	1.6
Septic shock	6	1.4
Haemorrhagic/hypovolemic shock	10	2.4
Hypovolemic shock	1	0.2
Anaphylactic shock	0	0.0
Neurogenic shock	1	0.2
Other shock	1	0.2
Mixed shock	1	0.2
Missing	0	

Neurologic failure	N	%
None	319	86.9
Cerebral coma	35	9.5
Metabolic coma	2	0.5
Postanoxic coma	10	2.7
Toxic coma	1	0.3
Missing or not evaluable	58	

Renal failure (RIFLE)	N	%
None	396	93.2
Risk	15	3.5
Injury	7	1.6
Failure	4	0.9
Loss	2	0.5
End-stage renal disease	1	0.2
Missing	0	

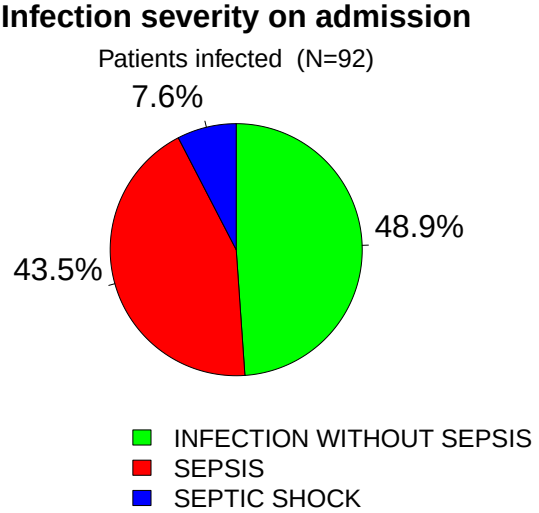
National report for general ICUs - Year 2023
Characteristics on admission - Pediatric patients evaluated with PIM 3

Clinical conditions on admission	N	%
Respiratory	70	16.5
Upper respiratory tract disease	19	4.5
Acute asthma/bronchospasm	17	4.0
Aspiration pneumonia	10	2.4
Bronchiolitis	9	2.1
Pleural effusion	7	1.6
Cardiovascular	18	4.2
Cardiac arrest	9	2.1
Left heart failure with pulm. edema	2	0.5
Acute severe arrhythmia: tachycardias	2	0.5
Non-ruptured aneurysm	2	0.5
Deep venous thrombosis	2	0.5
Neurological	78	18.4
Seizures	47	11.1
Brain tumour	20	4.7
Metabolic/postanoxic encephalopathy	7	1.6
Spontaneous Hydrocephalus	2	0.5
Brain and skull malformations	2	0.5
Gastrointestinal and hepatic	26	6.1
Gastrointestinal perforation	5	1.2
Oesophago-gastro-intestinal malf.	5	1.2
Intestinal occlusion	3	0.7
Digestive tract malignancy	3	0.7
Hepatic malignancy	3	0.7
Trauma (anatomical districts)	121	28.5
Abdomen	56	13.2
Head	49	11.5
Chest	43	10.1
Pelvis/bone/joint & muscle	30	7.1
Spine	18	4.2
Miscellaneous	5	1.2
Major vessels injury	4	0.9
Other	116	27.3
ENT/maxillofacial disease	33	7.8
Other disease	32	7.5
Acute intoxication	19	4.5
Metabolic disorder	17	4.0
Orthopaedic disease	6	1.4
Post transplantation	7	1.6
Bone marrow transplantation	6	1.4
Liver transplantation	1	0.2
Infections	92	21.6
Pneumonia	35	8.2
Upper respiratory tract infection	12	2.8
L.R.T.I. other than pneumonia	8	1.9
Pleurisy/Pleural empyema	8	1.9
NON-surgical CNS infection	6	1.4
NON-surgical skin/soft tissue infection	6	1.4
Gastroenteritis	4	0.9
NON-surgical secondary peritonitis	4	0.9
Primary bacteraemia of unknown origin	3	0.7
Clinical sepsis	3	0.7
Missing	0	

Trauma (anatomical districts)	N	%
Head	49	11.5
Cerebral contusion/laceration	19	4.5
Maxillofacial fracture	19	4.5
Skull fracture	18	4.2
Traumatic subarachnoid haemorrhage	13	3.1
Traumatic Subdural haematoma	10	2.4
Spine	18	4.2
Vertebral fracture, without deficit	13	3.1
Paraplegia	2	0.5
Tetraplegia	1	0.2
Chest	43	10.1
Other injuries of the chest	29	6.8
Traum. haemothorax/pneumothorax	10	2.4
Severe lung contusion/laceration	9	2.1
Abdomen	56	13.2
Spleen: Moderate-Severe laceration	18	4.2
Minor injuries of the abdomen	14	3.3
Liver: Moderate-Severe laceration	12	2.8
Pelvis/bone/joint & muscle	30	7.1
Long bone fracture	26	6.1
Multiple fracture of the pelvis	5	1.2
Extremity compartment syndrome	2	0.5
Major vessels injury	4	0.9
Proximal limbs vessels: transection	3	0.7
Neck vessels: dissection/transection	1	0.2
Major thoracic vessels: transection	1	0.2
Miscellaneous	5	1.2
Inhalation injury	3	0.7
Burns (>30% BSA)	2	0.5
Missing	0	

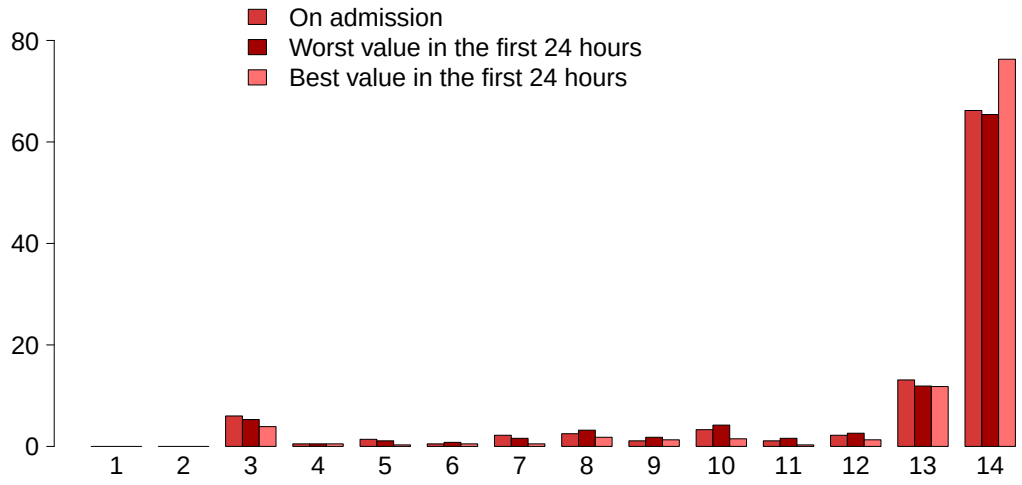
Infection severity on admission	N	%
None	333	78.4
INFECTION WITHOUT SEPSIS	45	10.6
SEPSIS	40	9.4
SEPTIC SHOCK	7	1.6
Missing	0	

