**GiViTI**

Gruppo Italiano per la Valutazione degli Interventi In Terapia Intensiva

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# Report
# PROSAFE project

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## Year 2018

**National report for general ICUs** (151 ICUs)

# ITALY

SESTANTE EDIZIONI - BERGAMO

**PROSAFE project** - **National report for general ICUs** (151 ICUs)
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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 2018 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 Cardiosurgical Petal, whose aim is to describe in detail the characteristics of patients admitted to the ICU and subject to cardiosurgical procedures;
- the StART Petal, whose objective is to assess the appropriateness of ICU bed utilization by comparing the level of care required by admitted patients with the level of care that can be provided using available resources.
- the CREACTIVE (Collaborative REsearch on ACute Traumatic brain Injury in intensiVe care medicine in Europe) and CAF (Creactive Ambulatory Follow-up) Petals, that aim to collect relevant information to better characterize patients admitted to the ICU for a traumatic brain injury (european collaborative project FP7-HEALTH-2013-INNOVATION-1).
- the TUONO Petal, designed to permit comparison of chest ultrasound reports.
- the BIO-AX-TBI Petal, whose aim is to identify biological and imaging biomarkers that best characterize axonal injury in traumatic brain injury.

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 293 ICUs collected data during 2018, 257 Italian and 36 foreign ICUs, for a total of 97069 patients registered in PROSAFE. Only the ICUs that collected valid data (233) 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 88248 patients admitted to intensive care during 2018.

## The reports

The Coordinating Centre (GiViTI) produces the following reports (only for subgroups composed of at least 5 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 (Italian) national report on the neurosurgical ICUs.
4. 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. An analysis application form is available on the GiViTI website to obtain more complex analyses.

## 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 233 ICUs which collected valid data in 2018 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 2018 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.

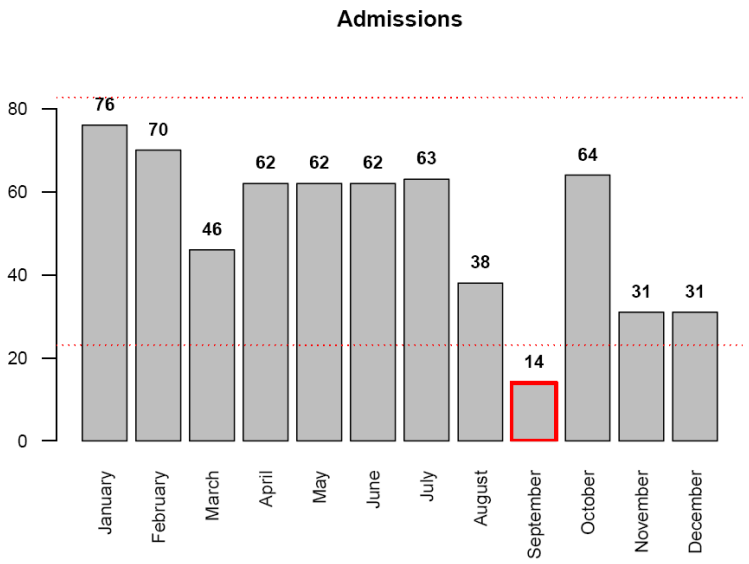
To more clearly illustrate the selection methods used in the choice of valid data, we present an extract from the data validity report of a randomly selected, anonymized ICU.

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 |

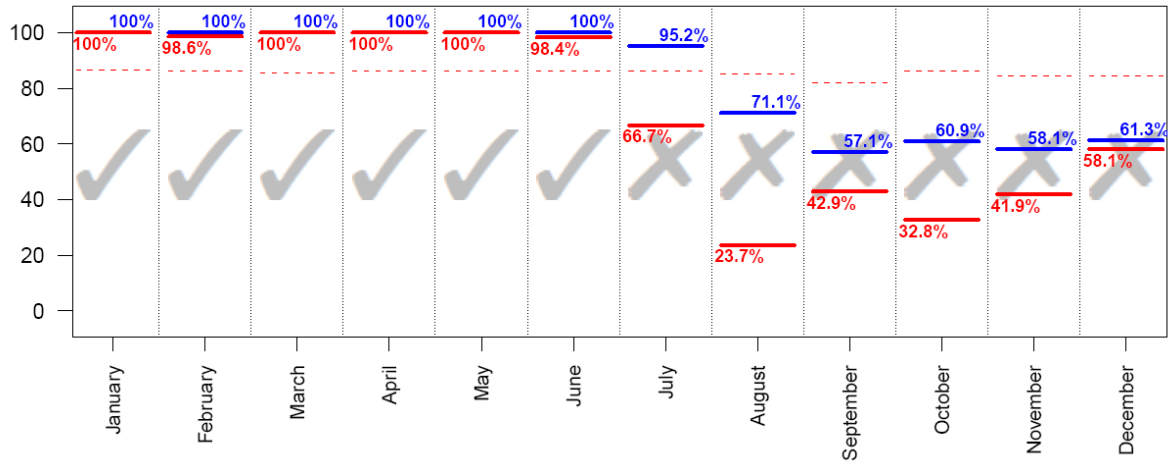



**WARNING!** The highligthed months have a number of patients quite different from the average. Please verify the correctness of the data and, particularly, that all consecutive patients have been registered in the Prosafe software.

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 This part presents patient characteristics at ICU admission and during ICU stay, severity scores, process indicators, and outcomes for the various patient subgroups.

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

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

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

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

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

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

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

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

**Surgical interventions on admission (top 10)** This lists the top 10 surgical interventions, divided by elective surgery and emergency surgery patients, operated between 7 days prior to and one day after admission to the ICU. Each

single intervention (even more than one per patient) is counted.

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

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

**SAPSII** The score cannot be calculated if GCS (first 24 hours) is unassessable.
The SAPSII score for individual patients can become the probability of dying in hospital. This is performed by the following formula:

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

where

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

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

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

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

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

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

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

**VAP** Forms of pneumonia associated with invasive ventilation are defined as VAP (pneumonia onsetting after the 2nd day of ventilation or 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?'.

**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 2018 | Last hospital mortality |
| Pediatric | PIM 2 | ICU mortality |
| | PIM 3 | ICU mortality |
| | PELOD | ICU mortality |

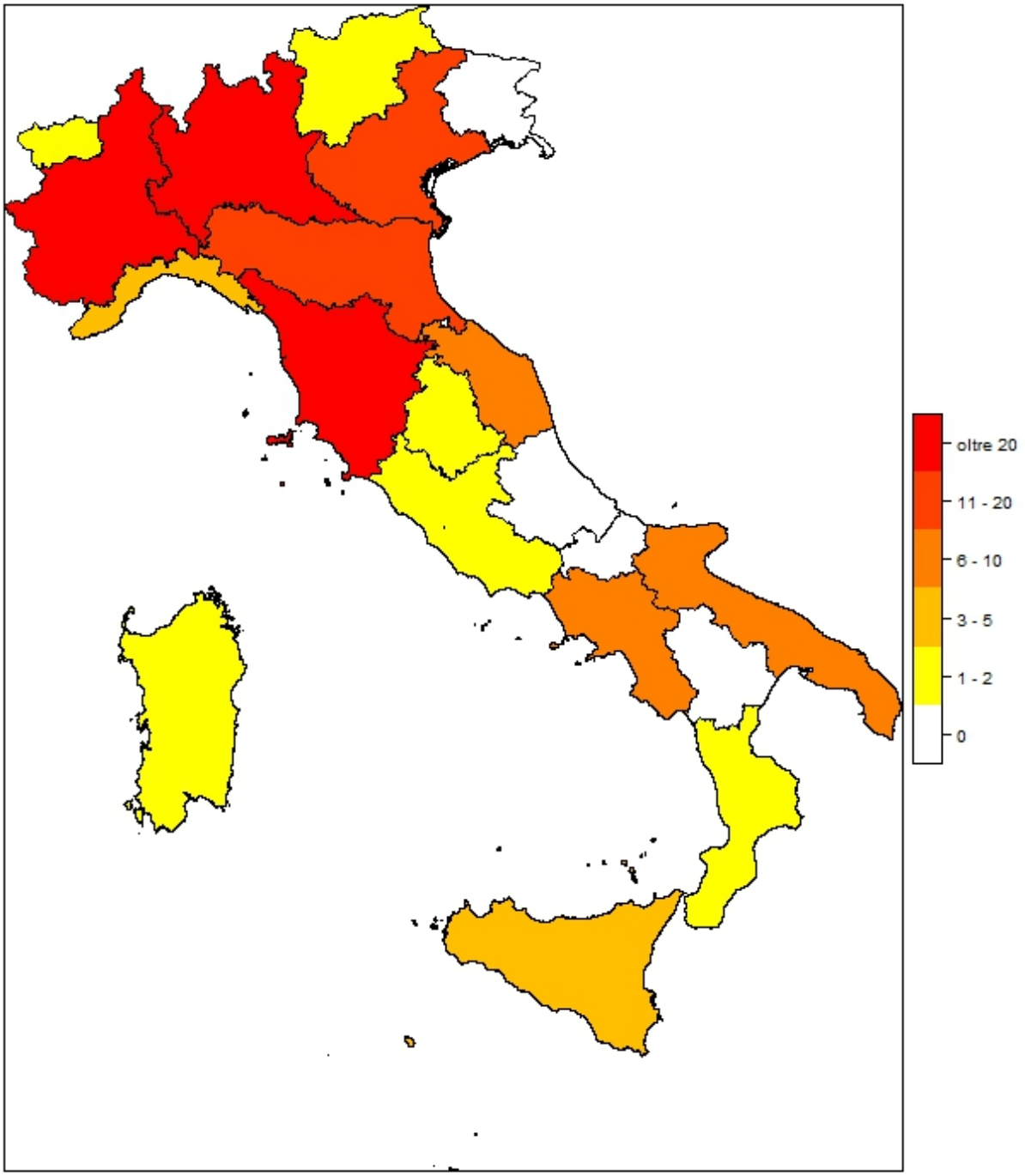
**Analysis of mortality: forest plot** The graph shows the various O/E scores of the ICUs involved in the project. The O/E score is given by the ratio between the total number of observed deaths and the total number of expected deaths (according to the indicated reference model). The dotted line, in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

# Statistics

| | TYPE | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Nation | General | Cardiosurgical | Surgical | Neurosurgical | Pediatrics | HDC | Other | **Total** |
| Cyprus | 2 ICUs<br>1115 patients | | | | | | | **2 ICUs**<br>**1115 patients** |
| Greece | 4 ICUs<br>944 patients | | | | 1 ICUs<br>144 patients | | | **5 ICUs**<br>**1088 patients** |
| Hungary | | | | 1 ICUs<br>437 patients | | | | **1 ICUs**<br>**437 patients** |
| Israel | 1 ICUs<br>519 patients | | | | 1 ICUs<br>792 patients | | 1 ICUs<br>449 patients | **3 ICUs**<br>**1760 patients** |
| Italy | **151 ICUs**<br>**51496 patients** | 19 ICUs<br>10771 patients | 11 ICUs<br>6483 patients | 11 ICUs<br>4712 patients | 3 ICUs<br>1076 patients | 4 ICUs<br>2358 patients | 8 ICUs<br>3169 patients | **207 ICUs**<br>**80065 patients** |
| Poland | 6 ICUs<br>875 patients | | | | 2 ICUs<br>386 patients | | | **8 ICUs**<br>**1261 patients** |
| Slovenia | 1 ICUs<br>323 patients | | 4 ICUs<br>1523 patients | | | | 2 ICUs<br>676 patients | **7 ICUs**<br>**2522 patients** |
| **Total** | **165 ICUs**<br>**55272 patients** | **19 ICUs**<br>**10771 patients** | **15 ICUs**<br>**8006 patients** | **12 ICUs**<br>**5149 patients** | **7 ICUs**<br>**2398 patients** | **4 ICUs**<br>**2358 patients** | **11 ICUs**<br>**4294 patients** | **233 ICUs**<br>**88248 patients** |

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

**Location of Italian participating ICUs** (N=151)
**ICUs per region**




| Region | N | % |
|---|---|---|
| Abruzzo | 0 | 0 |
| Basilicata | 0 | 0 |
| Calabria | 1 | 0.7 |
| Campania | 8 | 5.3 |
| Emilia Romagna | 16 | 10.6 |
| Friuli Venezia Giulia | 0 | 0 |
| Lazio | 2 | 1.3 |
| Liguria | 5 | 3.3 |
| Lombardia | 34 | 22.5 |
| Marche | 7 | 4.6 |
| Molise | 0 | 0 |
| Piemonte | 24 | 15.9 |
| Puglia | 6 | 4 |
| Sardegna | 2 | 1.3 |
| Sicilia | 3 | 2 |
| Toscana | 25 | 16.6 |
| Trentino Alto Adige | 1 | 0.7 |
| Umbria | 1 | 0.7 |
| Valle d'Aosta | 1 | 0.7 |
| Veneto | 15 | 9.9 |

| Geographical area | N | % |
|---|---|---|
| Northern Italy | 96 | 63.6 |
| Central Italy | 35 | 23.2 |
| Southern Italy | 20 | 13.2 |

**Description of hospitals** (N=151) - **Year 2018**

| Number of beds in hospital | N | % |
|---|---|---|
| < 300 beds | 60 | 42.9 |
| 300 - 800 beds | 67 | 47.9 |
| > 800 beds | 13 | 9.3 |
| Missing | 11 | |

| Type of ICUs present in hospital | N | % |
|---|---|---|
| General | 140 | 92.7 |
| Medical | 2 | 1.3 |
| Surgical | 4 | 2.6 |
| Neurological/neurosurgical | 13 | 8.6 |
| Cardiosurgical | 28 | 18.5 |
| Burns | 5 | 3.3 |
| Post-transplantations | 5 | 3.3 |
| Other | 36 | 23.8 |

| Type of subICUs present in hospital | N | % |
|---|---|---|
| General | 24 | 15.9 |
| Surgical | 7 | 4.6 |
| Cardiological | 101 | 66.9 |
| Respiratory | 21 | 13.9 |
| Neurological (stroke unit) | 59 | 39.1 |
| Other | 11 | 7.3 |

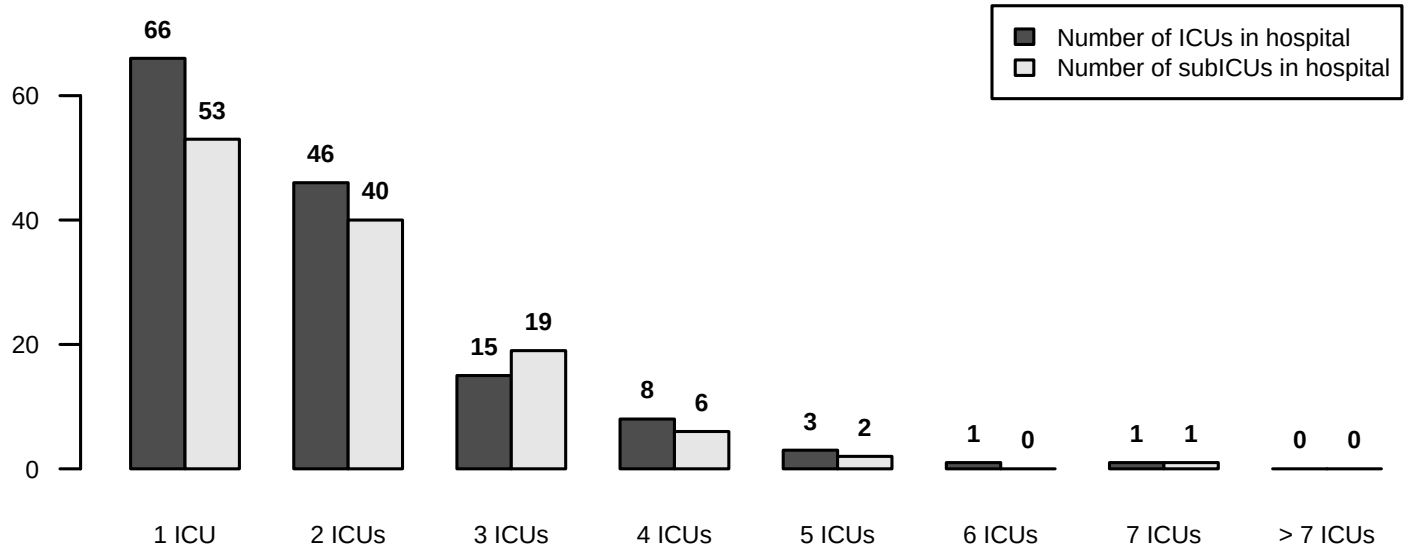
| Non surgical specialties | N | % |
|---|---|---|
| Cardiology | 132 | 94.3 |
| Pulmonology | 70 | 50.0 |
| Nephrology | 115 | 82.1 |
| Infection disease | 57 | 40.7 |
| Pediatric | 113 | 80.7 |
| Neonatology | 78 | 55.7 |
| Neurology | 100 | 71.4 |
| Haematology | 58 | 41.4 |
| Emergency room | 138 | 98.6 |
| Traumatology | 96 | 68.6 |
| Emergency medical | 79 | 56.4 |

| Surgical specialties (independent ward) | N | % |
|---|---|---|
| Neurosurgery | 41 | 27.2 |
| Cardiosurgery | 30 | 19.9 |
| Major vascular surgery | 65 | 43.0 |
| Thoracic surgery | 40 | 26.5 |
| Pediatric surgery | 26 | 17.2 |
| Transplantation activities | 17 | 11.3 |

| Surgical specialties (procedures only) | N | % |
|---|---|---|
| Neurosurgery | 8 | 5.3 |
| Cardiosurgery | 3 | 2.0 |
| Major vascular surgery | 19 | 12.6 |
| Thoracic surgery | 34 | 22.5 |
| Pediatric surgery | 29 | 19.2 |
| Transplantation activities | 15 | 9.9 |

| Services/activities available in H (h24) | N | % |
|---|---|---|
| Neuroradiology | 52 | 34.4 |
| Interventional neuroradiology | 38 | 25.2 |
| Interventional vascular radiology | 51 | 33.8 |
| CT scan | 138 | 91.4 |
| MRI | 65 | 43.0 |
| Interventional hemodynamic | 86 | 57.0 |
| Endoscopy | 96 | 63.6 |
| Bronchoscopy | 56 | 37.1 |
| Hyperbaric chamber | 12 | 7.9 |

| Services/activities available in H (rep.) | N | % |
|---|---|---|
| Neuroradiology | 15 | 9.9 |
| Interventional neuroradiology | 8 | 5.3 |
| Interventional vascular radiology | 26 | 17.2 |
| CT scan | 2 | 1.3 |
| MRI | 56 | 37.1 |
| Interventional hemodynamic | 7 | 4.6 |
| Endoscopy | 44 | 29.1 |
| Bronchoscopy | 54 | 35.8 |
| Hyperbaric chamber | 1 | 0.7 |



**Description of ICUs** (N=151) - **Year 2018**

| **Number of activable beds** | |
|---|---|
| Mean (SD) | 8.3 (3.4) |
| Median (Q1−Q3) | 8 (6−10) |
| Missing | 12 |

| **Number of beds declared to hospital** | |
|---|---|
| Mean (SD) | 26.8 (90.7) |
| Median (Q1−Q3) | 7 (6−10) |
| Missing | 11 |

| **University affiliation** | N | % |
|---|---|---|
| Yes | 47 | 33.6 |
| No | 93 | 66.4 |
| Missing | 11 | |

| **Square meter per bed** | |
|---|---|
| Mean (SD) | 15.5 (20.9) |
| Median (Q1−Q3) | 12 (9−18) |
| Missing | 11 |

| **Clinical psychologist** | N | % |
|---|---|---|
| No | 103 | 73.6 |
| For relatives | 36 | 25.7 |
| For patients | 28 | 20.0 |
| For personnel | 21 | 15.0 |

| **ICU Structure** | N | % |
|---|---|---|
| NON OPEN-SPACE | 54 | 38.6 |
| OPEN-SPACE (or alike) | 86 | 61.4 |
| Missing | 11 | |

| **Physicians** | N | % |
|---|---|---|
| Dedicated to ICU only | 24 | 17.1 |
| Dedicated to ICU on a rotation basis | 21 | 15.0 |
| Dedicated to ICU only and on a rotation basis | 95 | 67.9 |
| Missing | 11 | |

| **Declared beds per physician (average)** | |
|---|---|
| Mean (SD) | 16.6 (52.7) |
| Median (Q1−Q3) | 4.4 (3.6−6) |
| Missing | 11 |

| **Nurses** | N | % |
|---|---|---|
| Dedicated to ICU only | 93 | 66.4 |
| Dedicated to ICU on a rotation basis | 4 | 2.9 |
| Dedicated to ICU only and on a rotation basis | 43 | 30.7 |
| Missing | 11 | |

| **Declared beds per nurse (average)** | |
|---|---|
| Mean (SD) | 7.4 (23.5) |
| Median (Q1−Q3) | 2.1 (2−2.4) |
| Missing | 11 |

| **Number of hours conceeded for relatives' visits** | N | % |
|---|---|---|
| 1 | 10 | 7.1 |
| 2 | 15 | 10.7 |
| 3-4 | 18 | 12.9 |
| 5-12 | 87 | 62.1 |
| 13-20 | 2 | 1.4 |
| >20 | 8 | 5.7 |
| Missing | 11 | |

| **Maximum number of visitors per patient** | N | % |
|---|---|---|
| One | 43 | 30.7 |
| Two | 88 | 62.9 |
| Three or more | 9 | 6.4 |
| Missing | 11 | |

| **Biomedical devices per declared bed** | Median | Q1-Q3 | <5 Years ( mean % ) |
|---|---|---|---|
| Total available monitors (excluding those dedicated to transport) | 1.2 | 1.0−1.3 | 60.4 |
| of which only for basic monitoring (without transducers detection of invasive pressure, pic, pvc, ...) | 0.0 | 0.0−0.1 | 67.5 |
| Invasive monitoring of cardiac output (Swan-Ganz) | 0.1 | 0.0−0.3 | 74.9 |
| Invasive monitoring of cardiac output (PiCCO) | 0.2 | 0.0−0.2 | 77.9 |
| Invasive monitoring of cardiac output (Vigileo) | 0.1 | 0.0−0.2 | 72.1 |
| Non-invasive monitoring of cardiac output (impedentiometry) | 0.0 | 0.0−0.0 | 81.4 |
| Defibrillators | 0.3 | 0.2−0.4 | 71.4 |
| Both invasive and non invasive ventilators | 1.2 | 1.0−1.4 | 71.5 |
| Non invasive ventilators | 0.0 | 0.0−0.2 | 65.8 |
| Syringe pumps | 4.7 | 3.3−6.0 | 75.0 |
| Peristaltic pumps | 2.1 | 1.2−3.0 | 79.6 |

| **Biomedical equipment in ICU** | N | % |
|---|---|---|
| Transoesophageal echo | 51 | 36.4 |
| Basic ultrasounds | 139 | 99.3 |
| Advanced ultrasounds | 126 | 90.0 |
| Blood-gas analyzer | 140 | 100.0 |
| Haemodialysis - Haemofiltration | 121 | 86.4 |
| Transport ventilator | 133 | 95.0 |
| Fiberscope | 139 | 99.3 |
| Extracorporeal circulation system | 22 | 15.7 |

| **Routine microbiological surveillance cultures** | N | % |
|---|---|---|
| Yes | 135 | 96.4 |
| No | 5 | 3.6 |
| Missing | 11 | |

**Description of ICUs** (N=151) - **Year 2018**

| **Patients admitted** | |
|---|---|
| Mean (SD) | 344.6 (167.8) |
| Median | 322 |
| Q1−Q3 | 217−425.1 |
| Missing | 8 |

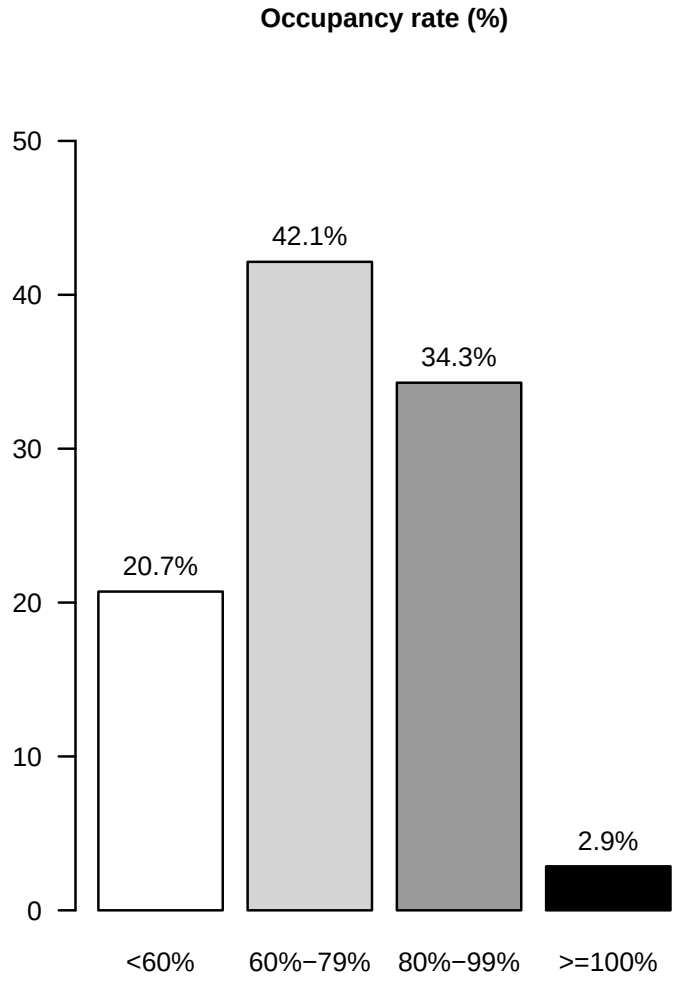
| **Occupancy rate (%)** | |
|---|---|
| Mean (SD) | 75.9 (14.8) |
| Median | 77.3 |
| Q1−Q3 | 65−84.5 |
| Missing | 19 |

| **Rotation index (patients/bed)** | |
|---|---|
| Mean (SD) | 45.9 (13.2) |
| Median | 45.3 |
| Q1−Q3 | 36.2−53.4 |
| Missing | 19 |