Infection severity on admission



National report for general ICUs - **Year 2023**
Severity scores - Pediatric patients evaluated with PIM 3

Glasgow Coma Scale (%)

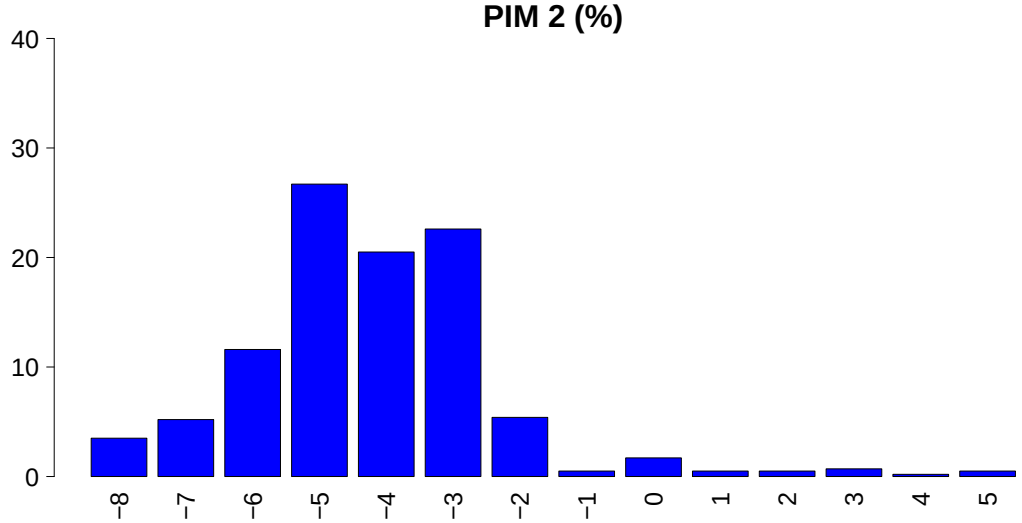


GCS (admission)	
Median	14
Q1–Q3	13–14
Not evaluable	58
Missing	0

GCS (worst in first 24 hours)	
Median	14
Q1–Q3	13–14
Not evaluable	46
Missing	0

GCS (best in first 24 hours)	
Median	14
Q1–Q3	14–14
Not evaluable	36
Missing	0

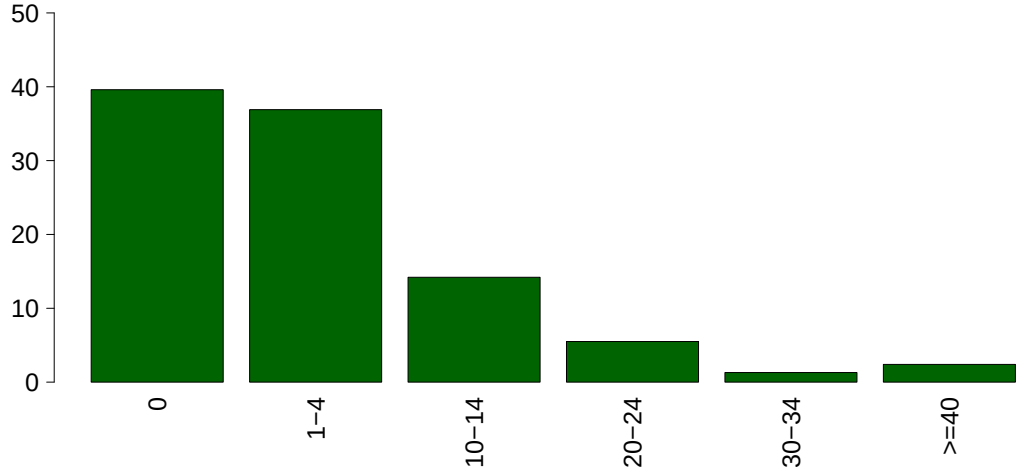
PIM 2 (%)



PIM 2	
Median	-4.4
Q1–Q3	-5.1–-3.1
Not evaluable	0
Missing	0

PIM 3	
Median	-4.4
Q1–Q3	-5.6–-3.4
Not evaluable	0
Missing	0

PELOD (%)



PELOD	
Mean	4.8
SD	9.8
Median	1
Q1–Q3	0–2
Not evaluable	46
Missing	0

National report for general ICUs - **Year 2023**
Characteristics during the stay - Pediatric patients evaluated with PIM 3

Complications during the stay	N	%
No	375	88.2
Yes	50	11.8
Missing	0	

Failures during the stay	N	%
No	408	96.0
Yes	17	4.0
A: Respiratory failure	9	2.1
B: Cardiovascular failure	5	1.2
C: Neurological failure	2	0.5
D: Hepatic failure	0	0.0
E: Renal failure (AKIN)	2	0.5
F: Acute skin failure	0	0.0
G: Metabolic failure	3	0.7
H: Coagulation failure	1	0.2
Missing	0	

Failures during the stay (top 10)	N	%
A	7	1.6
B	3	0.7
G	2	0.5
AC	1	0.2
ACG	1	0.2
BE	1	0.2
BH	1	0.2
E	1	0.2
-	0	0.0
-	0	0.0
Missing	0	

Respiratory failure occured	N	%
None	416	97.9
Intubation for airway maint.	4	0.9
Hypoxic failure	4	0.9
Hypercapnic failure	1	0.2
Missing	0	

Cardiovascular failure occured	N	%
None	420	98.8
Cardiogenic shock	3	0.7
Hypovolemic shock	0	0.0
Haemorrhagic/hypovolemic shock	0	0.0
Septic shock	1	0.2
Anaphylactic shock	0	0.0
Neurogenic shock	0	0.0
Other shock	1	0.2
Missing	0	

Neurological failure occured	N	%
None	423	99.5
Cerebral coma	1	0.2
Metabolic coma	1	0.2
Postanoxic coma	0	0.0
Missing	0	

Renal failure occured (AKIN)	N	%
None	423	99.5
Mild	1	0.2
Moderate	0	0.0
Severe	1	0.2
Missing	0	

Complications during the stay	N	%
Respiratory	9	2.1
Atelectasis	3	0.7
Pleural effusion	3	0.7
Pneumothorax/Pneumomediastinum	3	0.7
Aspiration pneumonia	1	0.2
Pulmonary embolism	1	0.2
Cardiovascular	6	1.4
Left heart failure w/o pulm. edema	2	0.5
Acute severe arrhythmia: bradycardias	1	0.2
Cardiac arrest	1	0.2
Pulmonary edema	1	0.2
Acute severe arrhythmia: tachycardias	1	0.2
Neurological	21	4.9
Drowsiness/agitation/delirium	7	1.6
Intracranial hypertension	7	1.6
Brain edema	5	1.2
Seizures	4	0.9
Hydrocephalus	2	0.5
Gastrointestinal and hepatic	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Other	6	1.4
Metabolic disorder	3	0.7
Nephrourologic disease	2	0.5
Category/Stage III: Full Thickness Skin Loss	1	0.2
Extremity compartment syndrome (severe)	1	0.2
Other disease	1	0.2
-	0	0.0
-	0	0.0
Infections	17	4.0
Pneumonia	7	1.6
Catheter-related UTI	3	0.7
Primary bacteraemia of unknown origin	2	0.5
Clinical sepsis	2	0.5
L.R.T.I. other than pneumonia	2	0.5
NON-surgical CNS infection	1	0.2
Ventriculostomy-related CNS infection	1	0.2
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

National report for general ICUs - **Year 2023**
Characteristics during the stay - Pediatric patients evaluated with PIM 3

Infections	N	%
None	318	74.8
Only on admission	90	21.2
On admission and during ICU stay	2	0.5
Only during ICU stay	15	3.5
Missing	0	

Maximum severity of infection	N	%
None	318	74.8
INFECTION WITHOUT SEPSIS	55	12.9
SEPSIS	45	10.6
SEPTIC SHOCK	7	1.6
Missing	0	

Severity evolution

		During the stay				
	N (R %)	None	INFECTION WITHOUT SEPSIS	SEPSIS	SEPTIC SHOCK	TOT
Admission	None	318 (95.5%)	12 (3.6%)	3 (0.9%)	0 (0.0%)	333
	INFECTION WITHOUT SEPSIS	-	43 (95.6%)	2 (4.4%)	0 (0.0%)	45
	SEPSIS	-	-	40 (100.0%)	0 (0.0%)	40
	SEPTIC SHOCK	-	-	-	7 (100.0%)	7
	TOT	318	55	45	7	425

Ventil. Associat. Pneumonia (VAP)	N	%
No	418	98.4
Yes	7	1.6
Missing	0	

Catheter Bacteraemia (CR-BSI)	N	%
No	425	100.0
Yes	0	0.0
Missing	0	

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

Estimate	14.3
CI (95%)	5.8−29.5

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

Estimate	0.0
CI (95%)	0.0−4.4

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

Estimate	11.4%
CI (95%)	4.6−23.6

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

Estimate	0.0%
CI (95%)	0.0−5.3

Catheter-related urinary tract infection (UTI)	N	%
No	422	99.3
Yes	3	0.7
Missing	0	

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

Estimate	2.5
CI (95%)	0.5−7.3

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

Estimate	3.0%
CI (95%)	0.6−8.8

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)	340	80.0										
Invasive ventilation	190	44.7	159	37.4	26	6.1	1	0–2	0	0	0–0	0
Non invasive ventilation	27	6.4	6	1.4	7	1.6	1	1–4	0	0	0–0	0
Tracheostomy	22	5.2	7	1.6	17	4	15	7–22	0	5	2–9	0
iNO (inhaled nitric oxide)	2	0.5	0	0	0	0	7	6–8	0	1	0–2	0
Central Venous Catheter	152	35.8	81	19.1	116	27.3	3	1–6	0	0	0–0	0
PICC	14	3.3	5	1.2	11	2.6	2	1–6	0	0	0–1	0
Arterial Catheter	226	53.2	130	30.6	40	9.4	2	1–4	0	0	0–0	0
Vasoactive drugs	46	10.8	29	6.8	13	3.1	2	1–4	0	0	0–1	0
Antiarrhythmics	0	0.0										
IABP	0	0.0										
Invasive monitoring of C.O.	5	1.2	3	0.7	1	0.2	4	4–6	0	1	0–2	0
Continous monitoring of ScVO2	1	0.2	0	0	0	0	4	4–4	0	2	2–2	0
Temporary pacing	0	0.0										
Ventricular assistance	0	0.0										
DC-shock	3	0.7								0	0–2	0
CPR	7	1.6								0	0–0	0
Massive transfusion	2	0.5								0	0–0	0
ICP monitoring without CSF drainage	5	1.2	0	0	1	0.2	2	1–14	0	0	0–0	0
ICP monitoring with CSF drainage	5	1.2	3	0.7	4	0.9	3	1–7	0	2	2–3	0
EVD without ICP monitoring	0	0.0										
Haemofiltration	2	0.5	1	0.2	0	0	24	14–33	0	5	5–5	0
Haemodialysis	0	0.0										
ECMO	5	1.2	3	0.7	3	0.7	1	0–1	0	0	0–1	0
Hepatic clearance techniques	0	0.0										
Clearance techniques during sepsis	0	0.0										
IAP (intra-abdominal pressure)	1	0.2										
Hypothermia	2	0.5	0	0	0	0	1	1–1	0	0	0–0	0
Enteral nutrition	64	15.1	17	4	41	9.6	5	2–16	0	1	0–2	0
Parenteral nutrition	16	3.8	3	0.7	10	2.4	3	2–6	0	2	0–2	0
SDD (Topical, Topical and systemic)	0	0.0										
Patient restraint	4	0.9										
Diagnostic fibrobronchoscopy	9	2.1								0	0–1	0
Surfactant treatment	0	0.0										
Vacuum therapy	0	0.0										
Oxygen therapy	49	11.5	33	7.8	24	5.6	1	1–3	0	1	0–2	0
Blood transfusion	0	0.0										
Peritoneal dialysis	0	0.0										
Plasmapheresis	0	0.0										
Thoracic drainage	2	0.5	2	0.5	2	0.5	2	1–2	0			
Peridural catheter	4	0.9	1	0.2	4	0.9	2	1–4	0	1	0–2	0
Urinary catheter	290	68.2	221	52	212	49.9	2	1–4	0	0	0–0	0
Near-infrared spectroscopy	0	0.0										
Phototherapy	0	0.0										
Electrical cardioversion	1	0.2								0	0–0	0
Pronation	4	0.9	0	0	0	0	1	1–3	0	2	1–2	0
Antivirals	13	3.1	9	2.1	9	2.1	3	2–4	0	0	0–0	0

National report for general ICUs - **Year 2023**
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	208	48.9										
Antibiotic prophylaxis	90	21.2	67	15.8	55	12.9	1	1–2	0	0	0–0	0
Empirical antibiotic therapy (infection diagnosis confirmed)	51	12.0	32	7.5	31	7.3	2	1–3	0	0	0–2	0
Empirical antibiotic therapy (infection diagnosis unconfirmed)	55	12.9	29	6.8	46	10.8	2	1–4	0	0	0–1	0
Targeted antibiotic therapy	38	8.9	10	2.4	23	5.4	6	2–10	0	3	1–6	0
Antifungal in empirical therapy	7	1.6	5	1.2	6	1.4	2	1–6	0	0	0–0	0
Antifungal in targeted therapy	1	0.2	0	0	1	0.2	0	0–0	0	2	2–2	0
Pre-emptive antifungal	4	0.9	3	0.7	3	0.7	6	2–8	0	0	0–0	0

Antibiotic therapy		
Pt. infected in ICU only (N=15)	N	%
No therapy	0	0.0
Only empirical	6	40.0
Only targeted	6	40.0
Targeted after empirical	3	20.0
Other	0	0.0
Missing	0	

Antifungal therapy		
Pt. infected in ICU only (N=15)	N	%
No therapy	15	100.0
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 2023**
Process indicators - Pediatric patients evaluated with PIM 3

Invasive ventilation (N=190)	N	%	Length (days) Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	35	16.5	7.2	10.4	2	1−8.5	0
For airway mainteinance	75	35.4	4.8	8.1	1	0−4	0
In weaning	70	33.0	0.5	0.5	1	0−1	0
Not evaluable	32	15.1	1.9	3.0	1	1−1	22
Reintubation within 48 hours	3	1.4	1.3	1.5	1	0.5−2	0