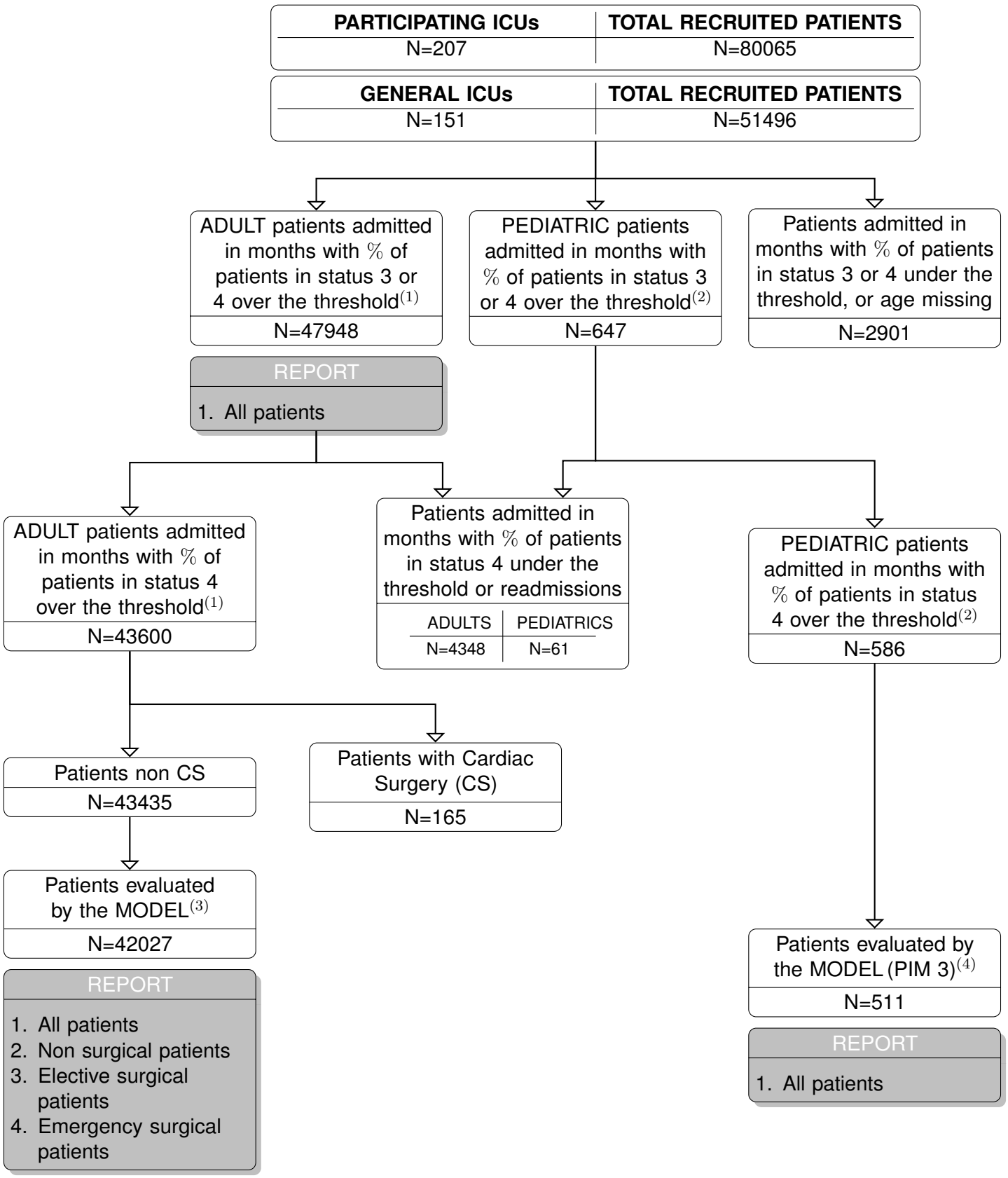
| **Turnover (hours)** | |
|---|---|
| Mean (SD) | 52.6 (44.1) |
| Median | 40.4 |
| Q1−Q3 | 28.5−66.2 |
| Missing | 19 |

| **Occupied beds per physician (average)** | |
|---|---|
| Mean (SD) | 3.5 (1.2) |
| Median | 3.3 |
| Q1−Q3 | 2.7−4.4 |
| Missing | 11 |

| **Occupied beds per nurse (average)** | |
|---|---|
| Mean (SD) | 1.6 (0.3) |
| Median | 1.6 |
| Q1−Q3 | 1.4−1.8 |
| Missing | 11 |



**National report for general ICUs** (151 ICUs) - **Year 2018**
**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 2018**
**Characteristics on admission** - Adult patients

**Patients** (N): 47948

| **Sex** | N | % |
|---|---|---|
| Male | 28296 | 59.3 |
| Female | 19415 | 40.7 |
| Missing | 237 | |

| **Age (years)** | N | % |
|---|---|---|
| 17-45 | 5477 | 11.4 |
| 46-65 | 12697 | 26.5 |
| 66-75 | 12298 | 25.6 |
| >75 | 17476 | 36.4 |
| Missing | 0 | |
| Mean | 67.0 | |
| SD | 16.2 | |
| Median | 71 | |
| Q1−Q3 | 58−79 | |
| Min−Max | 17−118 | |

| **Body mass Index (BMI)** | N | % |
|---|---|---|
| Underweight | 2726 | 5.8 |
| Normal | 20814 | 44.1 |
| Overweight | 14686 | 31.1 |
| Obese | 8982 | 19.0 |
| Missing | 740 | |

| **Pregnancy status** **Females** (N=19415) | N | % |
|---|---|---|
| Not fertile | 10465 | 54.0 |
| Not pregnant/Unknown | 8396 | 43.3 |
| Currently pregnant | 59 | 0.3 |
| Post partum | 459 | 2.4 |
| Missing | 36 | |

| **Comorbidities** | N | % |
|---|---|---|
| No | 6742 | 14.1 |
| Yes | 41032 | 85.9 |
| Missing | 174 | |

| **Comorbidities (top 10)** | N | % |
|---|---|---|
| Hypertension | 25351 | 53.1 |
| Arrhythmia | 8346 | 17.5 |
| Moderate COPD | 6988 | 14.6 |
| Diabetes Type II without insulin tr. | 6424 | 13.4 |
| Myocardial infarction | 6097 | 12.8 |
| Any tumour without metastasis | 5754 | 12.0 |
| Cerebrovascular disease | 5226 | 10.9 |
| NYHA class II-III | 4871 | 10.2 |
| Peripheral vascular disease | 4718 | 9.9 |
| Moderate or severe renal disease | 4570 | 9.6 |
| Missing | 174 | |

| **Stay before ICU (days)** | |
|---|---|
| Mean | 4.5 |
| SD | 11.7 |
| Median | 1 |
| Q1−Q3 | 0−4 |
| Missing | 204 |

| **Source of admission** | N | % |
|---|---|---|
| Same hospital | 41621 | 87.1 |
| Other hospital | 5897 | 12.3 |
| Long-term chronic care hospital | 282 | 0.6 |
| Directly from the community | 6 | 0.0 |
| Missing | 142 | |

| **Ward of admission** **Hospital** (N=47518) | N | % |
|---|---|---|
| Medical ward | 6991 | 14.7 |
| Surgical ward | 19629 | 41.3 |
| Emergency room | 16670 | 35.1 |
| Other ICU | 3022 | 6.4 |
| High dependency care unit | 1201 | 2.5 |
| Missing | 5 | |

| **Reason for transfer from** **Other ICU** (N=3022) | N | % |
|---|---|---|
| Specialist expertise | 894 | 29.6 |
| Step-up care | 503 | 16.6 |
| Logistical/organizational reasons | 1541 | 51.0 |
| Step-down care | 84 | 2.8 |
| Missing | 0 | |

| **Ward of admission** **Same hospital** (N=41621) | N | % |
|---|---|---|
| Medical ward | 6230 | 15.0 |
| Surgical ward | 19256 | 46.3 |
| Emergency room | 14126 | 33.9 |
| Other ICU | 911 | 2.2 |
| High dependency care unit | 1094 | 2.6 |
| Missing | 4 | |

| **Ward of admission** **Other hospital** (N=5897) | N | % |
|---|---|---|
| Medical ward | 761 | 12.9 |
| Surgical ward | 373 | 6.3 |
| Emergency room | 2544 | 43.1 |
| Other ICU | 2111 | 35.8 |
| High dependency care unit | 107 | 1.8 |
| Missing | 1 | |

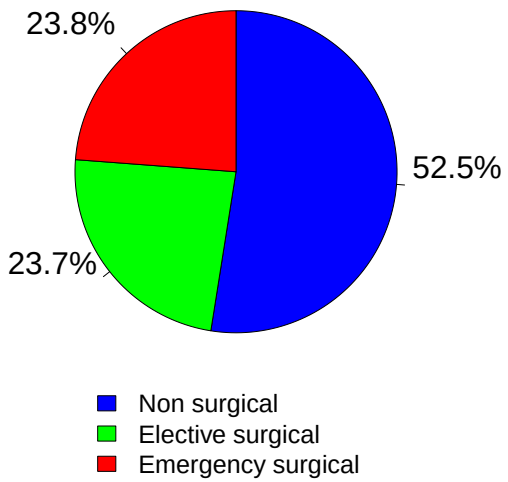
| **Scheduled admission** | N | % |
|---|---|---|
| No | 38715 | 81.0 |
| Yes | 9053 | 19.0 |
| Missing | 180 | |

**National report for general ICUs** - **Year 2018**
**Characteristics on admission** - Adult patients

| **Trauma** | N | % |
|---|---|---|
| No | 41880 | 87.7 |
| Yes | 5894 | 12.3 |
| Multiple trauma | 2415 | 5.1 |
| Missing | 174 | |

| **Surgical status** | N | % |
|---|---|---|
| Non surgical | 25070 | 52.5 |
| Elective surgical | 11311 | 23.7 |
| Emergency surgical | 11393 | 23.8 |
| Missing | 174 | |

**Surgical status**




| **Source of admission** **Surgical pt.** (N=22704) | N | % |
|---|---|---|
| Operating theatre of surgical ward | 16630 | 73.4 |
| Operating theatre of emergency room | 1982 | 8.7 |
| Surgical ward | 1193 | 5.3 |
| Other | 2861 | 12.6 |
| Missing | 38 | |

| **Surgical interventions (top 10)** **Elective surgical** (N=11311) | N | % |
|---|---|---|
| Gastrointestinal surgery | 3158 | 27.9 |
| Orthopaedic surgery | 1510 | 13.3 |
| Nephro/Urological surgery | 1484 | 13.1 |
| ENT surgery | 787 | 7.0 |
| Neurosurgery | 711 | 6.3 |
| Thoracic surgery | 638 | 5.6 |
| Gynaecological surgery | 604 | 5.3 |
| Abdominal vascular surgery | 491 | 4.3 |
| Pancreatic surgery | 396 | 3.5 |
| Peripheral vascular surgery | 395 | 3.5 |
| Missing | 1137 | |

| **Timing** **Elective surgical** (N=11311) | N | % |
|---|---|---|
| From -7 to -3 days | 230 | 2.0 |
| From -2 to -1 days | 380 | 3.4 |
| On ICU admission day | 11266 | 99.6 |
| The day after ICU admission | 115 | 1.0 |
| Missing | 26 | |

| **Surgical interventions (top 10)** **Emergency surgical** (N=11393) | N | % |
|---|---|---|
| Gastrointestinal surgery | 5217 | 45.8 |
| Neurosurgery | 1492 | 13.1 |
| Orthopaedic surgery | 1240 | 10.9 |
| Nephro/Urological surgery | 568 | 5.0 |
| Biliary tract surgery | 477 | 4.2 |
| Abdominal vascular surgery | 426 | 3.7 |
| Peripheral vascular surgery | 398 | 3.5 |
| ENT surgery | 350 | 3.1 |
| Obstetric surgery | 297 | 2.6 |
| Splenectomy | 266 | 2.3 |
| Missing | 662 | |

| **Timing** **Emergency surgical** (N=11393) | N | % |
|---|---|---|
| From -7 to -3 days | 338 | 3.0 |
| From -2 to -1 days | 1358 | 11.9 |
| On ICU admission day | 9995 | 87.7 |
| The day after ICU admission | 541 | 4.7 |
| Missing | 47 | |

| **Non surgical interventions** | N | % |
|---|---|---|
| None | 43494 | 91.1 |
| Elective | 646 | 1.4 |
| Emergency | 3628 | 7.6 |
| Missing | 180 | |

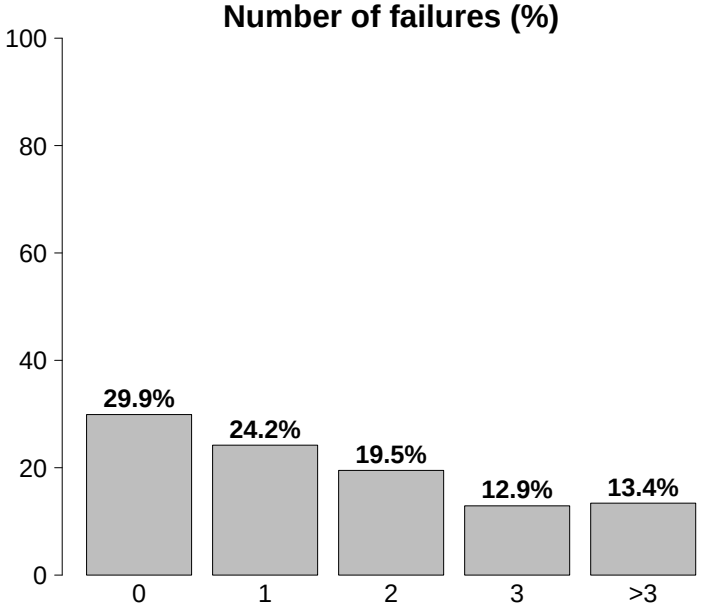
| **Non surgical interventions** **Elective** (N=646) | N | % |
|---|---|---|
| Interventional endoscopy | 216 | 33.4 |
| Interventional radiology | 142 | 22.0 |
| Interventional cardiology | 109 | 16.9 |
| Interventional neuroradiology | 89 | 13.8 |
| Missing | 90 | |

| **Non surgical interventions** **Emergency** (N=3628) | N | % |
|---|---|---|
| Interventional cardiology | 1303 | 35.9 |
| Interventional radiology | 913 | 25.2 |
| Interventional endoscopy | 804 | 22.2 |
| Interventional neuroradiology | 565 | 15.6 |
| Missing | 43 | |

**National report for general ICUs** - **Year 2018**
**Characteristics on admission** - Adult patients

| **Reason for admission** | N | % |
|---|---|---|
| Monitoring/Weaning | 19472 | 40.8 |
| Post surgical weaning | 6672 | 14.0 |
| Surgical monitoring | 7192 | 15.1 |
| Post interventional weaning | 174 | 0.4 |
| Interventional monitoring | 795 | 1.7 |
| Non surgical monitoring | 4385 | 9.2 |
| Missing | 254 | |
| Admission for procedures/treatments | 0 | 0.0 |
| Intensive Treatment | 28011 | 58.6 |
| Only ventilatory support | 14415 | 30.2 |
| Only cardiovascular support | 2052 | 4.3 |
| Ventilatory and cardiovascular support | 11542 | 24.2 |
| Missing | 2 | |
| Palliative Sedation | 204 | 0.4 |
| Diagnosis of death/Organ donation | 88 | 0.2 |
| Missing | 173 | |

**Number of failures (%)**




| **Failures on admission** | N | % |
|---|---|---|
| No | 14360 | 29.9 |
| Yes | 33588 | 70.1 |
| A: Respiratory failure | 25950 | 54.1 |
| B: Cardiovascular failure | 13594 | 28.4 |
| C: Neurological failure | 6894 | 14.4 |
| D: Hepatic failure | 371 | 0.8 |
| E: Renal failure | 17031 | 35.5 |
| F: Acute skin failure | 30 | 0.1 |
| G: Metabolic failure | 11887 | 24.8 |
| H: Coagulation failure | 591 | 1.2 |
| Missing | 0 | |

| **Failures on admission (top 10)** | N | % |
|---|---|---|
| A | 6860 | 14.3 |
| ABEG | 3458 | 7.2 |
| E | 3093 | 6.5 |
| AB | 2331 | 4.9 |
| AC | 2304 | 4.8 |
| AE | 2054 | 4.3 |
| ABE | 1654 | 3.4 |
| ABCEG | 1253 | 2.6 |
| AEG | 1138 | 2.4 |
| EG | 1116 | 2.3 |
| Missing | 0 | |

| **Respiratory failure** | N | % |
|---|---|---|
| None | 21990 | 45.9 |
| Only hypoxic failure | 8771 | 18.3 |
| Only hypercapnic failure | 1218 | 2.5 |
| Hypoxic-hypercapnic failure | 3360 | 7.0 |
| Intubation for airway maint. | 12601 | 26.3 |
| Missing | 8 | |

| **Cardiovascular failure** | N | % |
|---|---|---|
| None | 34354 | 71.7 |
| Without shock | 2790 | 5.8 |
| Cardiogenic shock | 2618 | 5.5 |
| Septic shock | 3414 | 7.1 |
| Haemorrhagic/hypovolemic shock | 1802 | 3.8 |
| Hypovolemic shock | 1211 | 2.5 |
| Anaphylactic shock | 46 | 0.1 |
| Neurogenic shock | 373 | 0.8 |
| Other shock | 619 | 1.3 |
| Mixed shock | 719 | 1.5 |
| Missing | 2 | |

| **Neurologic failure** | N | % |
|---|---|---|
| None | 32664 | 82.6 |
| Cerebral coma | 3665 | 9.3 |
| Metabolic coma | 1223 | 3.1 |
| Postanoxic coma | 1701 | 4.3 |
| Toxic coma | 302 | 0.8 |
| Missing or not evaluable | 8393 | |

| **Renal failure (AKIN)** | N | % |
|---|---|---|
| None | 30578 | 64.2 |
| Mild | 8231 | 17.3 |
| Moderate | 3909 | 8.2 |
| Severe | 4891 | 10.3 |
| Missing | 339 | |

| **Metabolic failure** | N | % |
|---|---|---|
| None | 35721 | 75.0 |
| pH <= 7.3, PaCO2 < 45 mmHg | 3066 | 6.4 |
| Base deficit >= 5 mmol/L, lactate >1.5x | 8821 | 18.5 |
| Missing | 340 | |

**National report for general ICUs - Year 2018**
**Characteristics on admission** - Adult patients

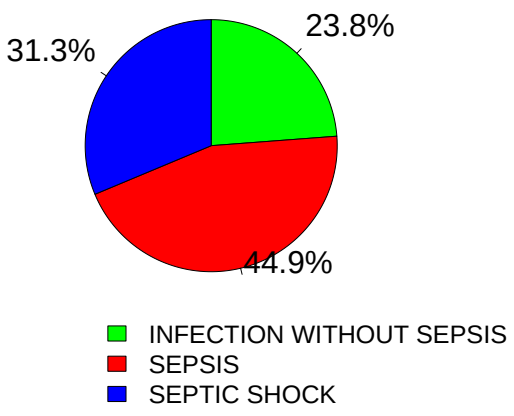
| Clinical conditions on admission | N | % |
|---|---|---|
| Respiratory | 8980 | 18.8 |
| Acute exacerbation of COPD | 2116 | 4.4 |
| Pleural effusion | 1909 | 4.0 |
| Atelectasis | 1045 | 2.2 |
| Aspiration pneumonia | 973 | 2.0 |
| Upper respiratory tract disease | 821 | 1.7 |
| Cardiovascular | 8853 | 18.5 |
| Cardiac arrest | 2367 | 5.0 |
| Left heart failure with pulmonary edema | 1655 | 3.5 |
| Left heart failure without pulm. edema | 1179 | 2.5 |
| Acute severe arrhythmia: tachycardias | 1017 | 2.1 |
| Acute ischaemia | 720 | 1.5 |
| Neurological | 6656 | 13.9 |
| Spontaneous Intraparenchymal bleeding | 1428 | 3.0 |
| Cerebral artery stroke | 1328 | 2.8 |
| Seizures | 1102 | 2.3 |
| Metabolic/postanoxic encephalopathy | 767 | 1.6 |
| Spontaneous Subarachnoid haemorrhage | 701 | 1.5 |
| Gastrointestinal and hepatic | 9759 | 20.4 |
| Digestive tract malignancy | 2519 | 5.3 |
| Gastrointestinal perforation | 1639 | 3.4 |
| Intestinal occlusion | 1451 | 3.0 |
| Bowel ischaemia | 722 | 1.5 |
| Gastrointestinal bleeding: upper tract | 700 | 1.5 |
| Trauma (anatomical districts) | 5890 | 12.3 |
| Pelvis/bone/joint & muscle | 2655 | 5.6 |
| Head | 2369 | 5.0 |
| Chest | 2152 | 4.5 |
| Spine | 1314 | 2.8 |
| Abdomen | 1055 | 2.2 |
| Major vessels injury | 231 | 0.5 |
| Miscellaneous | 113 | 0.2 |
| Other | 11876 | 24.9 |
| Other disease | 2700 | 5.7 |
| Metabolic disorder | 2471 | 5.2 |
| Nephrourologic disease | 2429 | 5.1 |
| Orthopaedic disease | 1097 | 2.3 |
| Acute intoxication | 1069 | 2.2 |
| Post transplantation | 329 | 0.7 |
| Liver transplantation | 130 | 0.3 |
| Renal transplantation | 121 | 0.3 |
| Infections | 13203 | 27.6 |
| Pneumonia | 5122 | 10.7 |
| NON-surgical secondary peritonitis | 1327 | 2.8 |
| NON-surgical urinary tract infection | 1157 | 2.4 |
| Post-surgical peritonitis | 877 | 1.8 |
| L.R.T.I. other than pneumonia | 874 | 1.8 |
| Cholecystitis/cholangitis | 607 | 1.3 |
| Primary bacteraemia of unknown origin | 603 | 1.3 |
| NON-surgical skin/soft tissue infection | 548 | 1.1 |
| Clinical sepsis | 485 | 1.0 |
| Primary peritonitis | 395 | 0.8 |
| Missing | 197 | |

| Trauma (anatomical districts) | N | % |
|---|---|---|
| Head | 2369 | 5.0 |
| Traumatic Subdural haematoma | 897 | 1.9 |
| Traumatic subarachnoid haemorrhage | 851 | 1.8 |
| Maxillofacial fracture | 774 | 1.6 |
| Cerebral contusion/laceration | 748 | 1.6 |
| Skull fracture | 622 | 1.3 |
| Spine | 1314 | 2.8 |
| Vertebral fracture, without deficit | 1122 | 2.3 |
| Cervical injury, incomplete deficit | 67 | 0.1 |
| Tetraplegia | 60 | 0.1 |
| Chest | 2152 | 4.5 |
| Other injuries of the chest | 1174 | 2.5 |
| Traum. haemothorax/pneumothorax | 810 | 1.7 |
| Severe lung contusion/laceration | 550 | 1.2 |
| Abdomen | 1055 | 2.2 |
| Spleen: Moderate-Severe laceration | 299 | 0.6 |
| Minor injuries of the abdomen | 293 | 0.6 |
| Liver: Moderate-Severe laceration | 240 | 0.5 |
| Pelvis/bone/joint & muscle | 2655 | 5.6 |
| Long bone fracture | 2127 | 4.5 |
| Multiple fracture of the pelvis | 703 | 1.5 |
| Very severe or open fracture of the pelvis | 116 | 0.2 |
| Major vessels injury | 231 | 0.5 |
| Proximal limbs vessels: transection | 83 | 0.2 |
| Neck vessels: dissection/transection | 53 | 0.1 |
| Aorta: rupture/dissection | 44 | 0.1 |
| Miscellaneous | 113 | 0.2 |
| Burns (>30% BSA) | 74 | 0.2 |
| Inhalation injury | 49 | 0.1 |
| Missing | 197 | |

| Infection severity on admission | N | % |
|---|---|---|
| None | 34548 | 73.2 |
| INFECTION WITHOUT SEPSIS | 3003 | 6.4 |
| SEPSIS | 5673 | 12.0 |
| SEPTIC SHOCK | 3946 | 8.4 |
| Missing | 778 | |

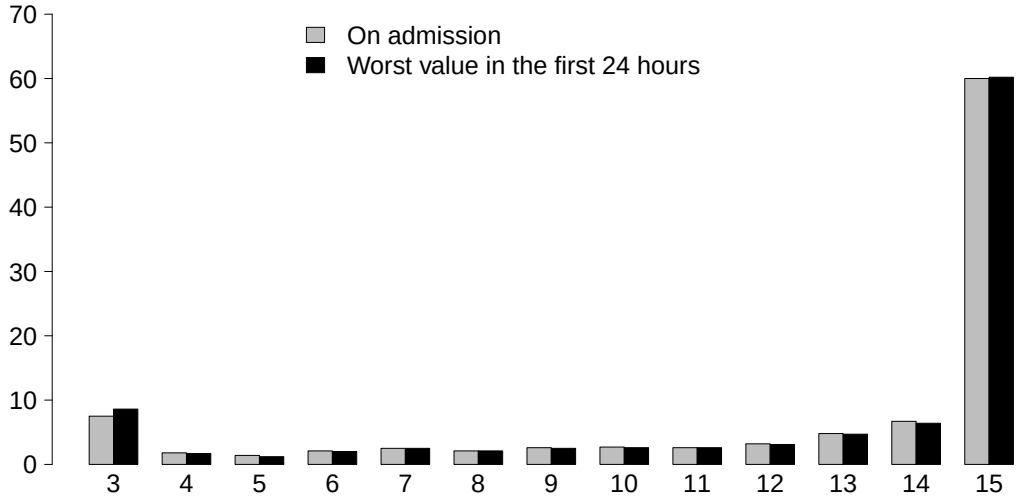
**Infection severity on admission**

Patients infected (N=12622)



**National report for general ICUs** - **Year 2018**
**Severity scores** - Adult patients

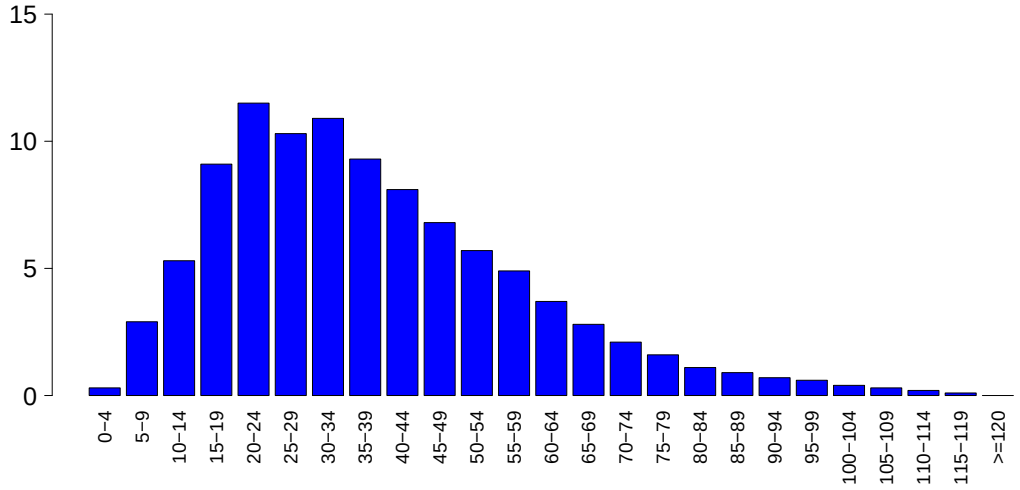
## Glasgow Coma Scale (%)




| GCS (admission) | |
|---|---|
| Median | 15 |
| Q1−Q3 | 11−15 |
| Not evaluable | 8157 |
| Missing | 236 |

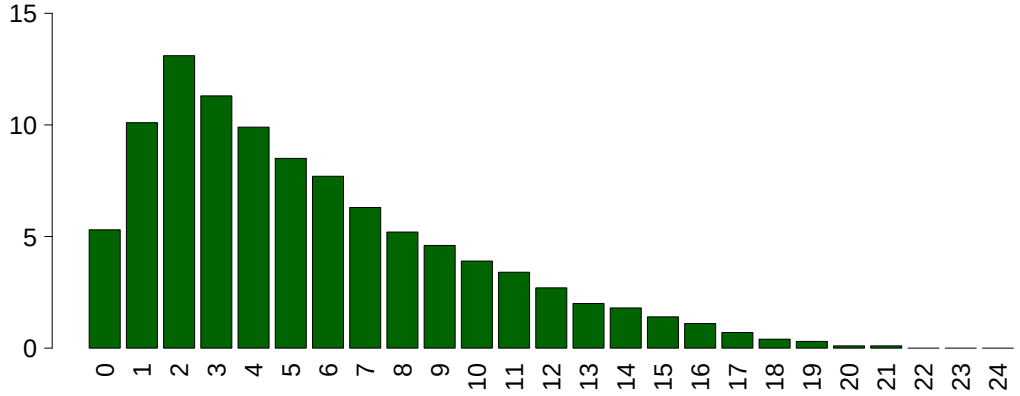
| GCS (first 24 hours) | |
|---|---|
| Median | 15 |
| Q1−Q3 | 11−15 |
| Not evaluable | 6873 |
| Missing | 314 |

## SAPS II (%)




| SAPSII | |
|---|---|
| Mean | 38.1 |
| SD | 20.4 |
| Median | 34 |
| Q1−Q3 | 23−50 |
| Not evaluable | 6873 |
| Missing | 336 |

## SOFA (%)




| SOFA | |
|---|---|
| Mean | 5.5 |
| SD | 4.2 |
| Median | 5 |
| Q1−Q3 | 2−8 |
| Not evaluable | 6873 |
| Missing | 338 |

**National report for general ICUs** - **Year 2018**
**Characteristics during the stay** - Adult patients

| **Complications during the stay** | N | % |
|---|---|---|
| No | 33176 | 69.7 |
| Yes | 14453 | 30.3 |
| Missing | 319 | |

| **Failures during the stay** | N | % |
|---|---|---|
| No | 41546 | 86.6 |
| Yes | 6402 | 13.4 |
| A: Respiratory failure | 3165 | 6.6 |
| B: Cardiovascular failure | 2763 | 5.8 |
| C: Neurological failure | 460 | 1.0 |
| D: Hepatic failure | 164 | 0.3 |
| E: Renal failure (AKIN) | 1681 | 3.5 |
| F: Acute skin failure | 14 | 0.0 |
| G: Metabolic failure | 498 | 1.0 |
| H: Coagulation failure | 253 | 0.5 |
| Missing | 0 | |

| **Failures during the stay (top 10)** | N | % |
|---|---|---|
| A | 1863 | 3.9 |
| B | 1380 | 2.9 |
| E | 713 | 1.5 |
| AB | 605 | 1.3 |
| G | 301 | 0.6 |
| BE | 247 | 0.5 |
| ABE | 182 | 0.4 |
| AE | 179 | 0.4 |
| C | 162 | 0.3 |
| AC | 61 | 0.1 |
| Missing | 0 | |

| **Respiratory failure occured** | N | % |
|---|---|---|
| None | 44464 | 93.4 |
| Intubation for airway maint. | 918 | 1.9 |
| Hypoxic failure | 2174 | 4.6 |
| Hypercapnic failure | 608 | 1.3 |
| Missing | 319 | |

| **Cardiovascular failure occured** | N | % |
|---|---|---|
| None | 44866 | 94.2 |
| Cardiogenic shock | 772 | 1.6 |
| Hypovolemic shock | 355 | 0.7 |
| Haemorrhagic/hypovolemic shock | 277 | 0.6 |
| Septic shock | 1053 | 2.2 |
| Anaphylactic shock | 3 | 0.0 |
| Neurogenic shock | 209 | 0.4 |
| Other shock | 255 | 0.5 |
| Missing | 319 | |

| **Neurological failure occured** | N | % |
|---|---|---|
| None | 47169 | 99.0 |
| Cerebral coma | 256 | 0.5 |
| Metabolic coma | 139 | 0.3 |
| Postanoxic coma | 69 | 0.1 |
| Missing | 319 | |

| **Renal failure occured (AKIN)** | N | % |
|---|---|---|
| None | 45948 | 96.5 |
| Mild | 224 | 0.5 |
| Moderate | 264 | 0.6 |
| Severe | 1193 | 2.5 |
| Missing | 319 | |

| **Complications during the stay** | N | % |
|---|---|---|
| Respiratory | 2513 | 5.3 |
| Pleural effusion | 995 | 2.1 |
| Atelectasis | 600 | 1.3 |
| Severe ARDS | 353 | 0.7 |
| Pneumothorax/Pneumomediastinum | 287 | 0.6 |
| Upper resp. tract disease | 181 | 0.4 |
| Cardiovascular | 3821 | 8.0 |
| Cardiac arrest | 1436 | 3.0 |
| Acute severe arrhythmia: tachycardias | 1344 | 2.8 |
| Acute severe arrhythmia: bradycardias | 310 | 0.7 |
| Pulmonary edema | 242 | 0.5 |
| Left heart failure w/o pulm. edema | 223 | 0.5 |
| Neurological | 3210 | 6.7 |
| Drowsiness/agitation/delirium | 1660 | 3.5 |
| Seizures | 530 | 1.1 |
| Intracranial hypertension | 444 | 0.9 |
| Brain edema | 441 | 0.9 |
| New ischaemic stroke | 199 | 0.4 |
| Gastrointestinal and hepatic | 1373 | 2.9 |
| Gastrointestinal bleeding: upper tract | 209 | 0.4 |
| Paralytic Ileus | 194 | 0.4 |
| Bowel ischaemia | 189 | 0.4 |
| Gastrointestinal bleeding: lower tract | 169 | 0.4 |
| Gastrointestinal perforation | 156 | 0.3 |
| Other | 1365 | 2.9 |
| Metabolic disorder | 498 | 1.0 |
| Other disease | 315 | 0.7 |
| Nephrourologic disease | 288 | 0.6 |
| Category/Stage II: Partial Thickness Skin Loss | 115 | 0.2 |
| Other skin and/or soft tissue pathology | 97 | 0.2 |
| Category/Stage I: Nonblanchable Erythema | 41 | 0.1 |
| Category/Stage III: Full Thickness Skin Loss | 40 | 0.1 |
| Infections | 4201 | 8.8 |
| Pneumonia | 1584 | 3.3 |
| L.R.T.I. other than pneumonia | 912 | 1.9 |
| NON-surgical urinary tract infection | 579 | 1.2 |
| Catheter-related bacteremia (CR-BSI) | 512 | 1.1 |
| Primary bacteraemia of unknown origin | 450 | 0.9 |
| Post-surgical peritonitis | 167 | 0.4 |
| Post-surgical skin/soft tissue infection | 152 | 0.3 |
| Upper respiratory tract infection | 141 | 0.3 |
| Clinical sepsis | 130 | 0.3 |
| NON-surgical skin/soft tissue infection | 96 | 0.2 |
| Missing | 319 | |

**National report for general ICUs** - **Year 2018**
**Characteristics during the stay** - Adult patients

| **Infections** | N | % |
|---|---|---|
| None | 31699 | 66.6 |
| Only on admission | 11723 | 24.6 |
| On admission and during ICU stay | 1441 | 3.0 |
| Only during ICU stay | 2759 | 5.8 |
| Missing | 326 | |

| **Maximum severity of infection** | N | % |
|---|---|---|
| None | 31699 | 67.5 |
| INFECTION WITHOUT SEPSIS | 3229 | 6.9 |
| SEPSIS | 7321 | 15.6 |
| SEPTIC SHOCK | 4690 | 10.0 |
| Missing | 1009 | |

**Severity evolution**

| | | During the stay | | | | |
|---|---|---|---|---|---|---|
| | N (R %) | None | INFECTION WITHOUT SEPSIS | SEPSIS | SEPTIC SHOCK | TOT |
| **Admission** | None | 31699 (92.4%) | 859 (2.5%) | 1413 (4.1%) | 339 (1.0%) | 34310 |
| | INFECTION WITHOUT SEPSIS | - | 2357 (78.6%) | 582 (19.4%) | 58 (1.9%) | 2997 |
| | SEPSIS | - | - | 5304 (93.7%) | 358 (6.3%) | 5663 |
| | SEPTIC SHOCK | - | - | - | 3929 (100.0%) | 3930 |
| | TOT | 31699 | 3218 | 7299 | 4684 | 46900 |

| **Ventil. Associat. Pneumonia (VAP)** | N | % |
|---|---|---|
| No | 46503 | 97.2 |
| Yes | 1346 | 2.8 |
| Missing | 99 | |

| **Catheter Bacteraemia (CR-BSI)** | N | % |
|---|---|---|
| No | 47117 | 98.9 |
| Yes | 512 | 1.1 |
| Missing | 319 | |

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

| | |
|---|---|
| Estimate | 9.3 |
| CI (95%) | 8.8−9.8 |

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

| | |
|---|---|
| Estimate | 2.2 |
| CI (95%) | 2.0−2.4 |

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

| | |
|---|---|
| Estimate | 7.4% |
| CI (95%) | 7.0−7.8 |

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

| | |
|---|---|
| Estimate | 2.7% |
| CI (95%) | 2.4−2.9 |

**National report for general ICUs** - **Year 2018**

**Process indicators** - Adult patients

| Procedures and/or treatments (Missing=206) | Use | | On admission | | On discharge | | Length (days) | | | Days from admission | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | Median | Q1-Q3 | Missing | Median | Q1-Q3 | Missing |
| **Procedures (antibiotics excluded)** | 45377 | 95.0 | | | | | | | | | | |
| Invasive ventilation | 32024 | 67.1 | 23317 | 48.8 | 6947 | 14.6 | 1 | 1–6 | 115 | 0 | 0–0 | 3 |
| Non invasive ventilation | 7674 | 16.1 | 1866 | 3.9 | 1629 | 3.4 | 1 | 1–3 | 16 | 0 | 0–2 | 1 |
| Tracheostomy | 5108 | 10.7 | 1412 | 3 | 4232 | 8.9 | 10 | 4–20 | 49 | 8 | 4–12 | 2 |
| iNO (inhaled nitric oxide) | 105 | 0.2 | 2 | 0 | 17 | 0 | 2 | 1–4 | 0 | 1 | 0–3 | 0 |
| Central Venous Catheter | 31261 | 65.5 | 14755 | 30.9 | 24489 | 51.3 | 4 | 2–9 | 133 | 0 | 0–0 | 5 |
| PICC | 1144 | 2.4 | 521 | 1.1 | 952 | 2 | 4 | 1–8 | 5 | 5 | 1–16 | 1 |
| Arterial Catheter | 38004 | 79.6 | 18635 | 39 | 10536 | 22.1 | 3 | 1–7 | 136 | 0 | 0–0 | 5 |
| Vasoactive drugs | 16965 | 35.5 | 7545 | 15.8 | 3939 | 8.3 | 2 | 1–4 | 50 | 0 | 0–0 | 5 |
| Antiarrhythmics | 3585 | 7.5 | 1019 | 2.1 | 1896 | 4 | 3 | 1–7 | 14 | 1 | 0–2 | 1 |
| IABP | 279 | 0.6 | 213 | 0.4 | 75 | 0.2 | 2 | 1–3 | 1 | 0 | 0–0 | 0 |
| Invasive monitoring of C.O. | 1669 | 3.5 | 315 | 0.7 | 349 | 0.7 | 4 | 2–7 | 2 | 0 | 0–1 | 0 |
| Continous monitoring of ScVO2 | 105 | 0.2 | 33 | 0.1 | 28 | 0.1 | 4 | 1–8 | 0 | 0 | 0–1 | 0 |
| Temporary pacing | 210 | 0.4 | 106 | 0.2 | 89 | 0.2 | 1 | 1–3 | 0 | 0 | 0–1 | 0 |
| Ventricular assistance | 6 | 0.0 | 5 | 0 | 4 | 0 | 1 | 0–2 | 0 | 6 | 6–6 | 0 |
| DC-shock | 845 | 1.8 | | | | | | | | 0 | 0–1 | 0 |
| CPR | 1442 | 3.0 | | | | | | | | 0 | 0–1 | 0 |
| Massive blood transfusion | 656 | 1.4 | | | | | | | | 0 | 0–0 | 1 |
| ICP monitoring without CSF drainage | 349 | 0.7 | 125 | 0.3 | 54 | 0.1 | 6 | 4–10 | 0 | 0 | 0–1 | 0 |
| ICP monitoring with CSF drainage | 373 | 0.8 | 220 | 0.5 | 203 | 0.4 | 7 | 2–15 | 3 | 0 | 0–1 | 0 |
| External ventricular drainage without ICP | 188 | 0.4 | 119 | 0.2 | 103 | 0.2 | 7 | 2–16 | 2 | 0 | 0–3 | 0 |
| Haemofiltration | 1887 | 4.0 | 197 | 0.4 | 499 | 1 | 3 | 2–8 | 12 | 1 | 0–2 | 0 |
| Haemodialysis | 1237 | 2.6 | 234 | 0.5 | 464 | 1 | 3 | 1–7 | 8 | 1 | 0–3 | 1 |
| ECMO | 149 | 0.3 | 73 | 0.2 | 60 | 0.1 | 7 | 2–14 | 0 | 1 | 1–5 | 0 |
| Hepatic clearance techniques | 6 | 0.0 | | | | | | | | | | |
| Clearance techniques during sepsis | 299 | 0.6 | 18 | 0 | 35 | 0.1 | 2 | 1–4 | 2 | 1 | 0–1 | 0 |
| IAP (intra-abdominal pressure) | 598 | 1.3 | | | | | | | | | | |
| Hypothermia | 404 | 0.8 | 80 | 0.2 | 27 | 0.1 | 1 | 1–2 | 1 | 0 | 0–0 | 0 |
| Enteral nutrition | 15037 | 31.5 | 2468 | 5.2 | 9834 | 20.6 | 6 | 3–14 | 59 | 1 | 0–2 | 6 |
| Parenteral nutrition | 8477 | 17.8 | 1165 | 2.4 | 5040 | 10.6 | 4 | 2–8 | 29 | 1 | 0–2 | 1 |
| SDD (Topical, Topical and systemic) | 367 | 0.8 | | | | | | | | | | |
| Patient restraint | 1196 | 2.5 | | | | | | | | | | |
| Peridural catheter | 1453 | 3.0 | 1268 | 2.7 | 1174 | 2.5 | 1 | 1–2 | 3 | 0 | 0–1 | 0 |
| Electrical cardioversion | 299 | 0.6 | | | | | | | | 1 | 0–3 | 0 |
| Vacuum therapy | 239 | 0.5 | | | | | | | | | | |
| **Antibiotics** | 30349 | 63.6 | | | | | | | | | | |
| Antibiotic prophylaxis | 15482 | 32.4 | 10024 | 21 | 8434 | 17.7 | 1 | 1–3 | 39 | 0 | 0–0 | 0 |
| Empirical antibiotic therapy | 10001 | 20.9 | 4706 | 9.9 | 4258 | 8.9 | 3 | 2–5 | 39 | 0 | 0–1 | 6 |
| Empirical antibiotic therapy in unconfirmed diagnosis | 3205 | 6.7 | 1341 | 2.8 | 1629 | 3.4 | 4 | 2–7 | 10 | 0 | 0–1 | 0 |
| Targeted antibiotic therapy | 7365 | 15.4 | 1463 | 3.1 | 4629 | 9.7 | 7 | 3–11 | 24 | 4 | 2–7 | 3 |

**National report for general ICUs** - **Year 2018**
**Process indicators** - Adult patients

| **Invasive ventilation** (N=32024) | N | % | Length (days) Mean | SD | Median | Q1-Q3 | Missing |
|---|---|---|---|---|---|---|---|
| Due to pulmonary failure | 11162 | 31.6 | 7.4 | 10.8 | 4 | 1−9 | 35 |
| For airway mainteinance | 12291 | 34.7 | 5.9 | 9.2 | 2 | 1−7 | 54 |
| In weaning | 6935 | 19.6 | 0.4 | 0.5 | 0 | 0−1 | 0 |
| Not evaluable | 4983 | 14.1 | 3.8 | 9.4 | 1 | 0−3 | 3385 |
| Reintubation within 48 hours | 613 | 1.7 | 7.3 | 9.3 | 4 | 2−9 | 4 |

| **Non invasive ventilation** (N=7674) | N | % |
|---|---|---|
| Non invasive ventilation only | 3946 | 51.4 |
| Non invasive ventilation failed | 1340 | 17.5 |
| For weaning | 2103 | 27.4 |
| Other | 285 | 3.7 |
| Missing | 0 | |

| **Tracheostomy not present on admission** (N=3696) | N | % |
|---|---|---|
| Surgical | 749 | 20.3 |
| Percutwist | 353 | 9.6 |
| Ciaglia | 430 | 11.6 |
| Monodil. Ciaglia | 1296 | 35.1 |
| Fantoni | 178 | 4.8 |
| Griggs | 487 | 13.2 |
| Other Kind | 133 | 3.6 |
| Unknown | 63 | 1.7 |
| Missing | 7 | |

| **Tracheostomy - Days after the beginning of inv. vent. Not present on admission** (N=3656) | |
|---|---|
| Mean | 8.8 |
| SD | 6.3 |
| Median | 8 |
| Q1−Q3 | 4−12 |
| Missing | 6 |

| **Invasive monitoring of C.O.** (N=1669) | N | % |
|---|---|---|
| Swan Ganz | 388 | 23.2 |
| PICCO | 964 | 57.8 |
| LIDCO | 3 | 0.2 |
| Vigileo-PRAM | 233 | 14.0 |
| Other | 77 | 4.6 |
| Missing | 4 | |

| **SDD** (N=367) | N | % |
|---|---|---|
| Topical | 355 | 96.7 |
| Topical and systemic | 11 | 3.0 |
| Missing | 1 | |

| **Antibiotic therapy Pt. infected in ICU only** (N=2759) | N | % |
|---|---|---|
| Only empirical | 541 | 23.3 |
| Only targeted | 793 | 34.2 |
| Targeted after empirical | 780 | 33.6 |
| Other | 205 | 8.8 |
| Missing | 440 | |

| **Surgical interventions** | N | % |
|---|---|---|
| No | 45551 | 95.5 |
| Yes | 2155 | 4.5 |
| Missing | 242 | |

| **Number of surgical interventions** | N | % |
|---|---|---|
| 0 | 45551 | 95.5 |
| 1 | 1635 | 3.4 |
| 2 | 329 | 0.7 |
| 3 | 105 | 0.2 |
| >3 | 86 | 0.2 |
| Missing | 242 | |

| **Surgical interventions Days from admission** | |
|---|---|
| Mean | 10.1 |
| SD | 13.0 |
| Median | 6 |
| Q1−Q3 | 3−13 |
| Missing | 17 |

| **Surgical interventions (top 10)** | N | % |
|---|---|---|
| Gastrointestinal surgery | 945 | 2.0 |
| Orthopaedic surgery | 539 | 1.1 |
| Neurosurgery | 321 | 0.7 |
| ENT surgery | 297 | 0.6 |
| Other surgery | 185 | 0.4 |
| Thoracic surgery | 160 | 0.3 |
| Maxillo-Facial surgery | 102 | 0.2 |
| Plastic surgery | 73 | 0.2 |
| Nephro/Urological surgery | 72 | 0.2 |
| Peripheral vascular surgery | 67 | 0.1 |
| Missing | 242 | |

| **Non surgical interventions** | N | % |
|---|---|---|
| No | 46704 | 98.0 |
| Yes | 969 | 2.0 |
| Missing | 275 | |

| **Non surgical interventions Days from admission** | |
|---|---|
| Mean | 11.9 |
| SD | 11.4 |
| Median | 8 |
| Q1−Q3 | 4−16 |
| Missing | 29 |

| **Non surgical interventions** | N | % |
|---|---|---|
| Interventional endoscopy | 620 | 1.3 |
| Interventional radiology | 255 | 0.5 |
| Interventional cardiology | 181 | 0.4 |
| Interventional neuroradiology | 76 | 0.2 |
| Missing | 275 | |

**National report for general ICUs** - **Year 2018**
**Outcome indicators** - Adult patients

| **ICU outcome** | N | % |
|---|---|---|
| Dead | 8726 | 18.3 |
| Transferred to same hospital | 34188 | 71.8 |
| Transferred to other hospital | 4076 | 8.6 |
| Discharged home | 398 | 0.8 |
| Disch. terminally ill | 216 | 0.5 |
| Missing | 344 | |

| **Transferred to** (N=38264) | N | % |
|---|---|---|
| Ward | 31148 | 81.4 |
| Other ICU | 2882 | 7.5 |
| High dependency care unit | 3052 | 8.0 |
| Rehabilitation | 891 | 2.3 |
| Day hospital or Long-term care | 290 | 0.8 |
| Missing | 1 | |

| **Reason of transfer to Other ICU** (N=2990) | N | % |
|---|---|---|
| Specialist expertise | 1407 | 47.1 |
| Step-up care | 271 | 9.1 |
| Logistical/organizational reasons | 1279 | 42.8 |
| Step-down care | 32 | 1.1 |
| Missing | 1 | |

| **Transferred to Same hospital** (N=34188) | N | % |
|---|---|---|
| Ward | 29956 | 87.6 |
| Other ICU | 1058 | 3.1 |
| High dependency care unit | 2846 | 8.3 |
| Rehabilitation | 196 | 0.6 |
| Day hospital or Long-term care | 131 | 0.4 |
| Missing | 1 | |

| **Transferred to Other hospital** (N=4076) | N | % |
|---|---|---|
| Ward | 1192 | 29.2 |
| Other ICU | 1824 | 44.7 |
| High dependency care unit | 206 | 5.1 |
| Rehabilitation | 695 | 17.1 |
| Day hospital or Long-term care | 159 | 3.9 |
| Missing | 0 | |

| **ICU mortality** | N | % |
|---|---|---|
| Alive | 38662 | 81.2 |
| Dead | 8942 | 18.8 |
| Missing | 344 | |

| **Timing of ICU mortality** (N=8942) | N | % |
|---|---|---|
| Daytime (08:00AM - 07:59PM) | 6126 | 68.5 |
| Nighttime (08:00PM - 07:59AM) | 2813 | 31.5 |
| Weekdays (Monday - Friday) | 6802 | 76.1 |
| Weekend (Saturday - Sunday) | 2138 | 23.9 |
| Missing | 3 | |

| **C.A.M. activation** (N=8942) | N | % |
|---|---|---|
| Yes, with organ donation | 514 | 5.9 |
| Yes, without organ donation | 507 | 5.8 |
| No, with organ donation | 15 | 0.2 |
| No, without organ donation | 7689 | 88.1 |
| Missing | 217 | |

| **Tissue removal** (N=8942) | N | % |
|---|---|---|
| Yes, with C.A.M. activation | 316 | 3.5 |
| Yes, without C.A.M. activation | 448 | 5.0 |
| No | 8178 | 91.5 |
| Missing | 0 | |

| **Hospital mortality *** | N | % |
|---|---|---|
| Dead | 10329 | 23.9 |
| Transf. to other acute-care hospital | 4397 | 10.2 |
| Transf. to other type of hosp. stay | 6349 | 14.7 |
| Nursing home | 757 | 1.8 |
| Voluntary discharge | 293 | 0.7 |
| Discharged home | 21022 | 48.7 |
| Missing | 453 | |

| **To other type of H stay*** (N=6349) | N | % |
|---|---|---|
| Rehabilitation in the same institute | 1108 | 17.5 |
| Rehabilitation in other institute | 3242 | 51.1 |
| DH/long-term care, same inst. | 743 | 11.7 |
| DH/long-term care, other inst. | 1254 | 19.8 |
| Missing | 2 | |

| **Disch. terminally ill*** (N=32818) | N | % |
|---|---|---|
| Yes | 492 | 1.5 |
| No | 32321 | 98.5 |
| Missing | 5 | |

| **Hospital mortality *** | N | % |
|---|---|---|
| Alive | 32321 | 74.9 |
| Dead | 10821 | 25.1 |
| Missing | 458 | |

| **Timing of hosp. mortality *** (N=10821) | N | % |
|---|---|---|
| In ICU | 7957 | 73.6 |
| Within 24 hours after ICU | 189 | 1.7 |
| 24-47 hours after ICU | 173 | 1.6 |
| 48-71 hours after ICU | 163 | 1.5 |
| 72-95 hours after ICU | 162 | 1.5 |
| After 95 hours after ICU | 2170 | 20.1 |
| Missing | 7 | |

| **Timing of hosp. mortality (days from ICU disch.) * Discharged alive from ICU** (N=2864) | |
|---|---|
| Mean | 16.2 |
| SD | 20.0 |
| Median | 10 |
| Q1−Q3 | 4−21 |
| Missing | 5 |

* Statistics computed on patients admitted in months with % of patients in status 4 over the threshold (readmissions excluded) (N=43600).

**National report for general ICUs** - **Year 2018**
**Outcome indicators** - Adult patients

| **Last hospital mortality** * | N | % |
|---|---|---|
| Alive | 31937 | 74.2 |
| Dead | 11117 | 25.8 |
| Missing | 546 | |

| **Readmission from ward** | N | % |
|---|---|---|
| No | 46384 | 96.9 |
| Yes | 1490 | 3.1 |
| Missing | 74 | |

| **Number of readmissions** (N=1490) | N | % |
|---|---|---|
| 1 | 1376 | 92.3 |
| 2 | 100 | 6.7 |
| >2 | 14 | 0.9 |
| Missing | 0 | |

| **Timing of readmission** (N=1490) | N | % |
|---|---|---|
| Within 48 hours | 334 | 22.9 |
| 48-71 hours | 141 | 9.7 |
| 72-95 hours | 119 | 8.1 |
| After 95 hours | 867 | 59.3 |
| Missing | 29 | |

| **Timing readmission (days)** | |
|---|---|
| N | 1490 |
| Mean | 9.7 |
| SD | 17.1 |
| Median | 5.2 |
| Q1−Q3 | 2−11.1 |

| **ICU stay (days)** | |
|---|---|
| Mean | 6.1 |
| SD | 9.9 |
| Median | 2 |
| Q1−Q3 | 1−7 |
| Missing | 333 |

| **ICU stay (days)** **Alive** (N=38662) | |
|---|---|
| Mean | 5.8 |
| SD | 9.5 |
| Median | 2 |
| Q1−Q3 | 1−6 |
| Missing | 4 |

| **ICU stay (days)** **Dead** (N=8942) | |
|---|---|
| Mean | 7.4 |
| SD | 11.3 |
| Median | 3 |
| Q1−Q3 | 1−9 |
| Missing | 2 |

| **Stay after ICU (days)** * **Alive** (N=35418) | |
|---|---|
| Mean | 12.9 |
| SD | 17.1 |
| Median | 8 |
| Q1−Q3 | 4−16 |
| Missing | 255 |

| **Hospital stay (days)** * | |
|---|---|
| Mean | 19.4 |
| SD | 21.4 |
| Median | 13 |
| Q1−Q3 | 7−25 |
| Missing | 473 |

| **Hospital stay (days)** * **Alive** (N=32321) | |
|---|---|
| Mean | 20.7 |
| SD | 21.6 |
| Median | 15 |
| Q1−Q3 | 8−26 |
| Missing | 14 |

| **Hospital stay (days)** * **Dead** (N=10821) | |
|---|---|
| Mean | 15.3 |
| SD | 20.0 |
| Median | 8 |
| Q1−Q3 | 3−20 |
| Missing | 11 |

* Statistics computed on patients admitted in months with % of patients in status 4 over the threshold (readmissions excluded) (N=43600).