Non invasive ventilation (N=27)	N	%
Non invasive ventilation only	18	66.7
Non invasive ventilation failed	5	18.5
For weaning	3	11.1
Other	1	3.7
Missing	0	

Tracheostomy not present on admission (N=15)	N	%
Surgical	1	6.7
Percutwist	0	0.0
Ciaglia	1	6.7
Monodil. Ciaglia	8	53.3
Fantoni	2	13.3
Griggs	3	20.0
Other Kind	0	0.0
Unknown	0	0.0
Missing	0	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=15)	
Mean	5.5
SD	3.6
Median	5
Q1−Q3	2.5−9
Missing	0

Invasive monitoring of C.O. (N=5)	N	%
Swan Ganz	1	20.0
PICCO	3	60.0
LIDCO	0	0.0
Vigileo-PRAM	1	20.0
Other	0	0.0
Missing	0	

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

Surgical interventions	N	%
No	415	97.6
Yes	10	2.4
Missing	0	

Number of surgical interventions	N	%
0	415	97.6
1	9	2.1
2	0	0.0
3	0	0.0
>3	1	0.2
Missing	0	

Surgical interventions Days from admission	
Mean	14.0
SD	8.8
Median	13
Q1−Q3	9−15
Missing	0

Surgical interventions (top 10)	N	%
Neurosurgery	5	1.2
Other surgery	4	0.9
Orthopaedic surgery	2	0.5
Plastic surgery	1	0.2
ENT surgery	1	0.2
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Non surgical interventions	N	%
No	424	99.8
Yes	1	0.2
Missing	0	

Non surgical interventions Days from admission	
Mean	25.0
SD	
Median	25
Q1−Q3	25−25
Missing	0

Non surgical interventions	N	%
Therapeutic endoscopy (bronchoscopy excluded)	1	0.2
Interventional radiology	0	0.0
Interventional cardiology	0	0.0
Interventional neuroradiology	0	0.0
Interventional endoscopy	0	0.0
Therapeutic bronchoscopy	0	0.0
Missing	0	

National report for general ICUs - **Year 2023**
Outcome indicators - Pediatric patients evaluated with PIM 3

ICU outcome	N	%
Dead	22	5.2
Transferred to same hospital	371	87.3
Transferred to other hospital	26	6.1
Discharged home	5	1.2
Disch. terminally ill	1	0.2
Missing	0	

Transferred to (N=397)	N	%
Ward	369	92.9
Other ICU	0	0.0
High dependency care unit	18	4.5
Rehabilitation	9	2.3
Day hospital or Long-term care	1	0.3
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=371)	N	%
Ward	351	94.6
Other ICU	0	0.0
High dependency care unit	16	4.3
Rehabilitation	3	0.8
Day hospital or Long-term care	1	0.3
Missing	0	

Transferred to Other hospital (N=26)	N	%
Ward	18	69.2
Other ICU	0	0.0
High dependency care unit	2	7.7
Rehabilitation	6	23.1
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	402	94.6
Dead	23	5.4
Missing	0	

Timing of ICU mortality (N=23)	N	%
Daytime (08:00AM - 07:59PM)	19	82.6
Nighttime (08:00PM - 07:59AM)	4	17.4
Weekdays (Monday - Friday)	18	78.3
Weekend (Saturday - Sunday)	5	21.7
Missing	0	

C.A.M. activation (N=23)	N	%
Yes, with organ donation	6	27.3
Yes, without organ donation	1	4.5
No, with organ donation	0	0.0
No, without organ donation	15	68.2
Missing	1	

Tissue removal (N=23)	N	%
Yes, with C.A.M. activation	2	8.7
Yes, without C.A.M. activation	0	0.0
No	21	91.3
Missing	0	

Hospital mortality *	N	%
Dead	24	5.9
Transf. to other acute-care hospital	28	6.9
Transf. to other type of hosp. stay	31	7.6
Nursing home	11	2.7
Voluntary discharge	8	2.0
Discharged home	304	74.9
Missing	0	

To other type of H stay* (N=31)	N	%
Rehabilitation in the same institute	6	19.4
Rehabilitation in other institute	15	48.4
DH/long-term care, same inst.	7	22.6
DH/long-term care, other inst.	3	9.7
Missing	0	

Disch. terminally ill* (N=382)	N	%
Yes	3	0.8
No	378	99.2
Missing	1	

Hospital mortality *	N	%
Alive	378	93.3
Dead	27	6.7
Missing	1	

Timing of hosp. mortality * (N=27)	N	%
In ICU	23	85.2
Within 24 hours after ICU	1	3.7
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	3	11.1
Missing	0	

Timing of hosp. mortality (days from ICU disch.) * Discharged alive from ICU (N=4)	
Mean	8.0
SD	6.6
Median	8
Q1−Q3	5.2−10.8
Missing	0

* Statistics computed on patients admitted in months with % of patients in status 4 over the threshold (readmissions excluded) (N=406).

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Outcome indicators - Pediatric patients evaluated with PIM 3

Last hospital mortality *	N	%
Alive	377	93.3
Dead	27	6.7
Missing	2	

Expected outcome (N=402)	N	%
Recovery/resolution of acute episode	392	97.8
Palliative care grade 1	6	1.5
Palliative care grade 2	0	0.0
Palliative care grade 3	0	0.0
Palliative care grade 4	3	0.7
Missing	1	

Outcome treatments (N=10)	N	%
NON invasive ventilation	1	10.0
Invasive ventilation	0	0.0
Oxygen therapy	1	10.0
Tracheostomy	3	30.0
Diuretics grugs	0	0.0
Inotropic agents drugs	0	0.0
Antiepileptics drugs	4	40.0
Dialytic therapy	0	0.0
Limb replacement	0	0.0
Nasogastric tube	0	0.0
Ostomies	4	40.0
Home based parenteral nutrition	1	10.0
Motor physiotherapy	3	30.0
Respiratory physiotherapy	1	10.0
Posture	4	40.0
Psychological counselling	7	70.0
Missing	0	

ICU stay (days)	
Mean	3.6
SD	6.3
Median	2
Q1−Q3	1−3
Missing	0

ICU stay (days) **Alive** (N=402)	
Mean	3.4
SD	6.2
Median	1
Q1−Q3	1−3
Missing	0

ICU stay (days) **Dead** (N=23)	
Mean	6.9
SD	7.3
Median	3
Q1−Q3	1−8.5
Missing	0

Stay after ICU (days) * **Alive** (N=383)	
Mean	9.1
SD	13.2
Median	6
Q1−Q3	2−10.5
Missing	0

Hospital stay (days) *	
Mean	14.3
SD	20.1
Median	9
Q1−Q3	4−16
Missing	0

Hospital stay (days) * **Alive** (N=378)	
Mean	14.5
SD	20.3
Median	9
Q1−Q3	4−15.8
Missing	0

Hospital stay (days) * **Dead** (N=27)	
Mean	12.1
SD	16.9
Median	6
Q1−Q3	1−18
Missing	0

* Statistics computed on patients admitted in months with % of patients in status 4 over the threshold (readmissions excluded) (N=406).