**National report for general ICUs** - **Year 2018**
**Characteristics on admission** - Adult patients evaluated in the GiViTI model

**Patients** (N): 42027

| **Sex** | N | % |
|---|---|---|
| Male | 24787 | 59.0 |
| Female | 17240 | 41.0 |
| Missing | 0 | |

| **Age (years)** | N | % |
|---|---|---|
| 17-45 | 4842 | 11.5 |
| 46-65 | 11079 | 26.4 |
| 66-75 | 10638 | 25.3 |
| >75 | 15468 | 36.8 |
| Missing | 0 | |
| Mean | 67.0 | |
| SD | 16.3 | |
| Median | 71 | |
| Q1−Q3 | 58−79 | |
| Min−Max | 17−103 | |

| **Body mass Index (BMI)** | N | % |
|---|---|---|
| Underweight | 2388 | 5.7 |
| Normal | 18522 | 44.1 |
| Overweight | 13059 | 31.1 |
| Obese | 8058 | 19.2 |
| Missing | 0 | |

| **Pregnancy status** **Females** (N=17240) | N | % |
|---|---|---|
| Not fertile | 9320 | 54.1 |
| Not pregnant/Unknown | 7439 | 43.2 |
| Currently pregnant | 53 | 0.3 |
| Post partum | 424 | 2.5 |
| Missing | 4 | |

| **Comorbidities** | N | % |
|---|---|---|
| No | 6008 | 14.3 |
| Yes | 36019 | 85.7 |
| Missing | 0 | |

| **Comorbidities (top 10)** | N | % |
|---|---|---|
| Hypertension | 22322 | 53.1 |
| Arrhythmia | 7367 | 17.5 |
| Moderate COPD | 6117 | 14.6 |
| Diabetes Type II without insulin tr. | 5694 | 13.5 |
| Myocardial infarction | 5351 | 12.7 |
| Any tumour without metastasis | 5021 | 11.9 |
| Cerebrovascular disease | 4676 | 11.1 |
| NYHA class II-III | 4347 | 10.3 |
| Peripheral vascular disease | 4107 | 9.8 |
| Moderate or severe renal disease | 3990 | 9.5 |
| Missing | 0 | |

| **Stay before ICU (days)** | |
|---|---|
| Mean | 3.8 |
| SD | 9.9 |
| Median | 1 |
| Q1−Q3 | 0−3 |
| Missing | 0 |

| **Source of admission** | N | % |
|---|---|---|
| Same hospital | 36607 | 87.1 |
| Other hospital | 5169 | 12.3 |
| Long-term chronic care hospital | 251 | 0.6 |
| Directly from the community | 0 | 0.0 |
| Missing | 0 | |

| **Ward of admission** **Hospital** (N=41776) | N | % |
|---|---|---|
| Medical ward | 6040 | 14.5 |
| Surgical ward | 17101 | 40.9 |
| Emergency room | 15095 | 36.1 |
| Other ICU | 2514 | 6.0 |
| High dependency care unit | 1026 | 2.5 |
| Missing | 0 | |

| **Reason for transfer from** **Other ICU** (N=2514) | N | % |
|---|---|---|
| Specialist expertise | 757 | 30.1 |
| Step-up care | 388 | 15.4 |
| Logistical/organizational reasons | 1369 | 54.5 |
| Step-down care | 0 | 0.0 |
| Missing | 0 | |

| **Ward of admission** **Same hospital** (N=36607) | N | % |
|---|---|---|
| Medical ward | 5358 | 14.6 |
| Surgical ward | 16783 | 45.8 |
| Emergency room | 12859 | 35.1 |
| Other ICU | 682 | 1.9 |
| High dependency care unit | 925 | 2.5 |
| Missing | 0 | |

| **Ward of admission** **Other hospital** (N=5169) | N | % |
|---|---|---|
| Medical ward | 682 | 13.2 |
| Surgical ward | 318 | 6.2 |
| Emergency room | 2236 | 43.3 |
| Other ICU | 1832 | 35.4 |
| High dependency care unit | 101 | 2.0 |
| Missing | 0 | |

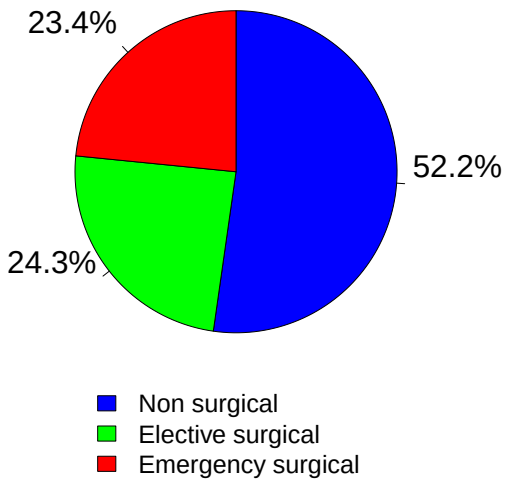
| **Scheduled admission** | N | % |
|---|---|---|
| No | 33857 | 80.6 |
| Yes | 8170 | 19.4 |
| Missing | 0 | |

**National report for general ICUs** - **Year 2018**
**Characteristics on admission** - Adult patients evaluated in the GiViTI model

| **Trauma** | N | % |
|---|---|---|
| No | 36701 | 87.3 |
| Yes | 5326 | 12.7 |
| Multiple trauma | 2185 | 5.2 |
| Missing | 0 | |

| **Surgical status** | N | % |
|---|---|---|
| Non surgical | 21951 | 52.2 |
| Elective surgical | 10223 | 24.3 |
| Emergency surgical | 9853 | 23.4 |
| Missing | 0 | |

**Surgical status**




| **Source of admission** **Surgical pt.** (N=20076) | N | % |
|---|---|---|
| Operating theatre of surgical ward | 14833 | 74.0 |
| Operating theatre of emergency room | 1785 | 8.9 |
| Surgical ward | 995 | 5.0 |
| Other | 2432 | 12.1 |
| Missing | 31 | |

| **Surgical interventions (top 10)** **Elective surgical** (N=10223) | N | % |
|---|---|---|
| Gastrointestinal surgery | 2926 | 28.6 |
| Nephro/Urological surgery | 1400 | 13.7 |
| Orthopaedic surgery | 1392 | 13.6 |
| ENT surgery | 699 | 6.8 |
| Thoracic surgery | 605 | 5.9 |
| Neurosurgery | 567 | 5.5 |
| Gynaecological surgery | 562 | 5.5 |
| Abdominal vascular surgery | 431 | 4.2 |
| Hepatic surgery | 370 | 3.6 |
| Pancreatic surgery | 368 | 3.6 |
| Missing | 903 | |

| **Timing** **Elective surgical** (N=10223) | N | % |
|---|---|---|
| From -7 to -3 days | 165 | 1.6 |
| From -2 to -1 days | 314 | 3.1 |
| On ICU admission day | 10268 | 100.4 |
| The day after ICU admission | 103 | 1.0 |
| Missing | 14 | |

| **Surgical interventions (top 10)** **Emergency surgical** (N=9853) | N | % |
|---|---|---|
| Gastrointestinal surgery | 4495 | 45.6 |
| Neurosurgery | 1260 | 12.8 |
| Orthopaedic surgery | 1128 | 11.4 |
| Nephro/Urological surgery | 501 | 5.1 |
| Biliary tract surgery | 435 | 4.4 |
| Abdominal vascular surgery | 365 | 3.7 |
| Peripheral vascular surgery | 360 | 3.7 |
| ENT surgery | 296 | 3.0 |
| Obstetric surgery | 282 | 2.9 |
| Splenectomy | 240 | 2.4 |
| Missing | 491 | |

| **Timing** **Emergency surgical** (N=9853) | N | % |
|---|---|---|
| From -7 to -3 days | 272 | 2.8 |
| From -2 to -1 days | 1170 | 11.9 |
| On ICU admission day | 8687 | 88.2 |
| The day after ICU admission | 465 | 4.7 |
| Missing | 29 | |

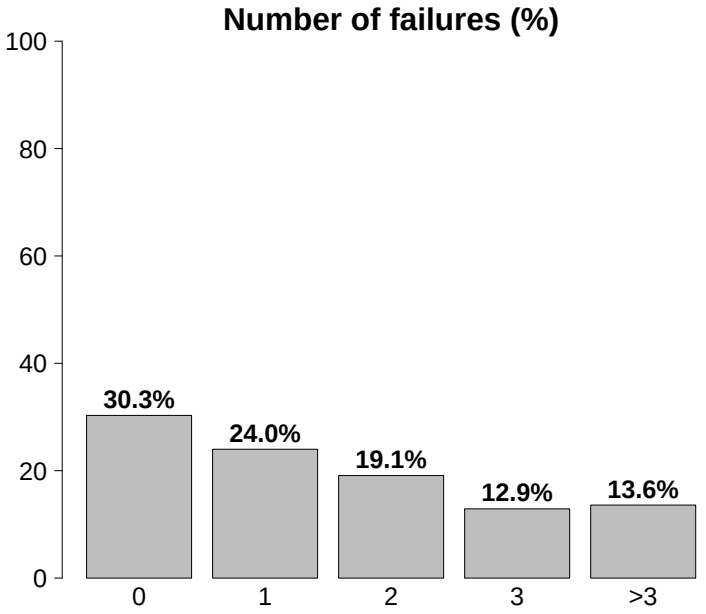
| **Non surgical interventions** | N | % |
|---|---|---|
| None | 38257 | 91.0 |
| Elective | 541 | 1.3 |
| Emergency | 3229 | 7.7 |
| Missing | 0 | |

| **Non surgical interventions** **Elective** (N=541) | N | % |
|---|---|---|
| Interventional endoscopy | 177 | 32.7 |
| Interventional radiology | 121 | 22.4 |
| Interventional cardiology | 92 | 17.0 |
| Interventional neuroradiology | 76 | 14.0 |
| Missing | 75 | |

| **Non surgical interventions** **Emergency** (N=3229) | N | % |
|---|---|---|
| Interventional cardiology | 1176 | 36.4 |
| Interventional radiology | 809 | 25.1 |
| Interventional endoscopy | 730 | 22.6 |
| Interventional neuroradiology | 480 | 14.9 |
| Missing | 34 | |

**National report for general ICUs** - **Year 2018**
**Characteristics on admission** - Adult patients evaluated in the GiViTI model

| Reason for admission | N | % |
|---|---|---|
| Monitoring/Weaning | 17549 | 41.8 |
| Post surgical weaning | 5935 | 14.2 |
| Surgical monitoring | 6598 | 15.8 |
| Post interventional weaning | 150 | 0.4 |
| Interventional monitoring | 712 | 1.7 |
| Non surgical monitoring | 3946 | 9.4 |
| Missing | 208 | |
| Admission for procedures/treatments | 0 | 0.0 |
| Intensive Treatment | 24477 | 58.2 |
| Only ventilatory support | 12562 | 29.9 |
| Only cardiovascular support | 1787 | 4.3 |
| Ventilatory and cardiovascular support | 10128 | 24.1 |
| Missing | 0 | |
| Palliative Sedation | 0 | 0.0 |
| Diagnosis of death/Organ donation | 0 | 0.0 |
| Missing | 1 | |




| Failures on admission | N | % |
|---|---|---|
| No | 12743 | 30.3 |
| Yes | 29284 | 69.7 |
| A: Respiratory failure | 22691 | 54.0 |
| B: Cardiovascular failure | 11915 | 28.4 |
| C: Neurological failure | 6023 | 14.3 |
| D: Hepatic failure | 321 | 0.8 |
| E: Renal failure | 14937 | 35.5 |
| F: Acute skin failure | 25 | 0.1 |
| G: Metabolic failure | 10548 | 25.1 |
| H: Coagulation failure | 532 | 1.3 |
| Missing | 0 | |

| Failures on admission (top 10) | N | % |
|---|---|---|
| A | 5906 | 14.1 |
| ABEG | 3044 | 7.2 |
| E | 2760 | 6.6 |
| AC | 2035 | 4.8 |
| AB | 1987 | 4.7 |
| AE | 1765 | 4.2 |
| ABE | 1420 | 3.4 |
| ABCEG | 1149 | 2.7 |
| AEG | 1012 | 2.4 |
| EG | 938 | 2.2 |
| Missing | 0 | |

| Respiratory failure | N | % |
|---|---|---|
| None | 19336 | 46.0 |
| Only hypoxic failure | 7699 | 18.3 |
| Only hypercapnic failure | 1062 | 2.5 |
| Hypoxic-hypercapnic failure | 2935 | 7.0 |
| Intubation for airway maint. | 10995 | 26.2 |
| Missing | 0 | |

| Cardiovascular failure | N | % |
|---|---|---|
| None | 30112 | 71.6 |
| Without shock | 2388 | 5.7 |
| Cardiogenic shock | 2331 | 5.5 |
| Septic shock | 2959 | 7.0 |
| Haemorrhagic/hypovolemic shock | 1584 | 3.8 |
| Hypovolemic shock | 1095 | 2.6 |
| Anaphylactic shock | 43 | 0.1 |
| Neurogenic shock | 344 | 0.8 |
| Other shock | 540 | 1.3 |
| Mixed shock | 631 | 1.5 |
| Missing | 0 | |

| Neurologic failure | N | % |
|---|---|---|
| None | 29080 | 82.8 |
| Cerebral coma | 3157 | 9.0 |
| Metabolic coma | 1066 | 3.0 |
| Postanoxic coma | 1526 | 4.3 |
| Toxic coma | 274 | 0.8 |
| Missing or not evaluable | 6924 | |

| Renal failure (AKIN) | N | % |
|---|---|---|
| None | 27090 | 64.5 |
| Mild | 7283 | 17.3 |
| Moderate | 3417 | 8.1 |
| Severe | 4237 | 10.1 |
| Missing | 0 | |

| Metabolic failure | N | % |
|---|---|---|
| None | 31479 | 74.9 |
| pH <= 7.3, PaCO2 < 45 mmHg | 2652 | 6.3 |
| Base deficit >= 5 mmol/L, lactate >1.5x | 7896 | 18.8 |
| Missing | 0 | |

**National report for general ICUs - Year 2018**
**Characteristics on admission** - Adult patients evaluated in the GiViTI model

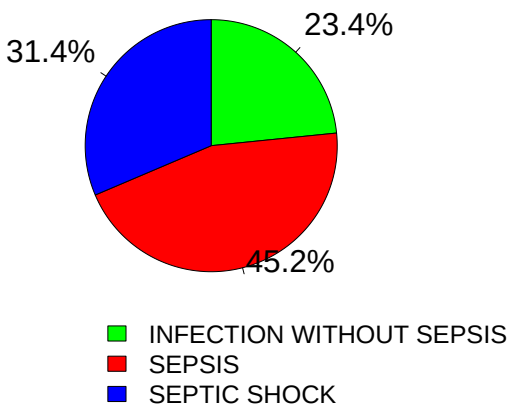
| Clinical conditions on admission | N | % |
|---|---|---|
| Respiratory | 7830 | 18.6 |
| Acute exacerbation of COPD | 1866 | 4.4 |
| Pleural effusion | 1614 | 3.8 |
| Aspiration pneumonia | 866 | 2.1 |
| Atelectasis | 850 | 2.0 |
| Upper respiratory tract disease | 714 | 1.7 |
| Cardiovascular | 7753 | 18.4 |
| Cardiac arrest | 2118 | 5.0 |
| Left heart failure with pulmonary edema | 1471 | 3.5 |
| Left heart failure without pulm. edema | 1051 | 2.5 |
| Acute severe arrhythmia: tachycardias | 913 | 2.2 |
| Acute ischaemia | 632 | 1.5 |
| Neurological | 5680 | 13.5 |
| Spontaneous Intraparenchymal bleeding | 1218 | 2.9 |
| Cerebral artery stroke | 1135 | 2.7 |
| Seizures | 955 | 2.3 |
| Metabolic/postanoxic encephalopathy | 679 | 1.6 |
| Spontaneous Subarachnoid haemorrhage | 608 | 1.4 |
| Gastrointestinal and hepatic | 8606 | 20.5 |
| Digestive tract malignancy | 2315 | 5.5 |
| Gastrointestinal perforation | 1421 | 3.4 |
| Intestinal occlusion | 1314 | 3.1 |
| Acute bile-duct disease | 638 | 1.5 |
| Gastrointestinal bleeding: upper tract | 618 | 1.5 |
| Trauma (anatomical districts) | 5327 | 12.7 |
| Pelvis/bone/joint & muscle | 2432 | 5.8 |
| Head | 2103 | 5.0 |
| Chest | 1954 | 4.6 |
| Spine | 1185 | 2.8 |
| Abdomen | 963 | 2.3 |
| Major vessels injury | 192 | 0.5 |
| Miscellaneous | 102 | 0.2 |
| Other | 10726 | 25.5 |
| Other disease | 2413 | 5.7 |
| Nephrourologic disease | 2238 | 5.3 |
| Metabolic disorder | 2202 | 5.2 |
| Orthopaedic disease | 1010 | 2.4 |
| Acute intoxication | 996 | 2.4 |
| Post transplantation | 300 | 0.7 |
| Liver transplantation | 117 | 0.3 |
| Renal transplantation | 112 | 0.3 |
| Infections | 11427 | 27.2 |
| Pneumonia | 4453 | 10.6 |
| NON-surgical secondary peritonitis | 1209 | 2.9 |
| NON-surgical urinary tract infection | 1028 | 2.4 |
| L.R.T.I. other than pneumonia | 752 | 1.8 |
| Post-surgical peritonitis | 634 | 1.5 |
| Cholecystitis/cholangitis | 562 | 1.3 |
| Primary bacteraemia of unknown origin | 518 | 1.2 |
| NON-surgical skin/soft tissue infection | 476 | 1.1 |
| Clinical sepsis | 445 | 1.1 |
| NON-surgical CNS infection | 341 | 0.8 |
| Missing | 0 | |

| Trauma (anatomical districts) | N | % |
|---|---|---|
| Head | 2103 | 5.0 |
| Traumatic Subdural haematoma | 776 | 1.8 |
| Traumatic subarachnoid haemorrhage | 760 | 1.8 |
| Maxillofacial fracture | 703 | 1.7 |
| Cerebral contusion/laceration | 681 | 1.6 |
| Skull fracture | 543 | 1.3 |
| Spine | 1185 | 2.8 |
| Vertebral fracture, without deficit | 1010 | 2.4 |
| Cervical injury, incomplete deficit | 62 | 0.1 |
| Tetraplegia | 55 | 0.1 |
| Chest | 1954 | 4.6 |
| Other injuries of the chest | 1079 | 2.6 |
| Traum. haemothorax/pneumothorax | 737 | 1.8 |
| Severe lung contusion/laceration | 500 | 1.2 |
| Abdomen | 963 | 2.3 |
| Spleen: Moderate-Severe laceration | 273 | 0.6 |
| Minor injuries of the abdomen | 273 | 0.6 |
| Liver: Moderate-Severe laceration | 207 | 0.5 |
| Pelvis/bone/joint & muscle | 2432 | 5.8 |
| Long bone fracture | 1942 | 4.6 |
| Multiple fracture of the pelvis | 644 | 1.5 |
| Very severe or open fracture of the pelvis | 104 | 0.2 |
| Major vessels injury | 192 | 0.5 |
| Proximal limbs vessels: transection | 75 | 0.2 |
| Neck vessels: dissection/transection | 46 | 0.1 |
| Major abdominal vessels: transection | 34 | 0.1 |
| Miscellaneous | 102 | 0.2 |
| Burns (>30% BSA) | 66 | 0.2 |
| Inhalation injury | 46 | 0.1 |
| Missing | 0 | |

| Infection severity on admission | N | % |
|---|---|---|
| None | 30600 | 73.7 |
| INFECTION WITHOUT SEPSIS | 2547 | 6.1 |
| SEPSIS | 4929 | 11.9 |
| SEPTIC SHOCK | 3420 | 8.2 |
| Missing | 531 | |

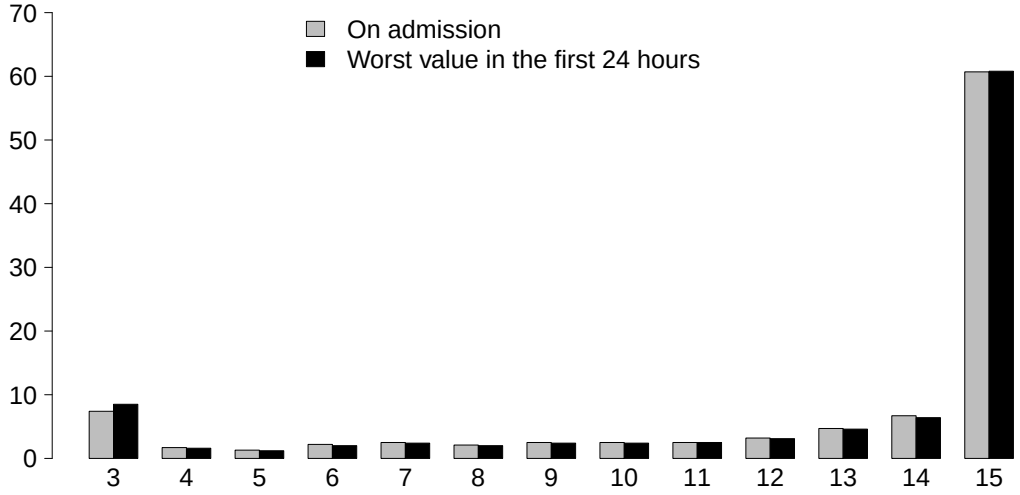
**Infection severity on admission**

Patients infected (N=10896)



**National report for general ICUs** - **Year 2018**
**Severity scores** - Adult patients evaluated in the GiViTI model

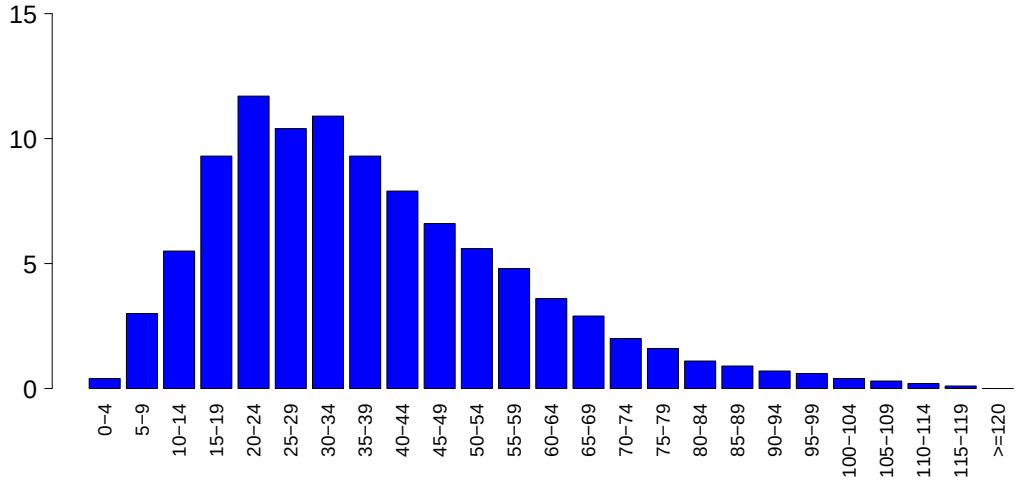
## Glasgow Coma Scale (%)




| GCS (admission) | |
|---|---|
| Median | 15 |
| Q1−Q3 | 12−15 |
| Not evaluable | 6924 |
| Missing | 0 |

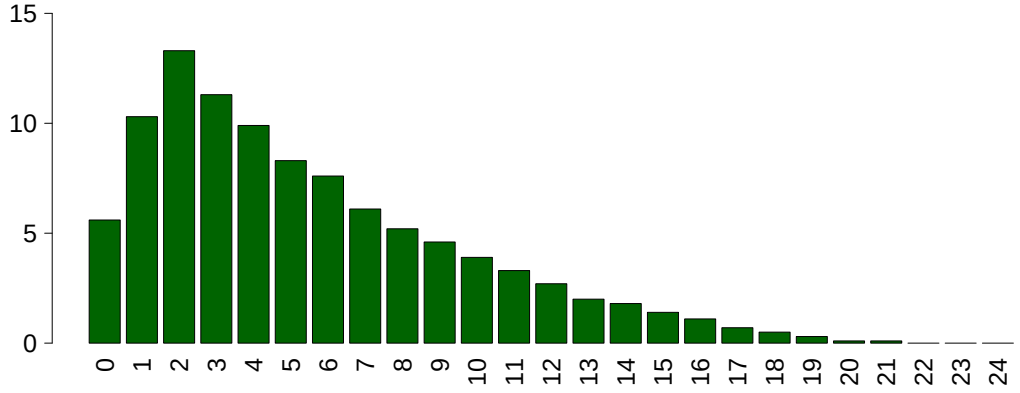
| GCS (first 24 hours) | |
|---|---|
| Median | 15 |
| Q1−Q3 | 11−15 |
| Not evaluable | 5910 |
| Missing | 0 |

## SAPS II (%)




| SAPSII | |
|---|---|
| Mean | 37.8 |
| SD | 20.5 |
| Median | 34 |
| Q1−Q3 | 23−49 |
| Not evaluable | 5910 |
| Missing | 0 |

## SOFA (%)




| SOFA | |
|---|---|
| Mean | 5.5 |
| SD | 4.2 |
| Median | 4 |
| Q1−Q3 | 2−8 |
| Not evaluable | 5910 |
| Missing | 0 |