Appendix

National report for general ICUs - Year 2023
Prognostic models: GiViTI 2023 - 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	-5.12 (-5.74;-4.49)	/	×
Miscellanea			
Operating theatre (Yes vs. No)	-0.36 (-0.51;-0.21)	0.70 (0.60; 0.81)	<0.001
Ward of admission: Medical ward vs. Surgical ward/Other ICU	1.51 (0.98; 2.03)	/	
Ward of admission: High dependency care unit vs. Surgical ward/Other ICU	0.42 (0.20; 0.65)	/	×
Ward of admission: Emergency room vs. Surgical ward/Other ICU	0.19 (0.08; 0.30)	/	
Surgical status (Elective surgical vs. Non surgical)	-0.06 (-0.53; 0.42)	/	
Surgical status (Emergency surgical vs. Non surgical)	0.40 (-0.04; 0.83)	/	×
Reason for admission (Intensive Treatment vs. Monitoring/Weaning**)	0.05 (-0.13; 0.24)	/	×
Vasoactive drugs (SOFA score): first 24 hours (Yes vs. No)	0.11 (0.00; 0.21)	/	×
Age in decades	-0.06 (-0.24; 0.12)	/	
(Age in decades)^2	0.04 (0.03; 0.05)	/	×
Admitted in hospital the same day of ICU admission (Yes vs. No)	0.14 (0.01; 0.27)	/	
$\log_e$(Stay before ICU (days) - 1/24)	0.19 (0.15; 0.22)	/	×
Min(BMI - 30, 0)	-0.05 (-0.06;-0.04)	0.95 (0.94; 0.96)	<0.001
Max(BMI - 30, 0)	0.02 (0.01; 0.03)	1.02 (1.01; 1.03)	
Scheduled admission without emergency (surg. or non-surg.) procedures (Yes vs. No)	0.36 (0.13; 0.59)	1.44 (1.14; 1.81)	0.002
Physiopatological components			
Bilirubin (mg/100ml) (1.2-5.9 vs. <1.2)	0.23 (0.14; 0.33)	1.26 (1.16; 1.38)	<0.001
Bilirubin (mg/100ml) (>=6 vs. <1.2)	0.71 (0.43; 0.99)	2.04 (1.54; 2.70)	
Systolic Blood Pressure (mmHg) (<70 vs. >=70)	0.43 (0.32; 0.54)	1.54 (1.38; 1.71)	<0.001
Creatinine (mg/dl) (>=5 vs. <5)	-0.41 (-0.59;-0.22)	0.67 (0.55; 0.80)	<0.001
Urine Output (L/24h) (<0.2 vs. >=1)	0.64 (0.38; 0.90)	/	
Urine Output (L/24h) (0.2-0.49 vs. >=1)	0.29 (0.07; 0.52)	/	×
Urine Output (L/24h) (0.5-0.99 vs. >=1)	0.19 (0.10; 0.29)	/	
HCO3 (mEq/L) (<20 vs. >=20)	0.21 (0.12; 0.29)	1.23 (1.13; 1.34)	<0.001
PaO2/FiO2 (100*mmHg/%) (100-199 vs. >=200)	0.21 (0.12; 0.30)	/	×
PaO2/FiO2 (100*mmHg/%) (<100 vs. >=200)	1.04 (0.81; 1.28)	/	
Platelets (10^3/mm3) (50-99 vs. >=100)	0.22 (0.09; 0.35)	1.24 (1.09; 1.41)	<0.001
Platelets (10^3/mm3) (<50 vs. >=100)	0.72 (0.55; 0.90)	2.06 (1.73; 2.46)	
Potassium (mEq/L)(mmol/L) (>=5 vs. <5)	0.28 (0.16; 0.40)	/	×
Sodium (mEq/L) (>=145 vs. <145)	0.26 (0.14; 0.37)	1.29 (1.15; 1.45)	<0.001
Clinical conditions on admission			
Trauma: Abdomen/Chest/Major vessels injury/Pelvis/bone/joint/muscle/Spine (Yes vs. No)	-0.39 (-0.55;-0.23)	/	×
Pneumonia (Yes vs. No)	0.19 (0.08; 0.30)	1.21 (1.09; 1.35)	<0.001
Endocarditis (Yes vs. No)	0.82 (0.43; 1.21)	2.27 (1.54; 3.35)	<0.001
Peritonites (Post-surgical, primary or secondary vs. None)	0.38 (0.21; 0.54)	1.46 (1.24; 1.71)	<0.001
Peritonites (Tertiary vs. None)	1.37 (0.69; 2.04)	3.92 (2.00; 7.68)	
Restrictive lung disease, exacerbation (Yes vs. No)	0.84 (0.44; 1.24)	2.31 (1.55; 3.46)	<0.001
Acute intoxication (Yes vs. No)	-0.67 (-0.99;-0.35)	0.51 (0.37; 0.70)	<0.001
ARDS (Mild vs. None)	0.16 (-0.18; 0.51)	/	
ARDS (Moderate vs. None)	0.74 (0.31; 1.17)	/	×
ARDS (Severe vs. None)	0.93 (0.46; 1.40)	/	
Haematological disease (Yes vs. No)	0.89 (0.55; 1.23)	2.44 (1.73; 3.43)	<0.001
Lung cancer (Yes vs. No)	0.91 (0.58; 1.23)	2.48 (1.79; 3.43)	<0.001
Spontaneous Intraparenchymal bleeding (Yes vs. No)	0.72 (0.52; 0.92)	2.05 (1.68; 2.51)	<0.001
Spontaneous Subarachnoid haemorrhage (Yes vs. No)	0.61 (0.34; 0.89)	1.85 (1.41; 2.43)	<0.001
Acute severe arrhythmia: bradycardias (Yes vs. No)	-0.65 (-1.11;-0.20)	0.52 (0.33; 0.82)	0.004
Cardiac arrest (Yes vs. No)	0.70 (0.50; 0.91)	/	×
Comorbidities			
Arrhythmia (Yes vs. No)	0.20 (0.10; 0.29)	/	×
Malignant haematological disease (Yes vs. No)	0.47 (0.28; 0.66)	1.60 (1.33; 1.94)	<0.001
NYHA class II-III-IV (Yes vs. No)	0.20 (0.09; 0.31)	1.22 (1.09; 1.36)	<0.001
Metastatic cancer (Yes vs. No)	1.06 (0.90; 1.22)	2.89 (2.47; 3.38)	<0.001
Moderate or severe liver disease (Yes vs. No)	0.65 (0.44; 0.87)	1.92 (1.55; 2.38)	<0.001
Comorbidities (No vs. Yes)	-0.29 (-0.44;-0.14)	0.75 (0.64; 0.87)	<0.001
Respiratory comorbidities (Moderate COPD /Severe COPD/Restrictive lung disease) (Yes vs. No)	0.19 (0.10; 0.28)	1.21 (1.11; 1.33)	<0.001
Neurological comorbidities*** (Yes vs. No)	0.21 (0.12; 0.30)	/	×