**National report for general ICUs** - **Year 2018**
**Characteristics during the stay** - Adult patients evaluated in the GiViTI model

| **Complications during the stay** | N | % |
|---|---|---|
| No | 29501 | 70.2 |
| Yes | 12524 | 29.8 |
| Missing | 2 | |

| **Failures during the stay** | N | % |
|---|---|---|
| No | 36544 | 87.0 |
| Yes | 5483 | 13.0 |
| A: Respiratory failure | 2661 | 6.3 |
| B: Cardiovascular failure | 2374 | 5.6 |
| C: Neurological failure | 399 | 0.9 |
| D: Hepatic failure | 133 | 0.3 |
| E: Renal failure (AKIN) | 1440 | 3.4 |
| F: Acute skin failure | 13 | 0.0 |
| G: Metabolic failure | 435 | 1.0 |
| H: Coagulation failure | 224 | 0.5 |
| Missing | 0 | |

| **Failures during the stay (top 10)** | N | % |
|---|---|---|
| A | 1561 | 3.7 |
| B | 1213 | 2.9 |
| E | 619 | 1.5 |
| AB | 506 | 1.2 |
| G | 273 | 0.6 |
| BE | 211 | 0.5 |
| AE | 154 | 0.4 |
| ABE | 147 | 0.3 |
| C | 141 | 0.3 |
| AC | 54 | 0.1 |
| Missing | 0 | |

| **Respiratory failure occured** | N | % |
|---|---|---|
| None | 39364 | 93.7 |
| Intubation for airway maint. | 757 | 1.8 |
| Hypoxic failure | 1839 | 4.4 |
| Hypercapnic failure | 503 | 1.2 |
| Missing | 2 | |

| **Cardiovascular failure occured** | N | % |
|---|---|---|
| None | 39651 | 94.4 |
| Cardiogenic shock | 678 | 1.6 |
| Hypovolemic shock | 315 | 0.7 |
| Haemorrhagic/hypovolemic shock | 243 | 0.6 |
| Septic shock | 852 | 2.0 |
| Anaphylactic shock | 3 | 0.0 |
| Neurogenic shock | 190 | 0.5 |
| Other shock | 229 | 0.5 |
| Missing | 2 | |

| **Neurological failure occured** | N | % |
|---|---|---|
| None | 41626 | 99.1 |
| Cerebral coma | 224 | 0.5 |
| Metabolic coma | 118 | 0.3 |
| Postanoxic coma | 60 | 0.1 |
| Missing | 2 | |

| **Renal failure occured (AKIN)** | N | % |
|---|---|---|
| None | 40585 | 96.6 |
| Mild | 197 | 0.5 |
| Moderate | 224 | 0.5 |
| Severe | 1019 | 2.4 |
| Missing | 2 | |

| **Complications during the stay** | N | % |
|---|---|---|
| Respiratory | 2188 | 5.2 |
| Pleural effusion | 867 | 2.1 |
| Atelectasis | 536 | 1.3 |
| Severe ARDS | 303 | 0.7 |
| Pneumothorax/Pneumomediastinum | 249 | 0.6 |
| Upper resp. tract disease | 155 | 0.4 |
| Cardiovascular | 3389 | 8.1 |
| Cardiac arrest | 1264 | 3.0 |
| Acute severe arrhythmia: tachycardias | 1208 | 2.9 |
| Acute severe arrhythmia: bradycardias | 275 | 0.7 |
| Pulmonary edema | 214 | 0.5 |
| Left heart failure w/o pulm. edema | 200 | 0.5 |
| Neurological | 2814 | 6.7 |
| Drowsiness/agitation/delirium | 1455 | 3.5 |
| Seizures | 479 | 1.1 |
| Brain edema | 395 | 0.9 |
| Intracranial hypertension | 376 | 0.9 |
| New ischaemic stroke | 172 | 0.4 |
| Gastrointestinal and hepatic | 1153 | 2.7 |
| Gastrointestinal bleeding: upper tract | 189 | 0.4 |
| Bowel ischaemia | 173 | 0.4 |
| Paralytic Ileus | 160 | 0.4 |
| Gastrointestinal bleeding: lower tract | 141 | 0.3 |
| Gastrointestinal perforation | 124 | 0.3 |
| Other | 1187 | 2.8 |
| Metabolic disorder | 435 | 1.0 |
| Other disease | 276 | 0.7 |
| Nephrourologic disease | 253 | 0.6 |
| Category/Stage II: Partial Thickness Skin Loss | 97 | 0.2 |
| Other skin and/or soft tissue pathology | 79 | 0.2 |
| Category/Stage I: Nonblanchable Erythema | 39 | 0.1 |
| Extremity compartment syndrome (severe) | 36 | 0.1 |
| Infections | 3591 | 8.5 |
| Pneumonia | 1325 | 3.2 |
| L.R.T.I. other than pneumonia | 815 | 1.9 |
| NON-surgical urinary tract infection | 493 | 1.2 |
| Catheter-related bacteremia (CR-BSI) | 436 | 1.0 |
| Primary bacteraemia of unknown origin | 393 | 0.9 |
| Post-surgical peritonitis | 131 | 0.3 |
| Upper respiratory tract infection | 123 | 0.3 |
| Post-surgical skin/soft tissue infection | 122 | 0.3 |
| Clinical sepsis | 118 | 0.3 |
| NON-surgical skin/soft tissue infection | 84 | 0.2 |
| Missing | 2 | |

**National report for general ICUs** - **Year 2018**
**Characteristics during the stay** - Adult patients evaluated in the GiViTI model

| **Infections** | N | % |
|---|---|---|
| None | 28231 | 67.2 |
| Only on admission | 10203 | 24.3 |
| On admission and during ICU stay | 1223 | 2.9 |
| Only during ICU stay | 2368 | 5.6 |
| Missing | 2 | |

| **Maximum severity of infection** | N | % |
|---|---|---|
| None | 28231 | 68.2 |
| INFECTION WITHOUT SEPSIS | 2755 | 6.7 |
| SEPSIS | 6376 | 15.4 |
| SEPTIC SHOCK | 4024 | 9.7 |
| Missing | 641 | |

**Severity evolution**

| | | **During the stay** | | | | |
|---|---|---|---|---|---|---|
| | N (R %) | None | INFECTION WITHOUT SEPSIS | SEPSIS | SEPTIC SHOCK | TOT |
| **Admission** | None | 28231 (92.7%) | 741 (2.4%) | 1233 (4.0%) | 253 (0.8%) | 30458 |
| | INFECTION WITHOUT SEPSIS | - | 2004 (78.7%) | 493 (19.4%) | 50 (2.0%) | 2547 |
| | SEPSIS | - | - | 4631 (94.0%) | 298 (6.0%) | 4929 |
| | SEPTIC SHOCK | - | - | - | 3419 (100.0%) | 3420 |
| | TOT | 28231 | 2746 | 6357 | 4020 | 41354 |

| **Ventil. Associat. Pneumonia (VAP)** | N | % |
|---|---|---|
| No | 40886 | 97.3 |
| Yes | 1140 | 2.7 |
| Missing | 1 | |

| **Catheter Bacteraemia (CR-BSI)** | N | % |
|---|---|---|
| No | 41589 | 99.0 |
| Yes | 436 | 1.0 |
| Missing | 2 | |

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

| | |
|---|---|
| Estimate | 9.2 |
| CI (95%) | 8.7−9.8 |

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

| | |
|---|---|
| Estimate | 2.2 |
| CI (95%) | 2.0−2.4 |

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

| | |
|---|---|
| Estimate | 7.4% |
| CI (95%) | 7.0−7.8 |

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

| | |
|---|---|
| Estimate | 2.6% |
| CI (95%) | 2.4−2.9 |

**National report for general ICUs** - **Year 2018**

**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 |
| **Procedures (antibiotics excluded)** | 39889 | 94.9 | | | | | | | | | | |
| Invasive ventilation | 27887 | 66.4 | 20312 | 48.3 | 5986 | 14.2 | 1 | 1–6 | 1 | 0 | 0–0 | 0 |
| Non invasive ventilation | 6726 | 16.0 | 1609 | 3.8 | 1414 | 3.4 | 1 | 1–3 | 0 | 0 | 0–2 | 0 |
| Tracheostomy | 4248 | 10.1 | 1113 | 2.6 | 3541 | 8.4 | 11 | 4–20 | 0 | 8 | 5–12 | 0 |
| iNO (inhaled nitric oxide) | 91 | 0.2 | 2 | 0 | 15 | 0 | 2 | 1–4 | 0 | 1 | 0–3 | 0 |
| Central Venous Catheter | 27239 | 64.8 | 12417 | 29.5 | 21621 | 51.4 | 4 | 2–9 | 3 | 0 | 0–0 | 0 |
| PICC | 929 | 2.2 | 409 | 1 | 780 | 1.9 | 3 | 1–7 | 0 | 5 | 1–16 | 0 |
| Arterial Catheter | 33472 | 79.6 | 16304 | 38.8 | 9222 | 21.9 | 3 | 1–7 | 2 | 0 | 0–0 | 0 |
| Vasoactive drugs | 14769 | 35.1 | 6483 | 15.4 | 3424 | 8.1 | 2 | 1–4 | 2 | 0 | 0–0 | 0 |
| Antiarrhythmics | 3149 | 7.5 | 872 | 2.1 | 1666 | 4 | 3 | 1–7 | 0 | 1 | 0–2 | 0 |
| IABP | 222 | 0.5 | 168 | 0.4 | 57 | 0.1 | 2 | 1–3 | 0 | 0 | 0–0 | 0 |
| Invasive monitoring of C.O. | 1462 | 3.5 | 263 | 0.6 | 316 | 0.8 | 4 | 2–7 | 0 | 0 | 0–1 | 0 |
| Continous monitoring of ScVO2 | 95 | 0.2 | 29 | 0.1 | 26 | 0.1 | 4 | 2–8 | 0 | 0 | 0–1 | 0 |
| Temporary pacing | 177 | 0.4 | 87 | 0.2 | 79 | 0.2 | 1 | 1–3 | 0 | 0 | 0–1 | 0 |
| Ventricular assistance | 4 | 0.0 | 4 | 0 | 3 | 0 | 0 | 0–1 | 0 | | | |
| DC-shock | 763 | 1.8 | | | | | | | | 0 | 0–1 | 0 |
| CPR | 1314 | 3.1 | | | | | | | | 0 | 0–1 | 0 |
| Massive blood transfusion | 598 | 1.4 | | | | | | | | 0 | 0–0 | 0 |
| ICP monitoring without CSF drainage | 311 | 0.7 | 105 | 0.2 | 48 | 0.1 | 7 | 4–10 | 0 | 0 | 0–1 | 0 |
| ICP monitoring with CSF drainage | 273 | 0.6 | 140 | 0.3 | 136 | 0.3 | 8 | 3–16 | 0 | 0 | 0–1 | 0 |
| External ventricular drainage without ICP | 155 | 0.4 | 92 | 0.2 | 87 | 0.2 | 8 | 3–18 | 0 | 0 | 0–4 | 0 |
| Haemofiltration | 1665 | 4.0 | 161 | 0.4 | 436 | 1 | 3 | 2–8 | 1 | 1 | 0–2 | 0 |
| Haemodialysis | 1025 | 2.4 | 192 | 0.5 | 392 | 0.9 | 3 | 1–7 | 1 | 1 | 0–3 | 0 |
| ECMO | 131 | 0.3 | 62 | 0.1 | 55 | 0.1 | 7 | 1–14 | 0 | 1 | 1–5 | 0 |
| Hepatic clearance techniques | 6 | 0.0 | | | | | | | | | | |
| Clearance techniques during sepsis | 261 | 0.6 | 15 | 0 | 30 | 0.1 | 3 | 1–4 | 0 | 1 | 0–1 | 0 |
| IAP (intra-abdominal pressure) | 535 | 1.3 | | | | | | | | | | |
| Hypothermia | 367 | 0.9 | 73 | 0.2 | 26 | 0.1 | 1 | 1–2 | 0 | 0 | 0–0 | 0 |
| Enteral nutrition | 12960 | 30.8 | 2017 | 4.8 | 8506 | 20.2 | 6 | 3–14 | 1 | 1 | 0–2 | 0 |
| Parenteral nutrition | 7358 | 17.5 | 916 | 2.2 | 4416 | 10.5 | 4 | 2–8 | 2 | 1 | 0–2 | 0 |
| SDD (Topical, Topical and systemic) | 345 | 0.8 | | | | | | | | | | |
| Patient restraint | 1087 | 2.6 | | | | | | | | | | |
| Peridural catheter | 1306 | 3.1 | 1133 | 2.7 | 1061 | 2.5 | 1 | 1–2 | 0 | 0 | 0–1 | 0 |
| Electrical cardioversion | 260 | 0.6 | | | | | | | | 1 | 0–3 | 0 |
| Vacuum therapy | 189 | 0.4 | | | | | | | | | | |
| **Antibiotics** | 26694 | 63.5 | | | | | | | | | | |
| Antibiotic prophylaxis | 13819 | 32.9 | 8854 | 21.1 | 7552 | 18 | 1 | 1–3 | 0 | 0 | 0–0 | 0 |
| Empirical antibiotic therapy | 8741 | 20.8 | 4024 | 9.6 | 3746 | 8.9 | 3 | 2–5 | 1 | 0 | 0–1 | 0 |
| Empirical antibiotic therapy in unconfirmed diagnosis | 2832 | 6.7 | 1157 | 2.8 | 1455 | 3.5 | 4 | 2–7 | 0 | 0 | 0–1 | 0 |
| Targeted antibiotic therapy | 6315 | 15.0 | 1154 | 2.7 | 4006 | 9.5 | 7 | 3–11 | 0 | 4 | 2–7 | 0 |

**National report for general ICUs** - **Year 2018**
**Process indicators** - Adult patients evaluated in the GiViTI model

| **Invasive ventilation** (N=27887) | N | % | Length (days) Mean | SD | Median | Q1-Q3 | Missing |
|---|---|---|---|---|---|---|---|
| Due to pulmonary failure | 9765 | 31.5 | 7.3 | 10.6 | 4 | 1−9 | 0 |
| For airway mainteinance | 10733 | 34.7 | 5.7 | 8.9 | 2 | 1−7 | 1 |
| In weaning | 6197 | 20.0 | 0.4 | 0.5 | 0 | 0−1 | 0 |
| Not evaluable | 4267 | 13.8 | 3.5 | 7.1 | 1 | 0−3 | 3086 |
| Reintubation within 48 hours | 539 | 1.7 | 7.2 | 9.2 | 4 | 2−9 | 4 |

| **Non invasive ventilation** (N=6726) | N | % |
|---|---|---|
| Non invasive ventilation only | 3471 | 51.6 |
| Non invasive ventilation failed | 1169 | 17.4 |
| For weaning | 1843 | 27.4 |
| Other | 243 | 3.6 |
| Missing | 0 | |

| **Tracheostomy not present on admission** (N=3135) | N | % |
|---|---|---|
| Surgical | 642 | 20.5 |
| Percutwist | 322 | 10.3 |
| Ciaglia | 370 | 11.8 |
| Monodil. Ciaglia | 1114 | 35.5 |
| Fantoni | 130 | 4.1 |
| Griggs | 400 | 12.8 |
| Other Kind | 108 | 3.4 |
| Unknown | 49 | 1.6 |
| Missing | 0 | |

| **Tracheostomy - Days after the beginning of inv. vent. Not present on admission** (N=3107) | |
|---|---|
| Mean | 8.8 |
| SD | 6.3 |
| Median | 8 |
| Q1−Q3 | 4−12 |
| Missing | 2 |

| **Invasive monitoring of C.O.** (N=1462) | N | % |
|---|---|---|
| Swan Ganz | 326 | 22.3 |
| PICCO | 854 | 58.4 |
| LIDCO | 2 | 0.1 |
| Vigileo-PRAM | 209 | 14.3 |
| Other | 71 | 4.9 |
| Missing | 0 | |

| **SDD** (N=345) | N | % |
|---|---|---|
| Topical | 335 | 97.1 |
| Topical and systemic | 10 | 2.9 |
| Missing | 0 | |

| **Antibiotic therapy Pt. infected in ICU only** (N=2368) | N | % |
|---|---|---|
| Only empirical | 469 | 23.6 |
| Only targeted | 666 | 33.5 |
| Targeted after empirical | 679 | 34.1 |
| Other | 175 | 8.8 |
| Missing | 379 | |

| **Surgical interventions** | N | % |
|---|---|---|
| No | 40207 | 95.7 |
| Yes | 1820 | 4.3 |
| Missing | 0 | |

| **Number of surgical interventions** | N | % |
|---|---|---|
| 0 | 40207 | 95.7 |
| 1 | 1389 | 3.3 |
| 2 | 273 | 0.6 |
| 3 | 86 | 0.2 |
| >3 | 72 | 0.2 |
| Missing | 0 | |

| **Surgical interventions Days from admission** | |
|---|---|
| Mean | 9.8 |
| SD | 11.0 |
| Median | 6 |
| Q1−Q3 | 3−12 |
| Missing | 13 |

| **Surgical interventions (top 10)** | N | % |
|---|---|---|
| Gastrointestinal surgery | 774 | 1.8 |
| Orthopaedic surgery | 479 | 1.1 |
| Neurosurgery | 261 | 0.6 |
| ENT surgery | 257 | 0.6 |
| Other surgery | 142 | 0.3 |
| Thoracic surgery | 129 | 0.3 |
| Maxillo-Facial surgery | 90 | 0.2 |
| Nephro/Urological surgery | 69 | 0.2 |
| Plastic surgery | 66 | 0.2 |
| Organ donation | 57 | 0.1 |
| Missing | 0 | |

| **Non surgical interventions** | N | % |
|---|---|---|
| No | 41204 | 98.0 |
| Yes | 823 | 2.0 |
| Missing | 0 | |

| **Non surgical interventions Days from admission** | |
|---|---|
| Mean | 11.6 |
| SD | 11.1 |
| Median | 8 |
| Q1−Q3 | 4−15 |
| Missing | 24 |

| **Non surgical interventions** | N | % |
|---|---|---|
| Interventional endoscopy | 538 | 1.3 |
| Interventional radiology | 210 | 0.5 |
| Interventional cardiology | 147 | 0.3 |
| Interventional neuroradiology | 66 | 0.2 |
| Missing | 0 | |

**National report for general ICUs** - **Year 2018**
**Outcome indicators** - Adult patients evaluated in the GiViTI model

| **ICU outcome** | N | % |
|---|---|---|
| Dead | 7352 | 17.5 |
| Transferred to same hospital | 30540 | 72.7 |
| Transferred to other hospital | 3617 | 8.6 |
| Discharged home | 331 | 0.8 |
| Disch. terminally ill | 184 | 0.4 |
| Missing | 3 | |

| **Transferred to** (N=34157) | N | % |
|---|---|---|
| Ward | 27841 | 81.5 |
| Other ICU | 2495 | 7.3 |
| High dependency care unit | 2783 | 8.1 |
| Rehabilitation | 783 | 2.3 |
| Day hospital or Long-term care | 255 | 0.7 |
| Missing | 0 | |

| **Reason of transfer to Other ICU** (N=2594) | N | % |
|---|---|---|
| Specialist expertise | 1229 | 47.4 |
| Step-up care | 235 | 9.1 |
| Logistical/organizational reasons | 1103 | 42.5 |
| Step-down care | 27 | 1.0 |
| Missing | 0 | |

| **Transferred to Same hospital** (N=30540) | N | % |
|---|---|---|
| Ward | 26745 | 87.6 |
| Other ICU | 899 | 2.9 |
| High dependency care unit | 2605 | 8.5 |
| Rehabilitation | 174 | 0.6 |
| Day hospital or Long-term care | 117 | 0.4 |
| Missing | 0 | |

| **Transferred to Other hospital** (N=3617) | N | % |
|---|---|---|
| Ward | 1096 | 30.3 |
| Other ICU | 1596 | 44.1 |
| High dependency care unit | 178 | 4.9 |
| Rehabilitation | 609 | 16.8 |
| Day hospital or Long-term care | 138 | 3.8 |
| Missing | 0 | |

| **ICU mortality** | N | % |
|---|---|---|
| Alive | 34488 | 82.1 |
| Dead | 7536 | 17.9 |
| Missing | 3 | |

| **Timing of ICU mortality** (N=7536) | N | % |
|---|---|---|
| Daytime (08:00AM - 07:59PM) | 5179 | 68.7 |
| Nighttime (08:00PM - 07:59AM) | 2356 | 31.3 |
| Weekdays (Monday - Friday) | 5751 | 76.3 |
| Weekend (Saturday - Sunday) | 1785 | 23.7 |
| Missing | 1 | |

| **C.A.M. activation** (N=7536) | N | % |
|---|---|---|
| Yes, with organ donation | 427 | 5.8 |
| Yes, without organ donation | 429 | 5.8 |
| No, with organ donation | 11 | 0.1 |
| No, without organ donation | 6485 | 88.2 |
| Missing | 184 | |

| **Tissue removal** (N=7536) | N | % |
|---|---|---|
| Yes, with C.A.M. activation | 267 | 3.5 |
| Yes, without C.A.M. activation | 394 | 5.2 |
| No | 6875 | 91.2 |
| Missing | 0 | |

| **Hospital mortality** | N | % |
|---|---|---|
| Dead | 9851 | 23.4 |
| Transf. to other acute-care hospital | 4212 | 10.0 |
| Transf. to other type of hosp. stay | 6204 | 14.8 |
| Nursing home | 747 | 1.8 |
| Voluntary discharge | 288 | 0.7 |
| Discharged home | 20725 | 49.3 |
| Missing | 0 | |

| **To other type of H stay** (N=6204) | N | % |
|---|---|---|
| Rehabilitation in the same institute | 1082 | 17.4 |
| Rehabilitation in other institute | 3167 | 51.0 |
| DH/long-term care, same inst. | 732 | 11.8 |
| DH/long-term care, other inst. | 1223 | 19.7 |
| Missing | 0 | |

| **Disch. terminally ill** (N=32176) | N | % |
|---|---|---|
| Yes | 476 | 1.5 |
| No | 31700 | 98.5 |
| Missing | 0 | |

| **Hospital mortality** | N | % |
|---|---|---|
| Alive | 31700 | 75.4 |
| Dead | 10327 | 24.6 |
| Missing | 0 | |

| **Timing of hosp. mortality** (N=10327) | N | % |
|---|---|---|
| In ICU | 7533 | 73.0 |
| Within 24 hours after ICU | 185 | 1.8 |
| 24-47 hours after ICU | 167 | 1.6 |
| 48-71 hours after ICU | 157 | 1.5 |
| 72-95 hours after ICU | 156 | 1.5 |
| After 95 hours after ICU | 2126 | 20.6 |
| Missing | 3 | |

| **Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU** (N=2794) | |
|---|---|
| Mean | 16.2 |
| SD | 20.0 |
| Median | 10 |
| Q1−Q3 | 4−21 |
| Missing | 3 |

**National report for general ICUs** - **Year 2018**
**Outcome indicators** - Adult patients evaluated in the GiViTI model

| **Last hospital mortality** | N | % |
|---|---|---|
| Alive | 31408 | 74.7 |
| Dead | 10619 | 25.3 |
| Missing | 0 | |

| **ICU stay (days)** | |
|---|---|
| Mean | 5.9 |
| SD | 9.7 |
| Median | 2 |
| Q1−Q3 | 1−7 |
| Missing | 2 |

| **ICU stay (days)** **Alive** (N=34488) | |
|---|---|
| Mean | 5.6 |
| SD | 9.2 |
| Median | 2 |
| Q1−Q3 | 1−6 |
| Missing | 0 |

| **ICU stay (days)** **Dead** (N=7536) | |
|---|---|
| Mean | 7.3 |
| SD | 11.3 |
| Median | 3 |
| Q1−Q3 | 1−9 |
| Missing | 0 |

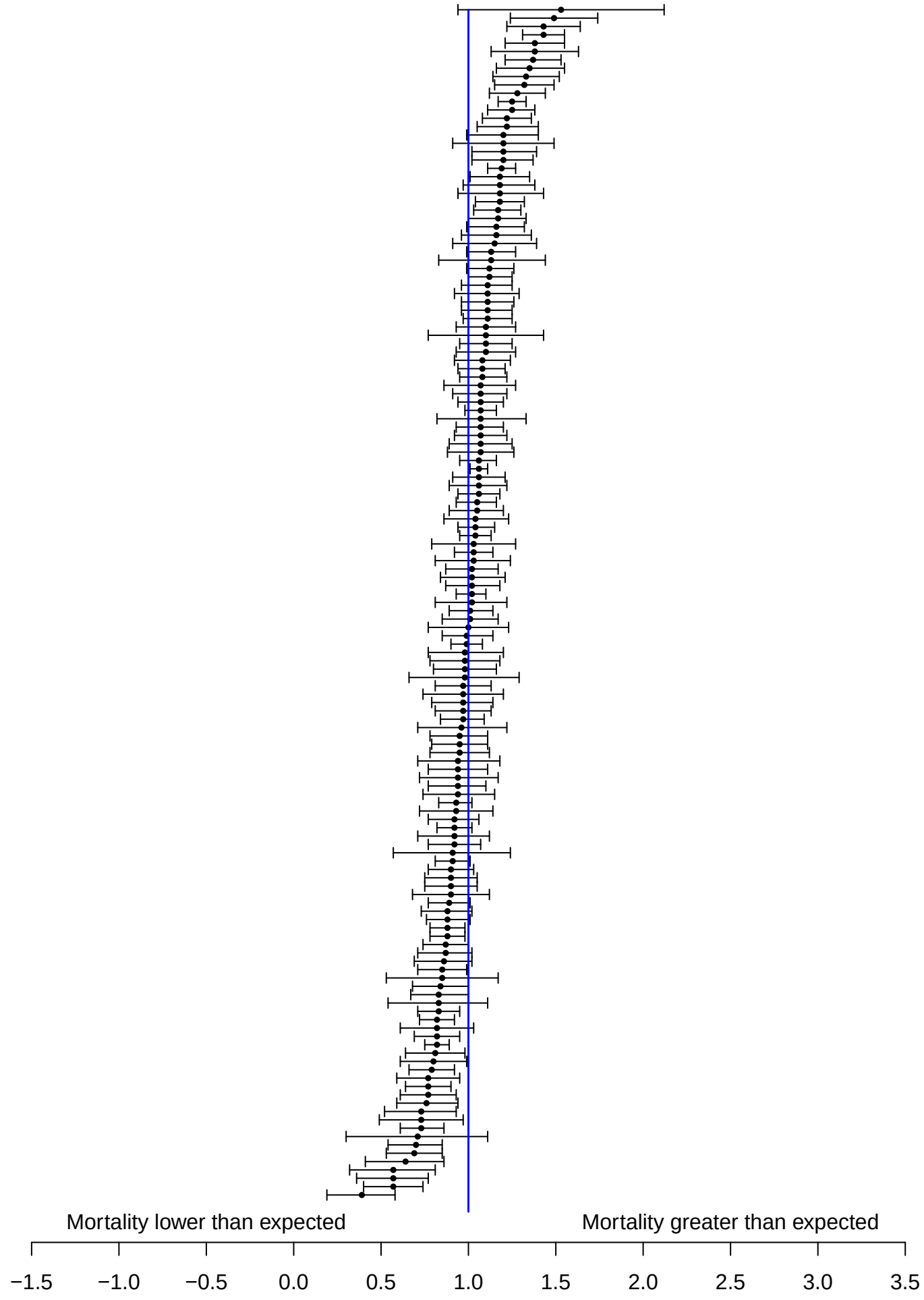
| **Stay after ICU (days)** **Alive** (N=34488) | |
|---|---|
| Mean | 12.9 |
| SD | 17.2 |
| Median | 9 |
| Q1−Q3 | 4−16 |
| Missing | 13 |

| **Hospital stay (days)** | |
|---|---|
| Mean | 19.4 |
| SD | 21.3 |
| Median | 13 |
| Q1−Q3 | 7−25 |
| Missing | 5 |

| **Hospital stay (days)** **Alive** (N=31700) | |
|---|---|
| Mean | 20.7 |
| SD | 21.5 |
| Median | 15 |
| Q1−Q3 | 8−26 |
| Missing | 3 |

| **Hospital stay (days)** **Dead** (N=10327) | |
|---|---|
| Mean | 15.5 |
| SD | 20.1 |
| Median | 9 |
| Q1−Q3 | 3−21 |
| Missing | 2 |