(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.*
**** Neurological comorbidities refers to at least one of the following: Cerebrovascular disease, Dementia , Hemiplegia or paraplegia or quadriplegia or Neurodegenerative/Neuromuscular disease.*

Organ failures			
GCS (3-4 vs. 15)	1.60 (1.35; 1.84)	/	×
GCS (5-6, Not evaluable in the first 24 hours in neurological patient* vs. 15)	1.25 (1.10; 1.40)	/	
GCS (7-8, Not evaluable in the first 24 hours in NON-neurological patient* vs. 15)	0.79 (0.68; 0.89)	/	
GCS (9-12 vs. 15)	0.55 (0.42; 0.69)	/	
GCS (13-14 vs. 15)	0.27 (0.14; 0.39)	/	
Worst pupils in the first 24 hrs. (Unilaterally dilated and non-reactive vs. Bilaterally reactive and/or miotic)	1.34 (1.05; 1.62)	/	×
Worst pupils in the first 24 hrs. (Bilaterally dilated and non-reactive vs. Bilaterally reactive and/or miotic)	3.89 (3.34; 4.44)	/	
Worst pupils in the first 24 hrs. (Unavailable/Unassessable vs. Bilaterally reactive and/or miotic)	0.46 (0.20; 0.72)	/	
Respiratory failure (Only hypoxic failure vs. None)	0.17 (0.01; 0.33)	/	×
Respiratory failure (Only hypercapnic failure vs. None)	-0.22 (-0.48; 0.04)	/	
Respiratory failure (Hypoxic-hypercapnic failure vs. None)	0.01 (-0.19; 0.22)	/	
Respiratory failure (Intubation for airway maint. vs. None)	0.18 (0.03; 0.34)	/	
Cardiovascular failure (Cardiogenic shock vs. None/Without shock/Septic shock/Hypovolemic shock)	0.45 (0.26; 0.64)	/	×
Cardiovascular failure (Anaphylactic shock vs. None/Without shock/Septic shock/Hypovolemic shock)	-1.74 (-3.15;-0.33)	/	
Cardiovascular failure (Neurogenic shock vs. None/Without shock/Septic shock/Hypovolemic shock)	0.36 (0.03; 0.69)	/	
Cardiovascular failure (Haemorrhagic/hypovolemic shock/Other shock/Mixed shock vs. None/Without shock/Septic shock/Hypovolemic shock)	0.14 (0.01; 0.28)	/	
Renal failure (AKIN) (Moderate/Severe vs. None/Mild)	0.30 (0.19; 0.42)	1.35 (1.21; 1.52)	<0.001
Neurologic failure: Metabolic coma/Toxic coma (Yes vs. No)	-0.73 (-0.94;-0.52)	0.48 (0.39; 0.59)	<0.001
Number of failures (No vs. Yes)	-0.26 (-0.42;-0.09)	/	×
Number of failures (number)	0.16 (0.11; 0.22)	/	
Surgical and non surgical procedures			
Nephro/Urological surgery (Yes vs. No)	-0.46 (-0.69;-0.22)	0.63 (0.50; 0.80)	<0.001
Gastrointestinal surgery (Yes vs. No)	0.27 (0.13; 0.42)	1.31 (1.14; 1.52)	<0.001
Organ/s transplantation (Yes vs. No)	-1.71 (-2.53;-0.89)	0.18 (0.08; 0.41)	<0.001
Interventional cardiology (Yes vs. No)	-0.42 (-0.64;-0.21)	0.66 (0.53; 0.81)	<0.001
Interactions among independent variables			
Bilaterally dilated and non-reactive × Neurological comorbidities***	-1.64 (-2.48;-0.81)	0.19 (0.08; 0.45)	<0.001
PaO2/FiO2 (100*mmHg/%) (<100) × GCS (3-6, Not evaluable in the first 24 hours in neurological patient*)	-0.73 (-1.13;-0.33)	0.48 (0.32; 0.72)	<0.001
PaO2/FiO2 (100*mmHg/%) (<100) × GCS (7-14, Not evaluable in the first 24 hours in NON-neurological patient*)	-0.36 (-0.62;-0.09)	0.70 (0.54; 0.91)	<0.001
Bilaterally dilated and non-reactive × PaO2/FiO2 (100*mmHg/%) (<200)	-1.11 (-1.86;-0.36)	0.33 (0.16; 0.70)	<0.001
GCS (3-4) × Admitted in hospital the same day of ICU admission	0.55 (0.26; 0.83)	1.73 (1.30; 2.30)	<0.001
Urine Output (L/24h) (<0.2) × Vasoactive drugs (SOFA score): first 24 hours	0.59 (0.32; 0.87)	1.81 (1.37; 2.38)	<0.001
Urine Output (L/24h) (0.2-0.49 vs. >=1) × Vasoactive drugs (SOFA score): first 24 hours	0.30 (0.04; 0.56)	1.35 (1.04; 1.74)	<0.001
Arrhythmia × Cardiac arrest	-0.65 (-0.99;-0.31)	0.52 (0.37; 0.73)	<0.001
Cardiac arrest × Medical ward/High dependency care unit	-0.41 (-0.78;-0.04)	0.66 (0.46; 0.96)	<0.001
Trauma: Abdomen/Chest/Major vessels injury/Pelvis/bone/joint/muscle/Spine × Cardiac arrest	1.17 (0.35; 1.98)	3.21 (1.42; 7.27)	<0.001
Medical ward × Intensive Treatment	-0.35 (-0.58;-0.11)	0.71 (0.56; 0.89)	<0.001
Medical ward × Age in decades	-0.12 (-0.19;-0.05)	0.89 (0.83; 0.95)	<0.001
Age in decades × Emergency surgical/Elective surgical	-0.08 (-0.14;-0.02)	0.92 (0.87; 0.98)	<0.001
High dependency care unit × Respiratory failure: Type II (hypercapnic)	0.58 (0.05; 1.11)	1.79 (1.06; 3.04)	<0.001
Respiratory failure: Type II (hypercapnic) × Emergency surgical/Elective surgical	0.55 (0.16; 0.94)	1.73 (1.17; 2.56)	<0.001
GCS (3-4) × Cardiogenic shock	-0.63 (-1.02;-0.23)	0.53 (0.36; 0.79)	<0.001
Potassium (mEq/L)(mmol/L) (>=5) × Cardiogenic shock	-0.41 (-0.77;-0.06)	0.66 (0.46; 0.94)	<0.001
Number of failures × ARDS Moderate/Severe	-0.22 (-0.36;-0.07)	0.81 (0.70; 0.93)	<0.001

Dependent variable explained	
Likelihood Ratio Test:	12810
Degree of freedom:	95
p-value:	<0.0001

Goodness-of-fit	
Area under the ROC curve:	0.889
GiViTI Calibration Test:	0.082
p-value:	0.774
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.*

**** Neurological comorbidities refers to at least one of the following: Cerebrovascular disease, Dementia , Hemiplegia or paraplegia or quadriplegia or Neurodegenerative/Neuromuscular disease.*

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 2023 data using PIM 2, PIM 3, PELOD, SAPSII, and GiViTI 2023 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).