**National report for general ICUs** - **Year 2018**
**Analysis of hospital mortality** - Adult patients evaluated in the GiViTI model
Predictive model: **GiViTI 2018**



**National report for general ICUs** - **Year 2018**
**Characteristics on admission** - Adult non surgical patients evaluated in the GiViTI model

**Patients** (N): 21951

| **Sex** | N | % |
|---|---|---|
| Male | 13176 | 60.0 |
| Female | 8775 | 40.0 |
| Missing | 0 | |

| **Age (years)** | N | % |
|---|---|---|
| 17-45 | 2566 | 11.7 |
| 46-65 | 5966 | 27.2 |
| 66-75 | 5489 | 25.0 |
| >75 | 7930 | 36.1 |
| Missing | 0 | |
| Mean | 66.6 | |
| SD | 16.3 | |
| Median | 70 | |
| Q1−Q3 | 57−79 | |
| Min−Max | 17−103 | |

| **Body mass Index (BMI)** | N | % |
|---|---|---|
| Underweight | 1231 | 5.6 |
| Normal | 9564 | 43.6 |
| Overweight | 6971 | 31.8 |
| Obese | 4185 | 19.1 |
| Missing | 0 | |

| **Pregnancy status** **Females** (N=8775) | N | % |
|---|---|---|
| Not fertile | 4832 | 55.1 |
| Not pregnant/Unknown | 3833 | 43.7 |
| Currently pregnant | 37 | 0.4 |
| Post partum | 71 | 0.8 |
| Missing | 2 | |

| **Comorbidities** | N | % |
|---|---|---|
| No | 3018 | 13.7 |
| Yes | 18933 | 86.3 |
| Missing | 0 | |

| **Comorbidities (top 10)** | N | % |
|---|---|---|
| Hypertension | 11298 | 51.5 |
| Arrhythmia | 4033 | 18.4 |
| Moderate COPD | 3255 | 14.8 |
| Diabetes Type II without insulin tr. | 3171 | 14.4 |
| Cerebrovascular disease | 2831 | 12.9 |
| Myocardial infarction | 2803 | 12.8 |
| NYHA class II-III | 2656 | 12.1 |
| Moderate or severe renal disease | 2349 | 10.7 |
| Antiplatelet therapy | 2068 | 9.4 |
| Peripheral vascular disease | 1977 | 9.0 |
| Missing | 0 | |

| **Stay before ICU (days)** | |
|---|---|
| Mean | 3.8 |
| SD | 10.7 |
| Median | 0 |
| Q1−Q3 | 0−2 |
| Missing | 0 |

| **Source of admission** | N | % |
|---|---|---|
| Same hospital | 17510 | 79.8 |
| Other hospital | 4221 | 19.2 |
| Long-term chronic care hospital | 220 | 1.0 |
| Directly from the community | 0 | 0.0 |
| Missing | 0 | |

| **Ward of admission** **Hospital** (N=21731) | N | % |
|---|---|---|
| Medical ward | 5152 | 23.7 |
| Surgical ward | 1273 | 5.9 |
| Emergency room | 12343 | 56.8 |
| Other ICU | 2114 | 9.7 |
| High dependency care unit | 849 | 3.9 |
| Missing | 0 | |

| **Reason for transfer from** **Other ICU** (N=2114) | N | % |
|---|---|---|
| Specialist expertise | 535 | 25.3 |
| Step-up care | 330 | 15.6 |
| Logistical/organizational reasons | 1249 | 59.1 |
| Step-down care | 0 | 0.0 |
| Missing | 0 | |

| **Ward of admission** **Same hospital** (N=17510) | N | % |
|---|---|---|
| Medical ward | 4519 | 25.8 |
| Surgical ward | 1184 | 6.8 |
| Emergency room | 10530 | 60.1 |
| Other ICU | 519 | 3.0 |
| High dependency care unit | 758 | 4.3 |
| Missing | 0 | |

| **Ward of admission** **Other hospital** (N=4221) | N | % |
|---|---|---|
| Medical ward | 633 | 15.0 |
| Surgical ward | 89 | 2.1 |
| Emergency room | 1813 | 43.0 |
| Other ICU | 1595 | 37.8 |
| High dependency care unit | 91 | 2.2 |
| Missing | 0 | |

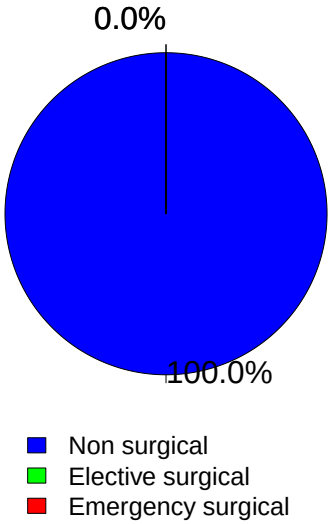
| **Scheduled admission** | N | % |
|---|---|---|
| No | 21820 | 99.4 |
| Yes | 131 | 0.6 |
| Missing | 0 | |

**National report for general ICUs** - **Year 2018**
**Characteristics on admission** - Adult non surgical patients evaluated in the GiViTI model

| Trauma | N | % |
|---|---|---|
| No | 19253 | 87.7 |
| Yes | 2698 | 12.3 |
| Multiple trauma | 1223 | 5.6 |
| Missing | 0 | |

| Surgical status | N | % |
|---|---|---|
| Non surgical | 21951 | 100.0 |
| Elective surgical | 0 | 0.0 |
| Emergency surgical | 0 | 0.0 |
| Missing | 0 | |

**Surgical status**




| Source of admission<br>**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)<br>**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<br>**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)<br>**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<br>**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 | 19027 | 86.7 |
| Elective | 335 | 1.5 |
| Emergency | 2589 | 11.8 |
| Missing | 0 | |

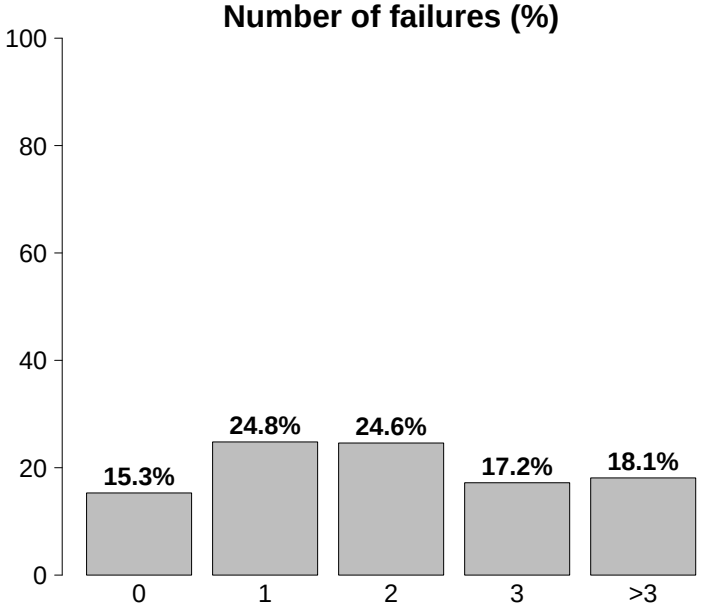
| Non surgical interventions<br>**Elective** (N=335) | N | % |
|---|---|---|
| Interventional endoscopy | 118 | 35.2 |
| Interventional cardiology | 84 | 25.1 |
| Interventional radiology | 74 | 22.1 |
| Interventional neuroradiology | 59 | 17.6 |
| Missing | 0 | |

| Non surgical interventions<br>**Emergency** (N=2589) | N | % |
|---|---|---|
| Interventional cardiology | 1136 | 43.9 |
| Interventional endoscopy | 584 | 22.6 |
| Interventional radiology | 554 | 21.4 |
| Interventional neuroradiology | 350 | 13.5 |
| Missing | 0 | |

**National report for general ICUs** - **Year 2018**
**Characteristics on admission** - Adult non surgical patients evaluated in the GiViTI model

| Reason for admission | N | % |
|---|---|---|
| Monitoring/Weaning | 4975 | 22.7 |
| Post surgical weaning | 0 | 0.0 |
| Surgical monitoring | 0 | 0.0 |
| Post interventional weaning | 140 | 0.6 |
| Interventional monitoring | 692 | 3.2 |
| Non surgical monitoring | 3946 | 18.1 |
| Missing | 197 | |
| Admission for procedures/treatments | 0 | 0.0 |
| Intensive Treatment | 16976 | 77.3 |
| Only ventilatory support | 9419 | 42.9 |
| Only cardiovascular support | 1062 | 4.8 |
| Ventilatory and cardiovascular support | 6495 | 29.6 |
| 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 | 3349 | 15.3 |
| Yes | 18602 | 84.7 |
| A: Respiratory failure | 15914 | 72.5 |
| B: Cardiovascular failure | 7557 | 34.4 |
| C: Neurological failure | 4874 | 22.2 |
| D: Hepatic failure | 257 | 1.2 |
| E: Renal failure | 8963 | 40.8 |
| F: Acute skin failure | 22 | 0.1 |
| G: Metabolic failure | 6804 | 31.0 |
| H: Coagulation failure | 342 | 1.6 |
| Missing | 0 | |

| Failures on admission (top 10) | N | % |
|---|---|---|
| A | 4176 | 19.0 |
| ABEG | 1792 | 8.2 |
| AC | 1642 | 7.5 |
| AE | 1320 | 6.0 |
| AB | 1162 | 5.3 |
| ABCEG | 936 | 4.3 |
| ABE | 860 | 3.9 |
| AEG | 778 | 3.5 |
| E | 699 | 3.2 |
| ABC | 486 | 2.2 |
| Missing | 0 | |

| Respiratory failure | N | % |
|---|---|---|
| None | 6037 | 27.5 |
| Only hypoxic failure | 5671 | 25.8 |
| Only hypercapnic failure | 966 | 4.4 |
| Hypoxic-hypercapnic failure | 2658 | 12.1 |
| Intubation for airway maint. | 6619 | 30.2 |
| Missing | 0 | |

| Cardiovascular failure | N | % |
|---|---|---|
| None | 14394 | 65.6 |
| Without shock | 1599 | 7.3 |
| Cardiogenic shock | 2112 | 9.6 |
| Septic shock | 1750 | 8.0 |
| Haemorrhagic/hypovolemic shock | 522 | 2.4 |
| Hypovolemic shock | 550 | 2.5 |
| Anaphylactic shock | 30 | 0.1 |
| Neurogenic shock | 211 | 1.0 |
| Other shock | 398 | 1.8 |
| Mixed shock | 385 | 1.8 |
| Missing | 0 | |

| Neurologic failure | N | % |
|---|---|---|
| None | 13749 | 73.8 |
| Cerebral coma | 2304 | 12.4 |
| Metabolic coma | 904 | 4.9 |
| Postanoxic coma | 1418 | 7.6 |
| Toxic coma | 248 | 1.3 |
| Missing or not evaluable | 3328 | |

| Renal failure (AKIN) | N | % |
|---|---|---|
| None | 12988 | 59.2 |
| Mild | 3888 | 17.7 |
| Moderate | 2115 | 9.6 |
| Severe | 2960 | 13.5 |
| Missing | 0 | |

| Metabolic failure | N | % |
|---|---|---|
| None | 15147 | 69.0 |
| pH <= 7.3, PaCO2 < 45 mmHg | 1737 | 7.9 |
| Base deficit >= 5 mmol/L, lactate >1.5x | 5067 | 23.1 |
| Missing | 0 | |

**National report for general ICUs - Year 2018**
**Characteristics on admission** - Adult non surgical patients evaluated in the GiViTI model

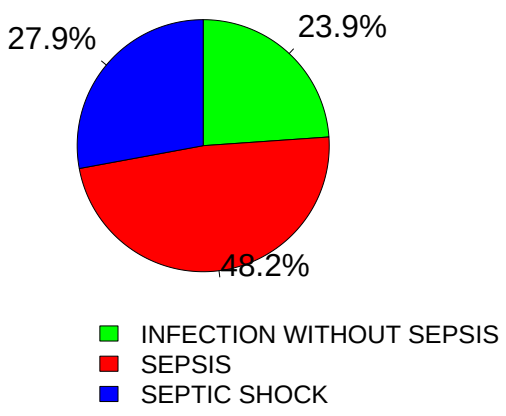
| Clinical conditions on admission | N | % |
|---|---|---|
| Respiratory | 5951 | 27.1 |
| Acute exacerbation of COPD | 1767 | 8.0 |
| Pleural effusion | 1242 | 5.7 |
| Aspiration pneumonia | 724 | 3.3 |
| Atelectasis | 622 | 2.8 |
| Severe ARDS | 416 | 1.9 |
| Cardiovascular | 5701 | 26.0 |
| Cardiac arrest | 1937 | 8.8 |
| Left heart failure with pulmonary edema | 1398 | 6.4 |
| Left heart failure without pulm. edema | 921 | 4.2 |
| Acute severe arrhythmia: tachycardias | 659 | 3.0 |
| Acute ischaemia | 561 | 2.6 |
| Neurological | 4211 | 19.2 |
| Cerebral artery stroke | 995 | 4.5 |
| Spontaneous Intraparenchymal bleeding | 881 | 4.0 |
| Seizures | 846 | 3.9 |
| Metabolic/postanoxic encephalopathy | 636 | 2.9 |
| Spontaneous Subarachnoid haemorrhage | 374 | 1.7 |
| Gastrointestinal and hepatic | 1632 | 7.4 |
| Gastrointestinal bleeding: upper tract | 444 | 2.0 |
| Acute pancreatitis | 239 | 1.1 |
| Liver Dysfunction Syndrome | 164 | 0.7 |
| Ascites | 132 | 0.6 |
| Acute bile-duct disease | 130 | 0.6 |
| Trauma (anatomical districts) | 2698 | 12.3 |
| Head | 1339 | 6.1 |
| Chest | 1278 | 5.8 |
| Pelvis/bone/joint & muscle | 794 | 3.6 |
| Spine | 690 | 3.1 |
| Abdomen | 389 | 1.8 |
| Miscellaneous | 81 | 0.4 |
| Major vessels injury | 58 | 0.3 |
| Other | 4321 | 19.7 |
| Metabolic disorder | 1665 | 7.6 |
| Acute intoxication | 965 | 4.4 |
| Other disease | 862 | 3.9 |
| Nephrourologic disease | 670 | 3.1 |
| Coagulation disorder | 342 | 1.6 |
| Post transplantation | 99 | 0.5 |
| Renal transplantation | 43 | 0.2 |
| Bone marrow transplantation | 22 | 0.1 |
| Infections | 7658 | 34.9 |
| Pneumonia | 4053 | 18.5 |
| NON-surgical urinary tract infection | 783 | 3.6 |
| L.R.T.I. other than pneumonia | 636 | 2.9 |
| Primary bacteraemia of unknown origin | 450 | 2.1 |
| Clinical sepsis | 364 | 1.7 |
| NON-surgical CNS infection | 314 | 1.4 |
| Cholecystitis/cholangitis | 246 | 1.1 |
| NON-surgical skin/soft tissue infection | 241 | 1.1 |
| Gastroenteritis | 170 | 0.8 |
| Catheter-related bacteremia (CR-BSI) | 124 | 0.6 |
| Missing | 0 | |

| Trauma (anatomical districts) | N | % |
|---|---|---|
| Head | 1339 | 6.1 |
| Traumatic subarachnoid haemorrhage | 545 | 2.5 |
| Cerebral contusion/laceration | 473 | 2.2 |
| Traumatic Subdural haematoma | 451 | 2.1 |
| Maxillofacial fracture | 435 | 2.0 |
| Skull fracture | 359 | 1.6 |
| Spine | 690 | 3.1 |
| Vertebral fracture, without deficit | 621 | 2.8 |
| Cervical injury, incomplete deficit | 29 | 0.1 |
| Tetraplegia | 27 | 0.1 |
| Chest | 1278 | 5.8 |
| Other injuries of the chest | 731 | 3.3 |
| Traum. haemothorax/pneumothorax | 455 | 2.1 |
| Severe lung contusion/laceration | 326 | 1.5 |
| Abdomen | 389 | 1.8 |
| Minor injuries of the abdomen | 137 | 0.6 |
| Spleen: Moderate-Severe laceration | 124 | 0.6 |
| Liver: Moderate-Severe laceration | 108 | 0.5 |
| Pelvis/bone/joint & muscle | 794 | 3.6 |
| Long bone fracture | 490 | 2.2 |
| Multiple fracture of the pelvis | 381 | 1.7 |
| Very severe or open fracture of the pelvis | 37 | 0.2 |
| Major vessels injury | 58 | 0.3 |
| Neck vessels: dissection/transection | 21 | 0.1 |
| Proximal limbs vessels: transection | 13 | 0.1 |
| Aorta: rupture/dissection | 11 | 0.1 |
| Miscellaneous | 81 | 0.4 |
| Burns (>30% BSA) | 51 | 0.2 |
| Inhalation injury | 37 | 0.2 |
| Missing | 0 | |

| Infection severity on admission | N | % |
|---|---|---|
| None | 14293 | 66.4 |
| INFECTION WITHOUT SEPSIS | 1728 | 8.0 |
| SEPSIS | 3481 | 16.2 |
| SEPTIC SHOCK | 2014 | 9.4 |
| Missing | 435 | |

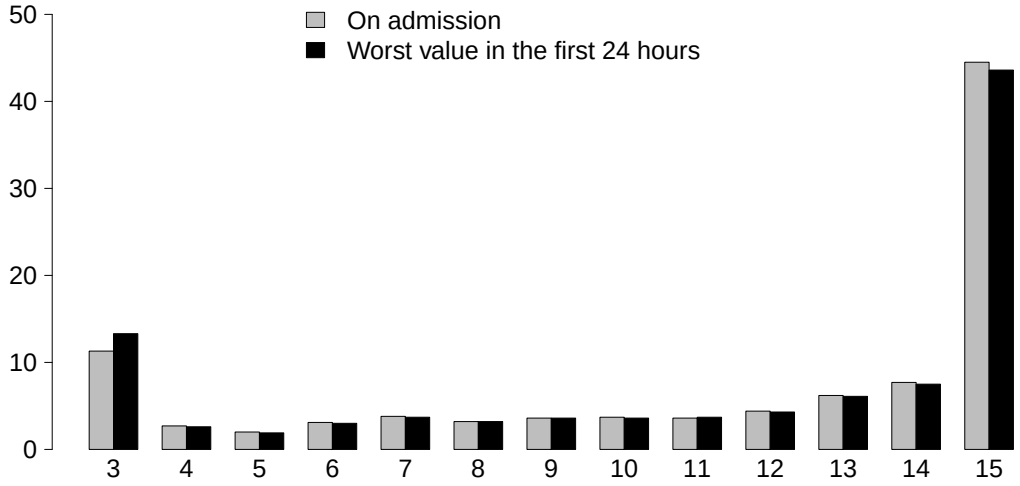
**Infection severity on admission**

Patients infected (N=7223)



**National report for general ICUs** - **Year 2018**
**Severity scores** - Adult non surgical patients evaluated in the GiViTI model

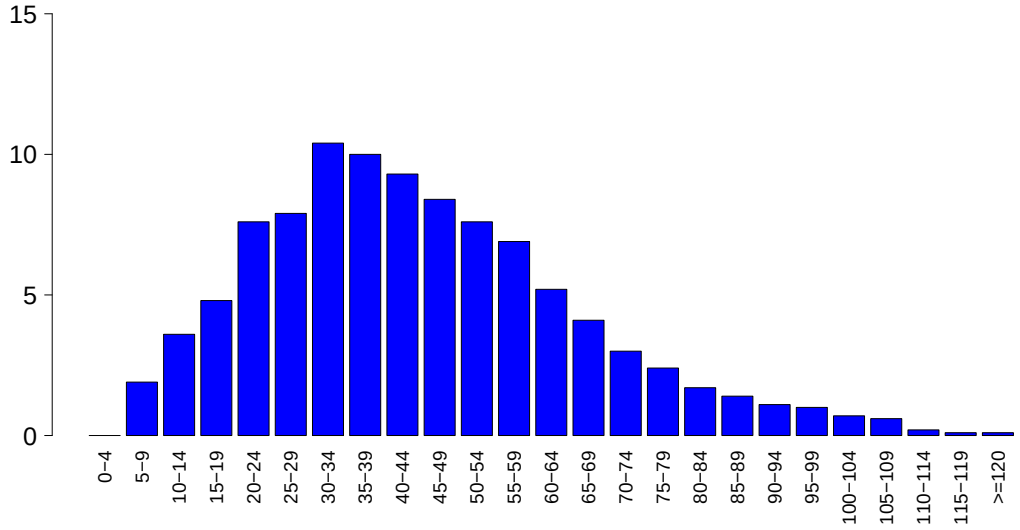
## Glasgow Coma Scale (%)




| GCS (admission) | |
|---|---|
| Median | 14 |
| Q1−Q3 | 8−15 |
| Not evaluable | 3328 |
| Missing | 0 |

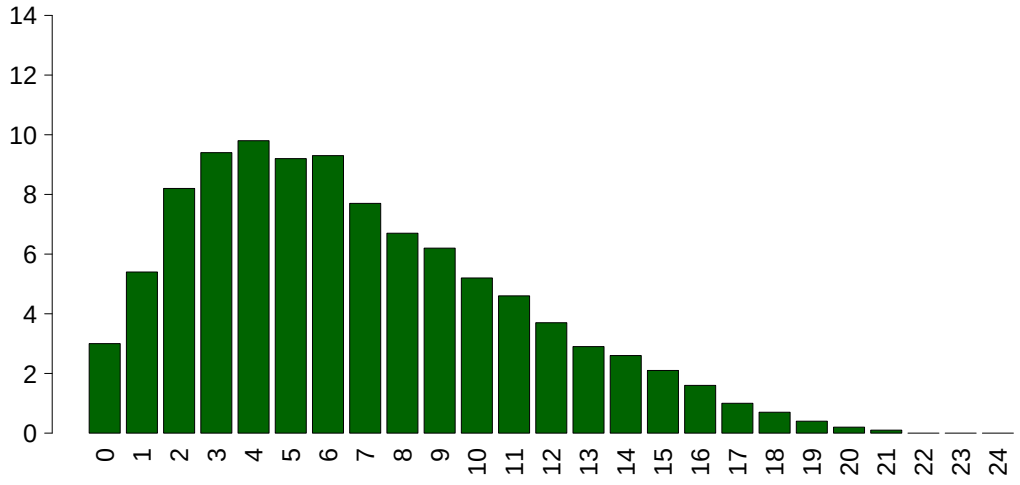
| GCS (first 24 hours) | |
|---|---|
| Median | 14 |
| Q1−Q3 | 8−15 |
| Not evaluable | 3455 |
| Missing | 0 |

## SAPS II (%)




| SAPSII | |
|---|---|
| Mean | 44.3 |
| SD | 21.2 |
| Median | 41 |
| Q1−Q3 | 29−57 |
| Not evaluable | 3455 |
| Missing | 0 |

## SOFA (%)




| SOFA | |
|---|---|
| Mean | 6.8 |
| SD | 4.3 |
| Median | 6 |
| Q1−Q3 | 3−10 |
| Not evaluable | 3455 |
| Missing | 0 |

**National report for general ICUs** - **Year 2018**
**Characteristics during the stay** - Adult non surgical patients evaluated in the GiViTI model

| **Complications during the stay** | N | % |
|---|---|---|
| No | 13684 | 62.3 |
| Yes | 8266 | 37.7 |
| Missing | 1 | |

| **Failures during the stay** | N | % |
|---|---|---|
| No | 18320 | 83.5 |
| Yes | 3631 | 16.5 |
| A: Respiratory failure | 1749 | 8.0 |
| B: Cardiovascular failure | 1608 | 7.3 |
| C: Neurological failure | 296 | 1.3 |
| D: Hepatic failure | 79 | 0.4 |
| E: Renal failure (AKIN) | 888 | 4.0 |
| F: Acute skin failure | 10 | 0.0 |
| G: Metabolic failure | 270 | 1.2 |
| H: Coagulation failure | 138 | 0.6 |
| Missing | 0 | |

| **Failures during the stay (top 10)** | N | % |
|---|---|---|
| A | 1023 | 4.7 |
| B | 856 | 3.9 |
| E | 372 | 1.7 |
| AB | 344 | 1.6 |
| G | 166 | 0.8 |
| BE | 131 | 0.6 |
| C | 114 | 0.5 |
| AE | 105 | 0.5 |
| ABE | 87 | 0.4 |
| AC | 44 | 0.2 |
| Missing | 0 | |

| **Respiratory failure occured** | N | % |
|---|---|---|
| None | 20201 | 92.0 |
| Intubation for airway maint. | 449 | 2.0 |
| Hypoxic failure | 1251 | 5.7 |
| Hypercapnic failure | 374 | 1.7 |
| Missing | 1 | |

| **Cardiovascular failure occured** | N | % |
|---|---|---|
| None | 20342 | 92.7 |
| Cardiogenic shock | 568 | 2.6 |
| Hypovolemic shock | 172 | 0.8 |
| Haemorrhagic/hypovolemic shock | 105 | 0.5 |
| Septic shock | 536 | 2.4 |
| Anaphylactic shock | 2 | 0.0 |
| Neurogenic shock | 147 | 0.7 |
| Other shock | 152 | 0.7 |
| Missing | 1 | |

| **Neurological failure occured** | N | % |
|---|---|---|
| None | 21654 | 98.7 |
| Cerebral coma | 166 | 0.8 |
| Metabolic coma | 76 | 0.3 |
| Postanoxic coma | 57 | 0.3 |
| Missing | 1 | |

| **Renal failure occured (AKIN)** | N | % |
|---|---|---|
| None | 21062 | 96.0 |
| Mild | 99 | 0.5 |
| Moderate | 150 | 0.7 |
| Severe | 639 | 2.9 |
| Missing | 1 | |

| **Complications during the stay** | N | % |
|---|---|---|
| Respiratory | 1440 | 6.6 |
| Pleural effusion | 534 | 2.4 |
| Atelectasis | 299 | 1.4 |
| Severe ARDS | 243 | 1.1 |
| Pneumothorax/Pneumomediastinum | 178 | 0.8 |
| Upper resp. tract disease | 105 | 0.5 |
| Cardiovascular | 2368 | 10.8 |
| Cardiac arrest | 1006 | 4.6 |
| Acute severe arrhythmia: tachycardias | 751 | 3.4 |
| Acute severe arrhythmia: bradycardias | 189 | 0.9 |
| Pulmonary edema | 178 | 0.8 |
| Left heart failure w/o pulm. edema | 163 | 0.7 |
| Neurological | 1873 | 8.5 |
| Drowsiness/agitation/delirium | 940 | 4.3 |
| Seizures | 357 | 1.6 |
| Brain edema | 283 | 1.3 |
| Intracranial hypertension | 248 | 1.1 |
| Non-surgical intracranial bleeding | 97 | 0.4 |
| Gastrointestinal and hepatic | 518 | 2.4 |
| Gastrointestinal bleeding: upper tract | 120 | 0.5 |
| Gastrointestinal bleeding: lower tract | 86 | 0.4 |
| Paralytic Ileus | 77 | 0.4 |
| Liver Dysfunction Syndrome | 66 | 0.3 |
| Bowel ischaemia | 58 | 0.3 |
| Other | 719 | 3.3 |
| Metabolic disorder | 270 | 1.2 |
| Other disease | 163 | 0.7 |
| Nephrourologic disease | 152 | 0.7 |
| Category/Stage II: Partial Thickness Skin Loss | 63 | 0.3 |
| Other skin and/or soft tissue pathology | 39 | 0.2 |
| Category/Stage I: Nonblanchable Erythema | 24 | 0.1 |
| Category/Stage III: Full Thickness Skin Loss | 24 | 0.1 |
| Infections | 2279 | 10.4 |
| Pneumonia | 861 | 3.9 |
| L.R.T.I. other than pneumonia | 565 | 2.6 |
| NON-surgical urinary tract infection | 383 | 1.7 |
| Catheter-related bacteremia (CR-BSI) | 283 | 1.3 |
| Primary bacteraemia of unknown origin | 252 | 1.1 |
| Upper respiratory tract infection | 83 | 0.4 |
| Clinical sepsis | 66 | 0.3 |
| NON-surgical skin/soft tissue infection | 48 | 0.2 |
| F.U.O. fever of unknown origin | 42 | 0.2 |
| Gastroenteritis | 33 | 0.2 |
| Missing | 1 | |