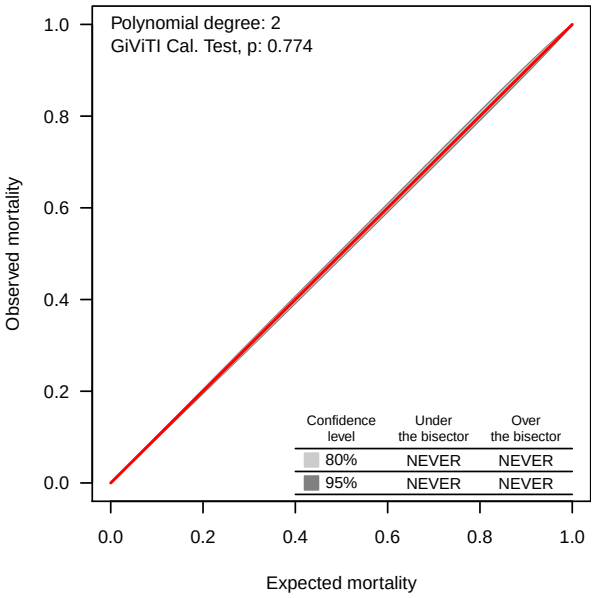
These belts serve as a representation of the validity of the models used to evaluate the performance of each ICU. A model is well calibrated, and thus a useful tool for evaluating individual departments, when the bisector is fully included in the belt. Only when this occurs can a deviation from the bisector 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 belt built by applying the GiViTI 2022 model to the data of 2023 patients is also shown. The aim of this belt is to investigate 2022 to 2023 differences in terms of performance of the GiViTI general ICUs.

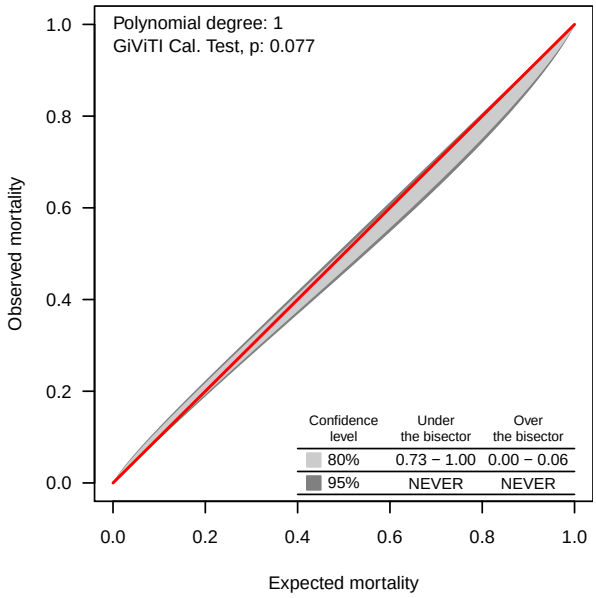
For further informations please look at [PLoS ONE 6(2): e16110].

National report for general ICUs - Year 2023
Validity of the models - Calibration belts

Predictive model: GiViTI 2023 (training set)

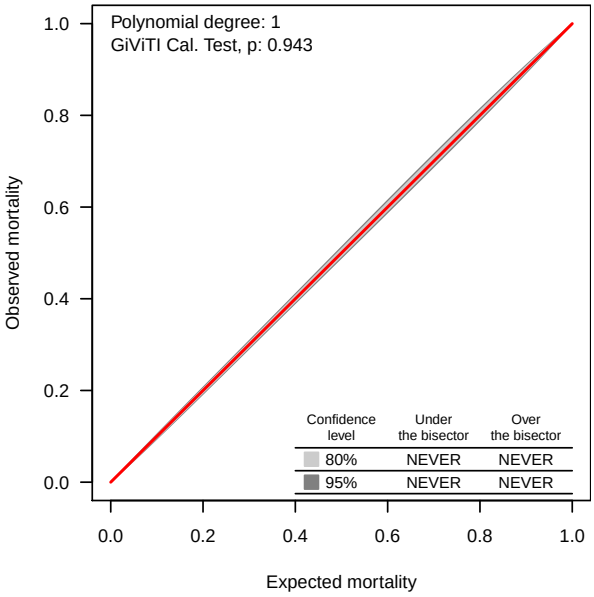


Predictive model: GiViTI 2023 (validation set)

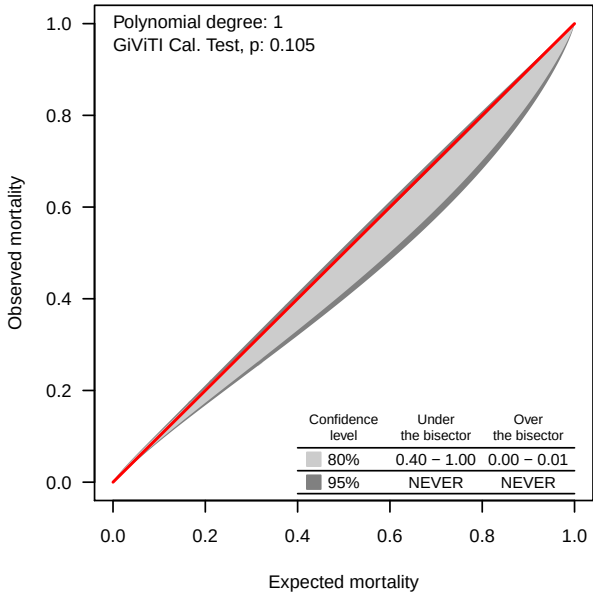


UNIFORMITY OF FIT

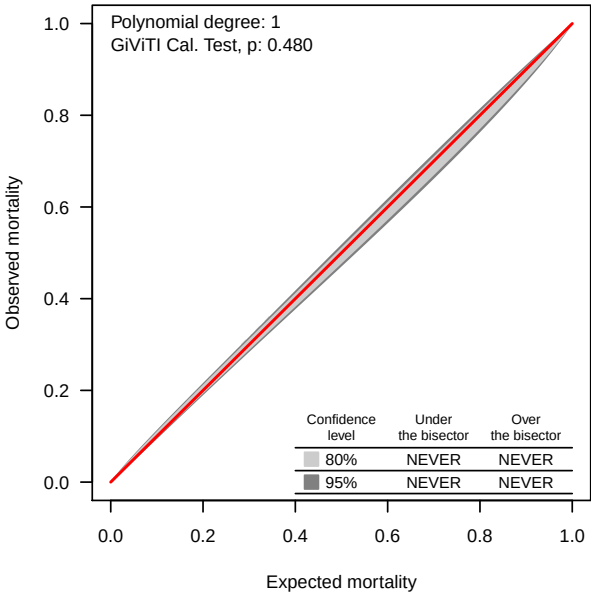
Predictive model: GiViTI 2023 Non surgical



Predictive model: GiViTI 2023 Elective surgical



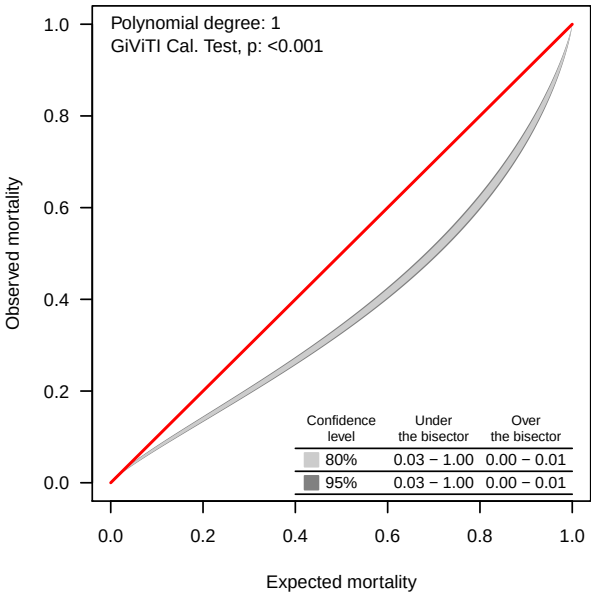
Predictive model: GiViTI 2023 Emergency surgical



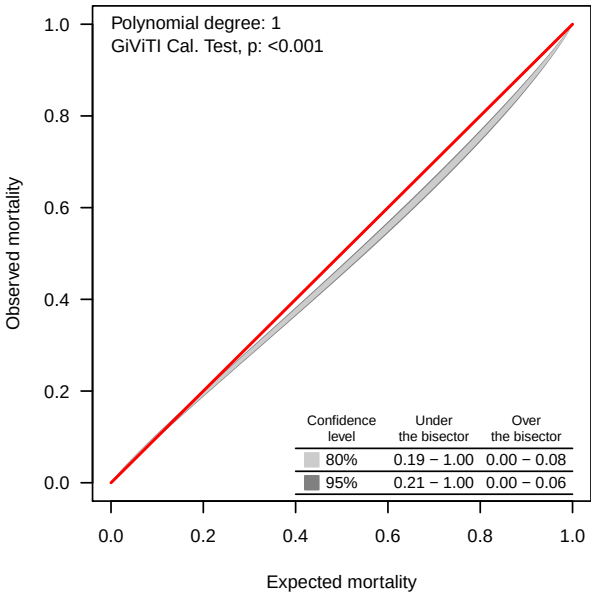
National report for general ICUs - Year 2023
Validity of the models - Calibration belts

EXTERNAL SCORE

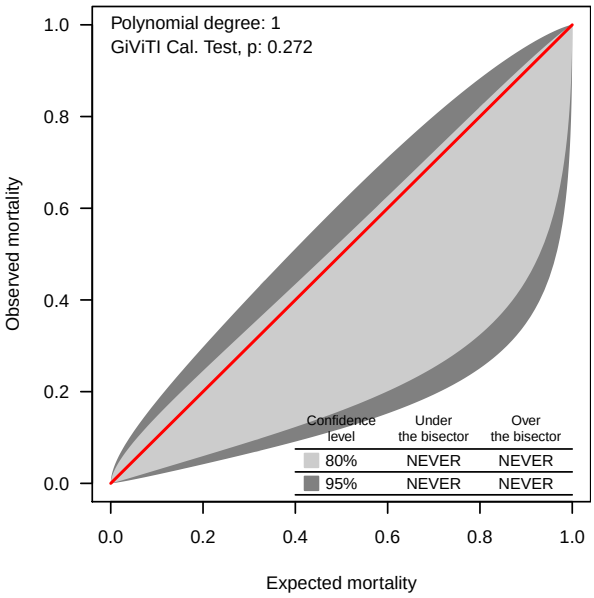
Predictive model: SAPSII



Predictive model: GiViTI 2022



Predictive model : PELOD



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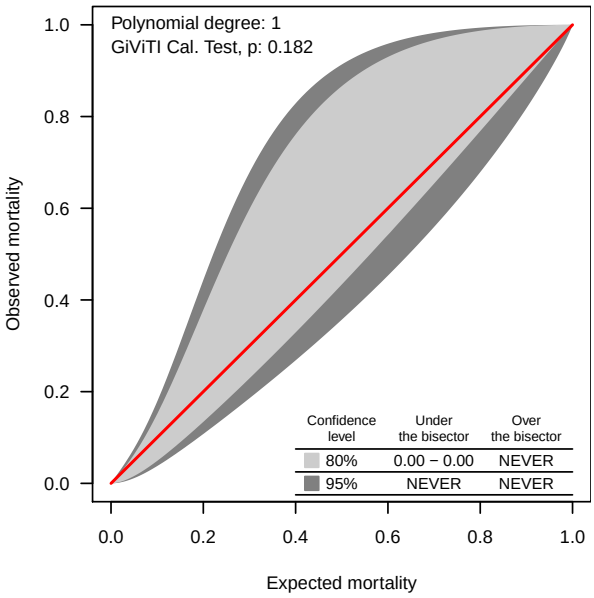

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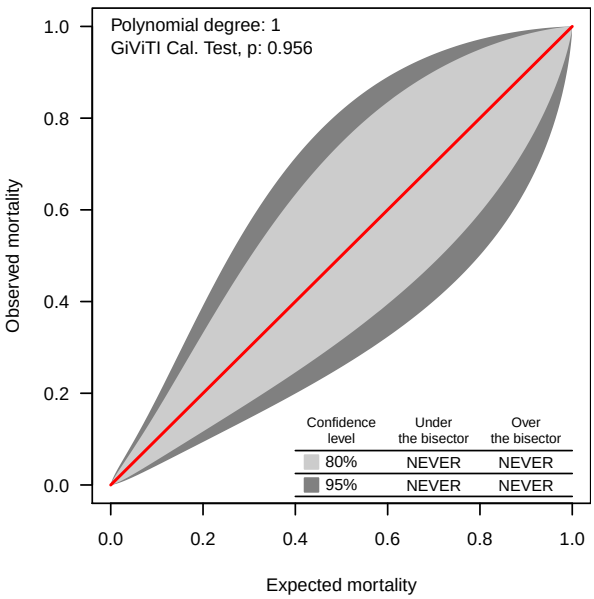
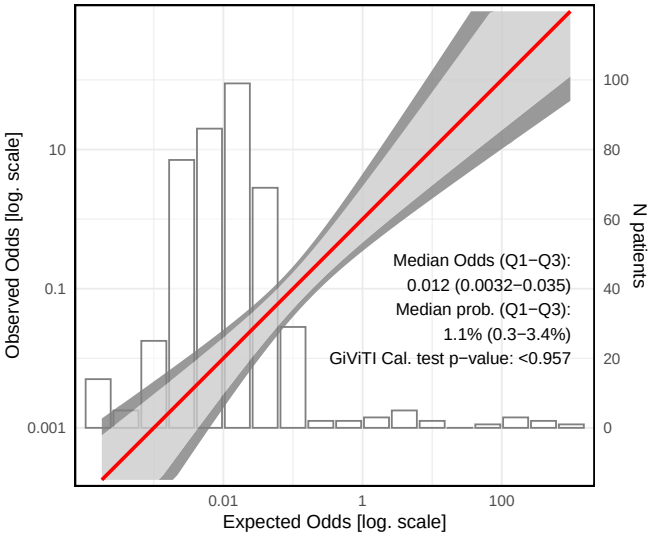


Predictive model: PIM3



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