**National report for general ICUs** - **Year 2018**
**Characteristics during the stay** - Adult non surgical patients evaluated in the GiViTI model

| **Infections** | N | % |
|---|---|---|
| None | 12835 | 58.5 |
| Only on admission | 6836 | 31.1 |
| On admission and during ICU stay | 822 | 3.7 |
| Only during ICU stay | 1457 | 6.6 |
| Missing | 1 | |

| **Maximum severity of infection** | N | % |
|---|---|---|
| None | 12835 | 59.8 |
| INFECTION WITHOUT SEPSIS | 1813 | 8.4 |
| SEPSIS | 4410 | 20.5 |
| SEPTIC SHOCK | 2414 | 11.2 |
| Missing | 479 | |

| **Severity evolution** | | **During the stay** | | | | |
|---|---|---|---|---|---|---|
| | N (R %) | None | INFECTION WITHOUT SEPSIS | SEPSIS | SEPTIC SHOCK | TOT |
| **Admission** | None | 12835 (90.3%) | 482 (3.4%) | 765 (5.4%) | 138 (1.0%) | 14220 |
| | INFECTION WITHOUT SEPSIS | - | 1322 (76.5%) | 370 (21.4%) | 36 (2.1%) | 1728 |
| | SEPSIS | - | - | 3258 (93.6%) | 223 (6.4%) | 3481 |
| | SEPTIC SHOCK | - | - | - | 2013 (100.0%) | 2014 |
| | TOT | 12835 | 1805 | 4393 | 2410 | 21443 |

| **Ventil. Associat. Pneumonia (VAP)** | N | % |
|---|---|---|
| No | 21215 | 96.6 |
| Yes | 736 | 3.4 |
| Missing | 0 | |

| **Catheter Bacteraemia (CR-BSI)** | N | % |
|---|---|---|
| No | 21667 | 98.7 |
| Yes | 283 | 1.3 |
| Missing | 1 | |

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

| | |
|---|---|
| Estimate | 8.3 |
| CI (95%) | 7.7−8.9 |

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

| | |
|---|---|
| Estimate | 2.1 |
| CI (95%) | 1.8−2.3 |

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

| | |
|---|---|
| Estimate | 6.6% |
| CI (95%) | 6.1−7.1 |

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

| | |
|---|---|
| Estimate | 2.5% |
| CI (95%) | 2.2−2.8 |

**National report for general ICUs** - **Year 2018**

**Process indicators** - Adult non surgical 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 |
| **Procedures (antibiotics excluded)** | 21140 | 96.3 | | | | | | | | | | |
| Invasive ventilation | 14523 | 66.2 | 8684 | 39.6 | 4376 | 19.9 | 3 | 1–8 | 0 | 0 | 0–0 | 0 |
| Non invasive ventilation | 5059 | 23.0 | 1333 | 6.1 | 1052 | 4.8 | 2 | 1–4 | 0 | 0 | 0–2 | 0 |
| Tracheostomy | 2918 | 13.3 | 691 | 3.1 | 2385 | 10.9 | 11 | 6–20 | 0 | 8 | 4–12 | 0 |
| iNO (inhaled nitric oxide) | 75 | 0.3 | 2 | 0 | 13 | 0.1 | 2 | 1–4 | 0 | 1 | 0–2 | 0 |
| Central Venous Catheter | 16099 | 73.3 | 5195 | 23.7 | 12116 | 55.2 | 5 | 2–11 | 2 | 0 | 0–0 | 0 |
| PICC | 545 | 2.5 | 186 | 0.8 | 439 | 2 | 4 | 2–9 | 0 | 7 | 1–17 | 0 |
| Arterial Catheter | 17961 | 81.8 | 5235 | 23.8 | 6120 | 27.9 | 4 | 2–9 | 1 | 0 | 0–0 | 0 |
| Vasoactive drugs | 9175 | 41.8 | 3185 | 14.5 | 2505 | 11.4 | 2 | 1–5 | 1 | 0 | 0–0 | 0 |
| Antiarrhythmics | 2056 | 9.4 | 541 | 2.5 | 1068 | 4.9 | 3 | 1–8 | 0 | 0 | 0–2 | 0 |
| IABP | 218 | 1.0 | 166 | 0.8 | 55 | 0.3 | 2 | 1–3 | 0 | 0 | 0–0 | 0 |
| Invasive monitoring of C.O. | 858 | 3.9 | 64 | 0.3 | 223 | 1 | 4 | 2–8 | 0 | 0 | 0–1 | 0 |
| Continous monitoring of ScVO2 | 57 | 0.3 | 9 | 0 | 16 | 0.1 | 5 | 3–9 | 0 | 0 | 0–1 | 0 |
| Temporary pacing | 151 | 0.7 | 76 | 0.3 | 66 | 0.3 | 1 | 1–3 | 0 | 0 | 0–1 | 0 |
| Ventricular assistance | 3 | 0.0 | 3 | 0 | 2 | 0 | 0 | 0–0 | 0 | | | |
| DC-shock | 653 | 3.0 | | | | | | | | 0 | 0–1 | 0 |
| CPR | 1086 | 4.9 | | | | | | | | 0 | 0–0 | 0 |
| Massive blood transfusion | 197 | 0.9 | | | | | | | | 0 | 0–0 | 0 |
| ICP monitoring without CSF drainage | 129 | 0.6 | 29 | 0.1 | 19 | 0.1 | 7 | 4–10 | 0 | 0 | 0–1 | 0 |
| ICP monitoring with CSF drainage | 41 | 0.2 | 15 | 0.1 | 21 | 0.1 | 8 | 4–17 | 0 | 1 | 0–2 | 0 |
| External ventricular drainage without ICP | 38 | 0.2 | 22 | 0.1 | 20 | 0.1 | 10 | 4–20 | 0 | 2 | 0–10 | 0 |
| Haemofiltration | 1219 | 5.6 | 127 | 0.6 | 327 | 1.5 | 3 | 2–7 | 1 | 0 | 0–2 | 0 |
| Haemodialysis | 727 | 3.3 | 138 | 0.6 | 275 | 1.3 | 3 | 1–7 | 0 | 0 | 0–3 | 0 |
| ECMO | 121 | 0.6 | 55 | 0.3 | 53 | 0.2 | 7 | 1–14 | 0 | 1 | 1–5 | 0 |
| Hepatic clearance techniques | 3 | 0.0 | | | | | | | | | | |
| Clearance techniques during sepsis | 159 | 0.7 | 8 | 0 | 22 | 0.1 | 3 | 1–4 | 0 | 1 | 0–1 | 0 |
| IAP (intra-abdominal pressure) | 206 | 0.9 | | | | | | | | | | |
| Hypothermia | 342 | 1.6 | 69 | 0.3 | 24 | 0.1 | 1 | 1–2 | 0 | 0 | 0–0 | 0 |
| Enteral nutrition | 9663 | 44.0 | 1684 | 7.7 | 6191 | 28.2 | 7 | 3–14 | 0 | 1 | 0–2 | 0 |
| Parenteral nutrition | 3606 | 16.4 | 451 | 2.1 | 1750 | 8 | 5 | 2–9 | 1 | 1 | 0–2 | 0 |
| SDD (Topical, Topical and systemic) | 168 | 0.8 | | | | | | | | | | |
| Patient restraint | 707 | 3.2 | | | | | | | | | | |
| Peridural catheter | 84 | 0.4 | 16 | 0.1 | 51 | 0.2 | 4 | 2–6 | 0 | 1 | 0–2 | 0 |
| Electrical cardioversion | 178 | 0.8 | | | | | | | | 1 | 0–3 | 0 |
| Vacuum therapy | 27 | 0.1 | | | | | | | | | | |
| **Antibiotics** | 12803 | 58.3 | | | | | | | | | | |
| Antibiotic prophylaxis | 3982 | 18.1 | 1226 | 5.6 | 1958 | 8.9 | 3 | 1–6 | 0 | 0 | 0–0 | 0 |
| Empirical antibiotic therapy | 5542 | 25.2 | 2244 | 10.2 | 2086 | 9.5 | 3 | 2–5 | 0 | 0 | 0–0 | 0 |
| Empirical antibiotic therapy in unconfirmed diagnosis | 1980 | 9.0 | 764 | 3.5 | 932 | 4.2 | 4 | 2–7 | 0 | 0 | 0–0 | 0 |
| Targeted antibiotic therapy | 4484 | 20.4 | 871 | 4 | 2790 | 12.7 | 7 | 3–11 | 0 | 3 | 2–6 | 0 |

**National report for general ICUs** - **Year 2018**
**Process indicators** - Adult non surgical patients evaluated in the GiViTI model

| **Invasive ventilation** (N=14523) | N | % | Length (days) Mean | SD | Median | Q1-Q3 | Missing |
|---|---|---|---|---|---|---|---|
| Due to pulmonary failure | 7407 | 45.9 | 7.6 | 10.8 | 4 | 1−9 | 0 |
| For airway mainteinance | 6439 | 39.9 | 6.0 | 9.1 | 3 | 1−7 | 0 |
| In weaning | 338 | 2.1 | 0.5 | 0.5 | 0 | 0−1 | 0 |
| Not evaluable | 1965 | 12.2 | 6.7 | 8.9 | 3 | 1−10 | 1629 |
| Reintubation within 48 hours | 309 | 1.9 | 7.2 | 8.9 | 4 | 2−9 | 3 |

| **Non invasive ventilation** (N=5059) | N | % |
|---|---|---|
| Non invasive ventilation only | 2791 | 55.2 |
| Non invasive ventilation failed | 1024 | 20.2 |
| For weaning | 1093 | 21.6 |
| Other | 151 | 3.0 |
| Missing | 0 | |

| **Tracheostomy not present on admission** (N=2227) | N | % |
|---|---|---|
| Surgical | 440 | 19.8 |
| Percutwist | 258 | 11.6 |
| Ciaglia | 262 | 11.8 |
| Monodil. Ciaglia | 800 | 35.9 |
| Fantoni | 87 | 3.9 |
| Griggs | 255 | 11.5 |
| Other Kind | 85 | 3.8 |
| Unknown | 40 | 1.8 |
| Missing | 0 | |

| **Tracheostomy - Days after the beginning of inv. vent. Not present on admission** (N=2211) | |
|---|---|
| Mean | 8.7 |
| SD | 6.3 |
| Median | 8 |
| Q1−Q3 | 4−12 |
| Missing | 2 |

| **Invasive monitoring of C.O.** (N=858) | N | % |
|---|---|---|
| Swan Ganz | 178 | 20.7 |
| PICCO | 548 | 63.9 |
| LIDCO | 0 | 0.0 |
| Vigileo-PRAM | 90 | 10.5 |
| Other | 42 | 4.9 |
| Missing | 0 | |

| **SDD** (N=168) | N | % |
|---|---|---|
| Topical | 162 | 96.4 |
| Topical and systemic | 6 | 3.6 |
| Missing | 0 | |

| **Antibiotic therapy Pt. infected in ICU only** (N=1457) | N | % |
|---|---|---|
| Only empirical | 262 | 21.6 |
| Only targeted | 434 | 35.8 |
| Targeted after empirical | 401 | 33.1 |
| Other | 116 | 9.6 |
| Missing | 244 | |

| **Surgical interventions** | N | % |
|---|---|---|
| No | 21021 | 95.8 |
| Yes | 930 | 4.2 |
| Missing | 0 | |

| **Number of surgical interventions** | N | % |
|---|---|---|
| 0 | 21021 | 95.8 |
| 1 | 781 | 3.6 |
| 2 | 114 | 0.5 |
| 3 | 23 | 0.1 |
| >3 | 12 | 0.1 |
| Missing | 0 | |

| **Surgical interventions Days from admission** | |
|---|---|
| Mean | 9.6 |
| SD | 11.6 |
| Median | 6 |
| Q1−Q3 | 3−12 |
| Missing | 12 |

| **Surgical interventions (top 10)** | N | % |
|---|---|---|
| Orthopaedic surgery | 257 | 1.2 |
| Gastrointestinal surgery | 192 | 0.9 |
| ENT surgery | 176 | 0.8 |
| Neurosurgery | 123 | 0.6 |
| Thoracic surgery | 84 | 0.4 |
| Organ donation | 53 | 0.2 |
| Maxillo-Facial surgery | 46 | 0.2 |
| Nephro/Urological surgery | 39 | 0.2 |
| Other surgery | 35 | 0.2 |
| Peripheral vascular surgery | 31 | 0.1 |
| Missing | 0 | |

| **Non surgical interventions** | N | % |
|---|---|---|
| No | 21387 | 97.4 |
| Yes | 564 | 2.6 |
| Missing | 0 | |

| **Non surgical interventions Days from admission** | |
|---|---|
| Mean | 11.1 |
| SD | 10.9 |
| Median | 7 |
| Q1−Q3 | 3−14 |
| Missing | 15 |

| **Non surgical interventions** | N | % |
|---|---|---|
| Interventional endoscopy | 380 | 1.7 |
| Interventional cardiology | 125 | 0.6 |
| Interventional radiology | 123 | 0.6 |
| Interventional neuroradiology | 25 | 0.1 |
| Missing | 0 | |

**National report for general ICUs** - **Year 2018**
**Outcome indicators** - Adult non surgical patients evaluated in the GiViTI model

| **ICU outcome** | N | % |
|---|---|---|
| Dead | 5563 | 25.3 |
| Transferred to same hospital | 13081 | 59.6 |
| Transferred to other hospital | 2856 | 13.0 |
| Discharged home | 284 | 1.3 |
| Disch. terminally ill | 164 | 0.7 |
| Missing | 3 | |

| **Transferred to** (N=15937) | N | % |
|---|---|---|
| Ward | 11016 | 69.1 |
| Other ICU | 2014 | 12.6 |
| High dependency care unit | 2076 | 13.0 |
| Rehabilitation | 604 | 3.8 |
| Day hospital or Long-term care | 227 | 1.4 |
| Missing | 0 | |

| **Reason of transfer to Other ICU** (N=2100) | N | % |
|---|---|---|
| Specialist expertise | 1035 | 49.3 |
| Step-up care | 211 | 10.0 |
| Logistical/organizational reasons | 831 | 39.6 |
| Step-down care | 23 | 1.1 |
| Missing | 0 | |

| **Transferred to Same hospital** (N=13081) | N | % |
|---|---|---|
| Ward | 10172 | 77.8 |
| Other ICU | 751 | 5.7 |
| High dependency care unit | 1933 | 14.8 |
| Rehabilitation | 126 | 1.0 |
| Day hospital or Long-term care | 99 | 0.8 |
| Missing | 0 | |

| **Transferred to Other hospital** (N=2856) | N | % |
|---|---|---|
| Ward | 844 | 29.6 |
| Other ICU | 1263 | 44.2 |
| High dependency care unit | 143 | 5.0 |
| Rehabilitation | 478 | 16.7 |
| Day hospital or Long-term care | 128 | 4.5 |
| Missing | 0 | |

| **ICU mortality** | N | % |
|---|---|---|
| Alive | 16221 | 73.9 |
| Dead | 5727 | 26.1 |
| Missing | 3 | |

| **Timing of ICU mortality** (N=5727) | N | % |
|---|---|---|
| Daytime (08:00AM - 07:59PM) | 3994 | 69.8 |
| Nighttime (08:00PM - 07:59AM) | 1732 | 30.2 |
| Weekdays (Monday - Friday) | 4358 | 76.1 |
| Weekend (Saturday - Sunday) | 1369 | 23.9 |
| Missing | 1 | |

| **C.A.M. activation** (N=5727) | N | % |
|---|---|---|
| Yes, with organ donation | 353 | 6.3 |
| Yes, without organ donation | 359 | 6.5 |
| No, with organ donation | 9 | 0.2 |
| No, without organ donation | 4842 | 87.0 |
| Missing | 164 | |

| **Tissue removal** (N=5727) | N | % |
|---|---|---|
| Yes, with C.A.M. activation | 208 | 3.6 |
| Yes, without C.A.M. activation | 297 | 5.2 |
| No | 5222 | 91.2 |
| Missing | 0 | |

| **Hospital mortality** | N | % |
|---|---|---|
| Dead | 6983 | 31.8 |
| Transf. to other acute-care hospital | 3108 | 14.2 |
| Transf. to other type of hosp. stay | 3675 | 16.7 |
| Nursing home | 411 | 1.9 |
| Voluntary discharge | 223 | 1.0 |
| Discharged home | 7551 | 34.4 |
| Missing | 0 | |

| **To other type of H stay** (N=3675) | N | % |
|---|---|---|
| Rehabilitation in the same institute | 597 | 16.2 |
| Rehabilitation in other institute | 1914 | 52.1 |
| DH/long-term care, same inst. | 436 | 11.9 |
| DH/long-term care, other inst. | 728 | 19.8 |
| Missing | 0 | |

| **Disch. terminally ill** (N=14968) | N | % |
|---|---|---|
| Yes | 305 | 2.0 |
| No | 14663 | 98.0 |
| Missing | 0 | |

| **Hospital mortality** | N | % |
|---|---|---|
| Alive | 14663 | 66.8 |
| Dead | 7288 | 33.2 |
| Missing | 0 | |

| **Timing of hosp. mortality** (N=7288) | N | % |
|---|---|---|
| In ICU | 5724 | 78.6 |
| Within 24 hours after ICU | 104 | 1.4 |
| 24-47 hours after ICU | 113 | 1.6 |
| 48-71 hours after ICU | 106 | 1.5 |
| 72-95 hours after ICU | 94 | 1.3 |
| After 95 hours after ICU | 1144 | 15.7 |
| Missing | 3 | |

| **Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU** (N=1564) | |
|---|---|
| Mean | 14.3 |
| SD | 17.4 |
| Median | 9 |
| Q1−Q3 | 3−19 |
| Missing | 3 |

**National report for general ICUs** - **Year 2018**
**Outcome indicators** - Adult non surgical patients evaluated in the GiViTI model

| **Last hospital mortality** | N | % |
|---|---|---|
| Alive | 14424 | 65.7 |
| Dead | 7527 | 34.3 |
| Missing | 0 | |

| **ICU stay (days)** | |
|---|---|
| Mean | 7.6 |
| SD | 10.8 |
| Median | 4 |
| Q1−Q3 | 2−9 |
| Missing | 2 |

| **ICU stay (days)** **Alive** (N=16221) | |
|---|---|
| Mean | 7.8 |
| SD | 10.7 |
| Median | 4 |
| Q1−Q3 | 2−9 |
| Missing | 0 |

| **ICU stay (days)** **Dead** (N=5727) | |
|---|---|
| Mean | 7.1 |
| SD | 11.3 |
| Median | 3 |
| Q1−Q3 | 1−9 |
| Missing | 0 |

| **Stay after ICU (days)** **Alive** (N=16221) | |
|---|---|
| Mean | 12.2 |
| SD | 16.3 |
| Median | 8 |
| Q1−Q3 | 2−16 |
| Missing | 7 |

| **Hospital stay (days)** | |
|---|---|
| Mean | 18.9 |
| SD | 20.8 |
| Median | 13 |
| Q1−Q3 | 6−25 |
| Missing | 5 |

| **Hospital stay (days)** **Alive** (N=14663) | |
|---|---|
| Mean | 21.4 |
| SD | 21.5 |
| Median | 16 |
| Q1−Q3 | 8−27 |
| Missing | 3 |

| **Hospital stay (days)** **Dead** (N=7288) | |
|---|---|
| Mean | 13.7 |
| SD | 18.4 |
| Median | 7 |
| Q1−Q3 | 2−18 |
| Missing | 2 |

**National report for general ICUs** - **Year 2018**
**Characteristics on admission** - Adult elective surgical patients evaluated in the GiViTI model

**Patients** (N): 10223

| **Sex** | N | % |
|---|---|---|
| Male | 5982 | 58.5 |
| Female | 4241 | 41.5 |
| Missing | 0 | |

| **Age (years)** | N | % |
|---|---|---|
| 17-45 | 784 | 7.7 |
| 46-65 | 2719 | 26.6 |
| 66-75 | 3021 | 29.6 |
| >75 | 3699 | 36.2 |
| Missing | 0 | |
| Mean | 68.5 | |
| SD | 14.1 | |
| Median | 71 | |
| Q1−Q3 | 61−79 | |
| Min−Max | 17−101 | |

| **Body mass Index (BMI)** | N | % |
|---|---|---|
| Underweight | 517 | 5.1 |
| Normal | 4322 | 42.3 |
| Overweight | 3061 | 29.9 |
| Obese | 2323 | 22.7 |
| Missing | 0 | |

| **Pregnancy status** **Females** (N=4241) | N | % |
|---|---|---|
| Not fertile | 2149 | 50.7 |
| Not pregnant/Unknown | 2039 | 48.1 |
| Currently pregnant | 7 | 0.2 |
| Post partum | 46 | 1.1 |
| Missing | 0 | |

| **Comorbidities** | N | % |
|---|---|---|
| No | 1025 | 10.0 |
| Yes | 9198 | 90.0 |
| Missing | 0 | |

| **Comorbidities (top 10)** | N | % |
|---|---|---|
| Hypertension | 6083 | 59.5 |
| Any tumour without metastasis | 2418 | 23.7 |
| Moderate COPD | 1727 | 16.9 |
| Arrhythmia | 1699 | 16.6 |
| Myocardial infarction | 1474 | 14.4 |
| Diabetes Type II without insulin tr. | 1423 | 13.9 |
| Peripheral vascular disease | 1166 | 11.4 |
| Antiplatelet therapy | 1002 | 9.8 |
| NYHA class II-III | 900 | 8.8 |
| Metastatic cancer | 876 | 8.6 |
| Missing | 0 | |

| **Stay before ICU (days)** | |
|---|---|
| Mean | 4.0 |
| SD | 8.5 |
| Median | 1 |
| Q1−Q3 | 1−3 |
| Missing | 0 |

| **Source of admission** | N | % |
|---|---|---|
| Same hospital | 10085 | 98.7 |
| Other hospital | 125 | 1.2 |
| Long-term chronic care hospital | 13 | 0.1 |
| Directly from the community | 0 | 0.0 |
| Missing | 0 | |

| **Ward of admission** **Hospital** (N=10210) | N | % |
|---|---|---|
| Medical ward | 174 | 1.7 |
| Surgical ward | 9880 | 96.8 |
| Emergency room | 40 | 0.4 |
| Other ICU | 74 | 0.7 |
| High dependency care unit | 42 | 0.4 |
| Missing | 0 | |

| **Reason for transfer from** **Other ICU** (N=74) | N | % |
|---|---|---|
| Specialist expertise | 33 | 44.6 |
| Step-up care | 11 | 14.9 |
| Logistical/organizational reasons | 30 | 40.5 |
| Step-down care | 0 | 0.0 |
| Missing | 0 | |

| **Ward of admission** **Same hospital** (N=10085) | N | % |
|---|---|---|
| Medical ward | 168 | 1.7 |
| Surgical ward | 9811 | 97.3 |
| Emergency room | 33 | 0.3 |
| Other ICU | 34 | 0.3 |
| High dependency care unit | 39 | 0.4 |
| Missing | 0 | |

| **Ward of admission** **Other hospital** (N=125) | N | % |
|---|---|---|
| Medical ward | 6 | 4.8 |
| Surgical ward | 69 | 55.2 |
| Emergency room | 7 | 5.6 |
| Other ICU | 40 | 32.0 |
| High dependency care unit | 3 | 2.4 |
| Missing | 0 | |

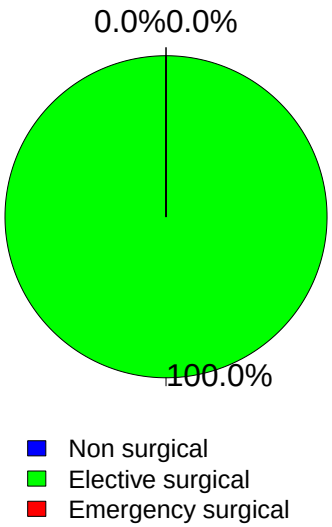
| **Scheduled admission** | N | % |
|---|---|---|
| No | 2200 | 21.5 |
| Yes | 8023 | 78.5 |
| Missing | 0 | |

**National report for general ICUs** - **Year 2018**
**Characteristics on admission** - Adult elective surgical patients evaluated in the GiViTI model

| **Trauma** | N | % |
|---|---|---|
| No | 9694 | 94.8 |
| Yes | 529 | 5.2 |
| Multiple trauma | 50 | 0.5 |
| Missing | 0 | |

| **Surgical status** | N | % |
|---|---|---|
| Non surgical | 0 | 0.0 |
| Elective surgical | 10223 | 100.0 |
| Emergency surgical | 0 | 0.0 |
| Missing | 0 | |

**Surgical status**




| **Source of admission** **Surgical pt.** (N=10223) | N | % |
|---|---|---|
| Operating theatre of surgical ward | 9394 | 92.0 |
| Operating theatre of emergency room | 12 | 0.1 |
| Surgical ward | 486 | 4.8 |
| Other | 318 | 3.1 |
| Missing | 13 | |

| **Surgical interventions (top 10)** **Elective surgical** (N=10223) | N | % |
|---|---|---|
| Gastrointestinal surgery | 2926 | 28.6 |
| Nephro/Urological surgery | 1400 | 13.7 |
| Orthopaedic surgery | 1392 | 13.6 |
| ENT surgery | 699 | 6.8 |
| Thoracic surgery | 605 | 5.9 |
| Neurosurgery | 567 | 5.5 |
| Gynaecological surgery | 562 | 5.5 |
| Abdominal vascular surgery | 431 | 4.2 |
| Hepatic surgery | 370 | 3.6 |
| Pancreatic surgery | 368 | 3.6 |
| Missing | 903 | |

| **Timing** **Elective surgical** (N=10223) | N | % |
|---|---|---|
| From -7 to -3 days | 165 | 1.6 |
| From -2 to -1 days | 314 | 3.1 |
| On ICU admission day | 10268 | 100.4 |
| The day after ICU admission | 103 | 1.0 |
| Missing | 14 | |

| **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 | 10009 | 97.9 |
| Elective | 132 | 1.3 |
| Emergency | 82 | 0.8 |
| Missing | 0 | |

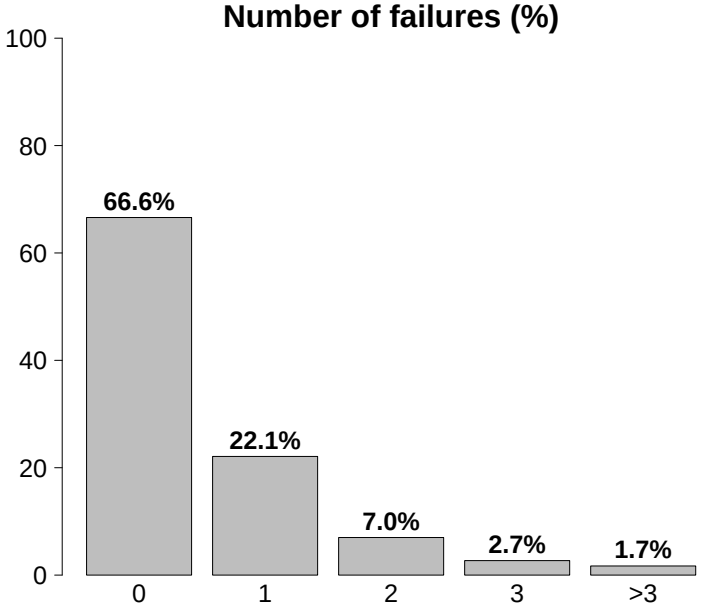
| **Non surgical interventions** **Elective** (N=132) | N | % |
|---|---|---|
| Interventional endoscopy | 38 | 28.8 |
| Interventional radiology | 32 | 24.2 |
| Interventional neuroradiology | 10 | 7.6 |
| Interventional cardiology | 3 | 2.3 |
| Missing | 49 | |

| **Non surgical interventions** **Emergency** (N=82) | N | % |
|---|---|---|
| Interventional radiology | 32 | 39.0 |
| Interventional endoscopy | 15 | 18.3 |
| Interventional cardiology | 13 | 15.9 |
| Interventional neuroradiology | 8 | 9.8 |
| Missing | 14 | |

**National report for general ICUs** - **Year 2018**
**Characteristics on admission** - Adult elective surgical patients evaluated in the GiViTI model

| Reason for admission | N | % |
|---|---|---|
| Monitoring/Weaning | 8662 | 84.7 |
| Post surgical weaning | 3985 | 39.0 |
| Surgical monitoring | 4660 | 45.6 |
| Post interventional weaning | 7 | 0.1 |
| Interventional monitoring | 6 | 0.1 |
| Non surgical monitoring | 0 | 0.0 |
| Missing | 4 | |
| Admission for procedures/treatments | 0 | 0.0 |
| Intensive Treatment | 1561 | 15.3 |
| Only ventilatory support | 835 | 8.2 |
| Only cardiovascular support | 258 | 2.5 |
| Ventilatory and cardiovascular support | 468 | 4.6 |
| 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 | 6804 | 66.6 |
| Yes | 3419 | 33.4 |
| A: Respiratory failure | 1303 | 12.7 |
| B: Cardiovascular failure | 726 | 7.1 |
| C: Neurological failure | 138 | 1.3 |
| D: Hepatic failure | 26 | 0.3 |
| E: Renal failure | 2087 | 20.4 |
| F: Acute skin failure | 2 | 0.0 |
| G: Metabolic failure | 912 | 8.9 |
| H: Coagulation failure | 45 | 0.4 |
| Missing | 0 | |

| Failures on admission (top 10) | N | % |
|---|---|---|
| E | 1282 | 12.5 |
| A | 537 | 5.3 |
| G | 279 | 2.7 |
| EG | 240 | 2.3 |
| AB | 151 | 1.5 |
| ABEG | 122 | 1.2 |
| AE | 120 | 1.2 |
| B | 113 | 1.1 |
| ABE | 96 | 0.9 |
| BE | 62 | 0.6 |
| Missing | 0 | |

| Respiratory failure | N | % |
|---|---|---|
| None | 8920 | 87.3 |
| Only hypoxic failure | 387 | 3.8 |
| Only hypercapnic failure | 34 | 0.3 |
| Hypoxic-hypercapnic failure | 66 | 0.6 |
| Intubation for airway maint. | 816 | 8.0 |
| Missing | 0 | |

| Cardiovascular failure | N | % |
|---|---|---|
| None | 9497 | 92.9 |
| Without shock | 167 | 1.6 |
| Cardiogenic shock | 86 | 0.8 |
| Septic shock | 61 | 0.6 |
| Haemorrhagic/hypovolemic shock | 218 | 2.1 |
| Hypovolemic shock | 112 | 1.1 |
| Anaphylactic shock | 10 | 0.1 |
| Neurogenic shock | 9 | 0.1 |
| Other shock | 29 | 0.3 |
| Mixed shock | 34 | 0.3 |
| Missing | 0 | |

| Neurologic failure | N | % |
|---|---|---|
| None | 8672 | 98.4 |
| Cerebral coma | 77 | 0.9 |
| Metabolic coma | 21 | 0.2 |
| Postanoxic coma | 33 | 0.4 |
| Toxic coma | 7 | 0.1 |
| Missing or not evaluable | 1413 | |

| Renal failure (AKIN) | N | % |
|---|---|---|
| None | 8136 | 79.6 |
| Mild | 1458 | 14.3 |
| Moderate | 367 | 3.6 |
| Severe | 262 | 2.6 |
| Missing | 0 | |

| Metabolic failure | N | % |
|---|---|---|
| None | 9311 | 91.1 |
| pH <= 7.3, PaCO2 < 45 mmHg | 276 | 2.7 |
| Base deficit >= 5 mmol/L, lactate >1.5x | 636 | 6.2 |
| Missing | 0 | |

**National report for general ICUs - Year 2018**
**Characteristics on admission** - Adult elective surgical patients evaluated in the GiViTI model

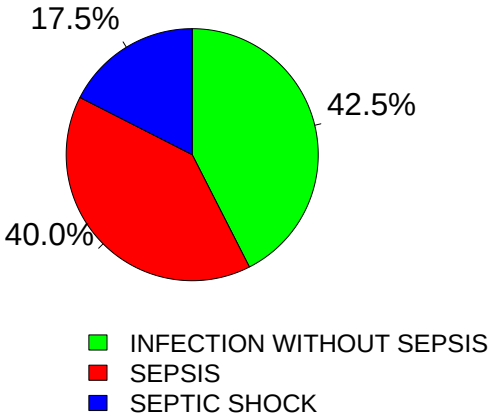
| Clinical conditions on admission | N | % |
|---|---|---|
| Respiratory | 1037 | 10.1 |
| Lung cancer | 435 | 4.3 |
| Upper respiratory tract disease | 170 | 1.7 |
| Pleural effusion | 135 | 1.3 |
| Atelectasis | 115 | 1.1 |
| Acute asthma/bronchospasm | 59 | 0.6 |
| Cardiovascular | 1082 | 10.6 |
| Non-ruptured aneurysm | 366 | 3.6 |
| Peripheral vascular disease | 281 | 2.7 |
| Acute severe arrhythmia: tachycardias | 107 | 1.0 |
| Cardiac arrest | 75 | 0.7 |
| Left heart failure without pulm. edema | 49 | 0.5 |
| Neurological | 608 | 5.9 |
| Brain tumour | 386 | 3.8 |
| Neuropathy/myopathy | 55 | 0.5 |
| Seizures | 46 | 0.4 |
| Cerebral artery stroke | 40 | 0.4 |
| Cerebral Aneurysm | 28 | 0.3 |
| Gastrointestinal and hepatic | 3001 | 29.4 |
| Digestive tract malignancy | 1868 | 18.3 |
| Pancreatic malignancy | 323 | 3.2 |
| Hepatic malignancy | 301 | 2.9 |
| Acute bile-duct disease | 205 | 2.0 |
| Intestinal occlusion | 93 | 0.9 |
| Trauma (anatomical districts) | 530 | 5.2 |
| Pelvis/bone/joint & muscle | 481 | 4.7 |
| Head | 37 | 0.4 |
| Chest | 37 | 0.4 |
| Spine | 30 | 0.3 |
| Abdomen | 12 | 0.1 |
| Major vessels injury | 2 | 0.0 |
| Miscellaneous | 1 | 0.0 |
| Other | 4732 | 46.3 |
| Other disease | 1269 | 12.4 |
| Nephrourologic disease | 1235 | 12.1 |
| Orthopaedic disease | 770 | 7.5 |
| ENT/maxillofacial disease | 684 | 6.7 |
| Gynaecological disease | 490 | 4.8 |
| Post transplantation | 32 | 0.3 |
| Liver transplantation | 16 | 0.2 |
| Renal transplantation | 11 | 0.1 |
| Infections | 502 | 4.9 |
| Pneumonia | 98 | 1.0 |
| NON-surgical urinary tract infection | 42 | 0.4 |
| Post-surgical urinary tract infection | 37 | 0.4 |
| Post-surgical peritonitis | 36 | 0.4 |
| Orthopaedic prosthesis infection | 35 | 0.3 |
| NON-surgical secondary peritonitis | 32 | 0.3 |
| Cholecystitis/cholangitis | 31 | 0.3 |
| L.R.T.I. other than pneumonia | 31 | 0.3 |
| Clinical sepsis | 26 | 0.3 |
| NON-surgical skin/soft tissue infection | 26 | 0.3 |
| Missing | 0 | |

| Trauma (anatomical districts) | N | % |
|---|---|---|
| Head | 37 | 0.4 |
| Maxillofacial fracture | 19 | 0.2 |
| Cerebral contusion/laceration | 8 | 0.1 |
| Traumatic subarachnoid haemorrhage | 7 | 0.1 |
| Traumatic intraparenchymal bleeding | 4 | 0.0 |
| Skull fracture | 4 | 0.0 |
| Spine | 30 | 0.3 |
| Vertebral fracture, without deficit | 28 | 0.3 |
| Cervical injury, incomplete deficit | 2 | 0.0 |
| - | 0 | 0.0 |
| Chest | 37 | 0.4 |
| Other injuries of the chest | 18 | 0.2 |
| Traum. haemothorax/pneumothorax | 9 | 0.1 |
| Severe lung contusion/laceration | 8 | 0.1 |
| Abdomen | 12 | 0.1 |
| Kidney: Rupture/laceration | 5 | 0.0 |
| Spleen: Moderate-Severe laceration | 4 | 0.0 |
| Liver: Moderate-Severe laceration | 3 | 0.0 |
| Pelvis/bone/joint & muscle | 481 | 4.7 |
| Long bone fracture | 461 | 4.5 |
| Multiple fracture of the pelvis | 24 | 0.2 |
| Very severe or open fracture of the pelvis | 4 | 0.0 |
| Major vessels injury | 2 | 0.0 |
| Neck vessels: dissection/transection | 1 | 0.0 |
| Aorta: rupture/dissection | 1 | 0.0 |
| - | 0 | 0.0 |
| Miscellaneous | 1 | 0.0 |
| Inhalation injury | 1 | 0.0 |
| - | 0 | 0.0 |
| Missing | 0 | |

| Infection severity on admission | N | % |
|---|---|---|
| None | 9721 | 95.4 |
| INFECTION WITHOUT SEPSIS | 201 | 2.0 |
| SEPSIS | 189 | 1.9 |
| SEPTIC SHOCK | 83 | 0.8 |
| Missing | 29 | |

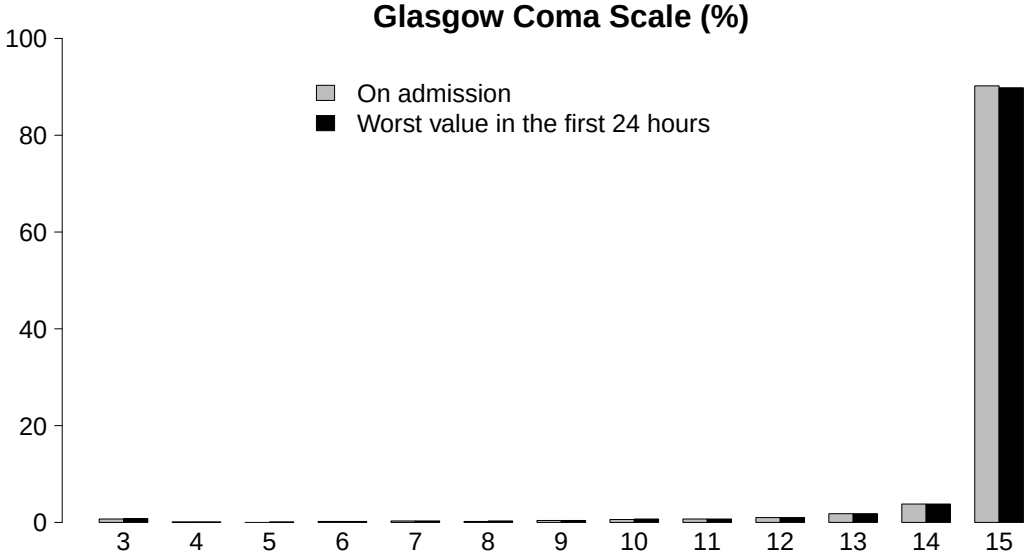
**Infection severity on admission**

Patients infected (N=473)



**National report for general ICUs** - **Year 2018**
**Severity scores** - Adult elective surgical patients evaluated in the GiViTI model

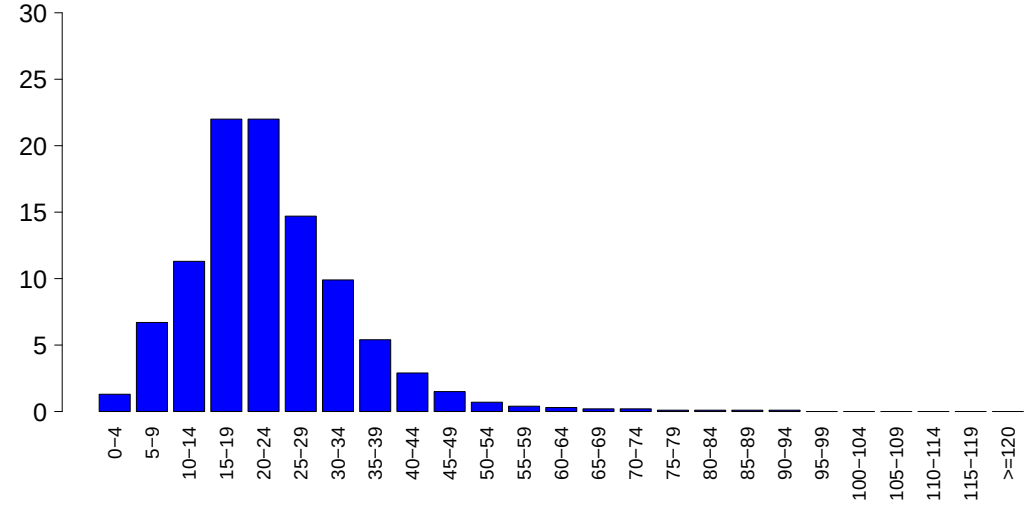
## Glasgow Coma Scale (%)




| GCS (admission) | |
|---|---|
| Median | 15 |
| Q1−Q3 | 15−15 |
| Not evaluable | 1413 |
| Missing | 0 |

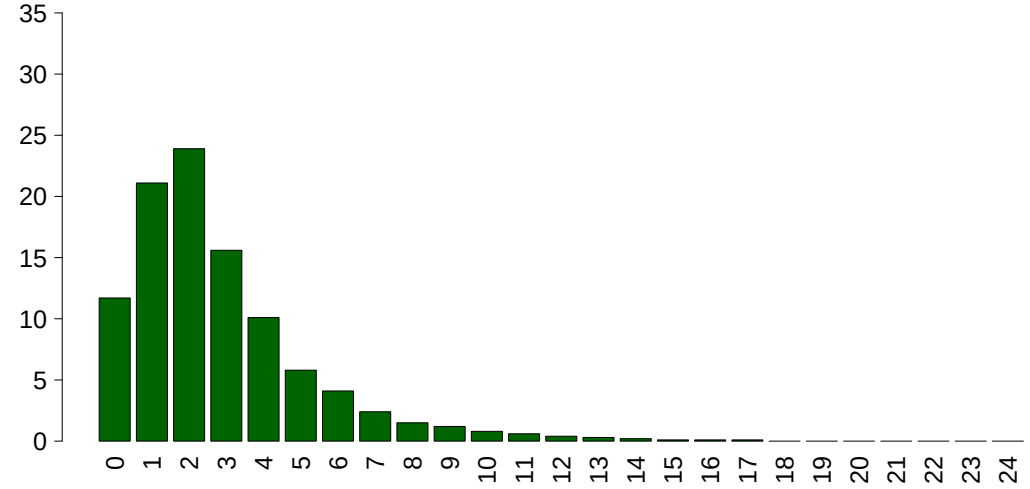
| GCS (first 24 hours) | |
|---|---|
| Median | 15 |
| Q1−Q3 | 15−15 |
| Not evaluable | 699 |
| Missing | 0 |

## SAPS II (%)




| SAPSII | |
|---|---|
| Mean | 22.9 |
| SD | 11.1 |
| Median | 22 |
| Q1−Q3 | 16−28 |
| Not evaluable | 699 |
| Missing | 0 |

## SOFA (%)




| SOFA | |
|---|---|
| Mean | 2.8 |
| SD | 2.4 |
| Median | 2 |
| Q1−Q3 | 1−4 |
| Not evaluable | 699 |
| Missing | 0 |

**National report for general ICUs** - **Year 2018**
**Characteristics during the stay** - Adult elective surgical patients evaluated in the GiViTI model

| Complications during the stay | N | % |
|---|---|---|
| No | 9282 | 90.8 |
| Yes | 941 | 9.2 |
| Missing | 0 | |

| Failures during the stay | N | % |
|---|---|---|
| No | 9834 | 96.2 |
| Yes | 389 | 3.8 |
| A: Respiratory failure | 237 | 2.3 |
| B: Cardiovascular failure | 137 | 1.3 |
| C: Neurological failure | 15 | 0.1 |
| D: Hepatic failure | 10 | 0.1 |
| E: Renal failure (AKIN) | 113 | 1.1 |
| F: Acute skin failure | 0 | 0.0 |
| G: Metabolic failure | 27 | 0.3 |
| H: Coagulation failure | 11 | 0.1 |
| Missing | 0 | |

| Failures during the stay (top 10) | N | % |
|---|---|---|
| A | 148 | 1.4 |
| E | 54 | 0.5 |
| AB | 45 | 0.4 |
| B | 45 | 0.4 |
| G | 18 | 0.2 |
| BE | 16 | 0.2 |
| ABE | 14 | 0.1 |
| AE | 11 | 0.1 |
| C | 5 | 0.0 |
| D | 5 | 0.0 |
| Missing | 0 | |

| Respiratory failure occured | N | % |
|---|---|---|
| None | 9986 | 97.7 |
| Intubation for airway maint. | 84 | 0.8 |
| Hypoxic failure | 145 | 1.4 |
| Hypercapnic failure | 34 | 0.3 |
| Missing | 0 | |

| Cardiovascular failure occured | N | % |
|---|---|---|
| None | 10086 | 98.7 |
| Cardiogenic shock | 26 | 0.3 |
| Hypovolemic shock | 25 | 0.2 |
| Haemorrhagic/hypovolemic shock | 32 | 0.3 |
| Septic shock | 52 | 0.5 |
| Anaphylactic shock | 0 | 0.0 |
| Neurogenic shock | 3 | 0.0 |
| Other shock | 13 | 0.1 |
| Missing | 0 | |

| Neurological failure occured | N | % |
|---|---|---|
| None | 10208 | 99.9 |
| Cerebral coma | 6 | 0.1 |
| Metabolic coma | 8 | 0.1 |
| Postanoxic coma | 1 | 0.0 |
| Missing | 0 | |

| Renal failure occured (AKIN) | N | % |
|---|---|---|
| None | 10110 | 98.9 |
| Mild | 31 | 0.3 |
| Moderate | 21 | 0.2 |
| Severe | 61 | 0.6 |
| Missing | 0 | |

| Complications during the stay | N | % |
|---|---|---|
| Respiratory | 170 | 1.7 |
| Pleural effusion | 58 | 0.6 |
| Atelectasis | 54 | 0.5 |
| Pneumothorax/Pneumomediastinum | 17 | 0.2 |
| Acute asthma/bronchospasm | 16 | 0.2 |
| Upper resp. tract disease | 16 | 0.2 |
| Cardiovascular | 237 | 2.3 |
| Acute severe arrhythmia: tachycardias | 100 | 1.0 |
| Cardiac arrest | 50 | 0.5 |
| Acute severe arrhythmia: bradycardias | 28 | 0.3 |
| Hypertensive crisis | 16 | 0.2 |
| Peripheral vascular disease | 14 | 0.1 |
| Neurological | 189 | 1.8 |
| Drowsiness/agitation/delirium | 123 | 1.2 |
| Seizures | 22 | 0.2 |
| Brain edema | 13 | 0.1 |
| New ischaemic stroke | 13 | 0.1 |
| Post-surgical intracranial bleeding | 11 | 0.1 |
| Gastrointestinal and hepatic | 112 | 1.1 |
| Anastomotic dehiscence | 24 | 0.2 |
| Gastrointestinal bleeding: upper tract | 18 | 0.2 |
| Intrabdominal bleeding | 16 | 0.2 |
| Paralytic Ileus | 15 | 0.1 |
| Bowel ischaemia | 13 | 0.1 |
| Other | 111 | 1.1 |
| Other disease | 43 | 0.4 |
| Nephrourologic disease | 28 | 0.3 |
| Metabolic disorder | 27 | 0.3 |
| Category/Stage II: Partial Thickness Skin Loss | 6 | 0.1 |
| Other skin and/or soft tissue pathology | 6 | 0.1 |
| Category/Stage I: Nonblanchable Erythema | 3 | 0.0 |
| Iatrogenic major vessels injury | 3 | 0.0 |
| Infections | 191 | 1.9 |
| Pneumonia | 66 | 0.6 |
| L.R.T.I. other than pneumonia | 30 | 0.3 |
| Post-surgical peritonitis | 25 | 0.2 |
| Primary bacteraemia of unknown origin | 21 | 0.2 |
| NON-surgical urinary tract infection | 16 | 0.2 |
| Catheter-related bacteremia (CR-BSI) | 14 | 0.1 |
| Clinical sepsis | 12 | 0.1 |
| Post-surgical skin/soft tissue infection | 12 | 0.1 |
| Post-surgical mediastinitis | 8 | 0.1 |
| Post-surgical urinary tract infection | 6 | 0.1 |
| Missing | 0 | |

**National report for general ICUs** - **Year 2018**
**Characteristics during the stay** - Adult elective surgical patients evaluated in the GiViTI model

| **Infections** | N | % |
|---|---|---|
| None | 9570 | 93.6 |
| Only on admission | 462 | 4.5 |
| On admission and during ICU stay | 40 | 0.4 |
| Only during ICU stay | 151 | 1.5 |
| Missing | 0 | |

| **Maximum severity of infection** | N | % |
|---|---|---|
| None | 9570 | 94.0 |
| INFECTION WITHOUT SEPSIS | 207 | 2.0 |
| SEPSIS | 273 | 2.7 |
| SEPTIC SHOCK | 130 | 1.3 |
| Missing | 43 | |

| **Severity evolution** | | **During the stay** | | | | |
|---|---|---|---|---|---|---|
| | N (R %) | None | INFECTION WITHOUT SEPSIS | SEPSIS | SEPTIC SHOCK | TOT |
| **Admission** | None | 9570 (98.6%) | 37 (0.4%) | 65 (0.7%) | 34 (0.4%) | 9706 |
| | INFECTION WITHOUT SEPSIS | - | 170 (84.6%) | 28 (13.9%) | 3 (1.5%) | 201 |
| | SEPSIS | - | - | 179 (94.7%) | 10 (5.3%) | 189 |
| | SEPTIC SHOCK | - | - | - | 83 (100.0%) | 83 |
| | TOT | 9570 | 207 | 272 | 130 | 10179 |

| **Ventil. Associat. Pneumonia (VAP)** | N | % |
|---|---|---|
| No | 10175 | 99.5 |
| Yes | 48 | 0.5 |
| Missing | 0 | |

| **Catheter Bacteraemia (CR-BSI)** | N | % |
|---|---|---|
| No | 10209 | 99.9 |
| Yes | 14 | 0.1 |
| Missing | 0 | |

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

| | |
|---|---|
| Estimate | 10.4 |
| CI (95%) | 7.7−13.8 |

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

| | |
|---|---|
| Estimate | 1.1 |
| CI (95%) | 0.6−1.9 |

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

| | |
|---|---|
| Estimate | 8.3% |
| CI (95%) | 6.2−11.1 |

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

| | |
|---|---|
| Estimate | 1.3% |
| CI (95%) | 0.7−2.2 |

**National report for general ICUs** - **Year 2018**

**Process indicators** - Adult elective surgical 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 |
| **Procedures (antibiotics excluded)** | 9200 | 90.0 | | | | | | | | | | |
| Invasive ventilation | 5556 | 54.3 | 5100 | 49.9 | 358 | 3.5 | 0 | 0–1 | 0 | 0 | 0–0 | 0 |
| Non invasive ventilation | 680 | 6.7 | 158 | 1.5 | 175 | 1.7 | 1 | 1–2 | 0 | 0 | 0–1 | 0 |
| Tracheostomy | 408 | 4.0 | 290 | 2.8 | 382 | 3.7 | 2 | 1–5 | 0 | 6 | 3–13 | 0 |
| iNO (inhaled nitric oxide) | 3 | 0.0 | 0 | 0 | 0 | 0 | 7 | 6–8 | 0 | 6 | 4–6 | 0 |
| Central Venous Catheter | 4244 | 41.5 | 3323 | 32.5 | 3874 | 37.9 | 1 | 1–3 | 0 | 0 | 0–0 | 0 |
| PICC | 192 | 1.9 | 144 | 1.4 | 177 | 1.7 | 1 | 1–3 | 0 | 1 | 0–4 | 0 |
| Arterial Catheter | 7281 | 71.2 | 5885 | 57.6 | 1015 | 9.9 | 1 | 1–2 | 0 | 0 | 0–0 | 0 |
| Vasoactive drugs | 1261 | 12.3 | 777 | 7.6 | 134 | 1.3 | 1 | 1–2 | 0 | 0 | 0–1 | 0 |
| Antiarrhythmics | 315 | 3.1 | 140 | 1.4 | 199 | 1.9 | 2 | 1–4 | 0 | 1 | 0–2 | 0 |
| IABP | 1 | 0.0 | 0 | 0 | 1 | 0 | 3 | 3–3 | 0 | 5 | 5–5 | 0 |
| Invasive monitoring of C.O. | 133 | 1.3 | 68 | 0.7 | 18 | 0.2 | 2 | 1–4 | 0 | 1 | 0–2 | 0 |
| Continous monitoring of ScVO2 | 9 | 0.1 | 5 | 0 | 1 | 0 | 2 | 1–7 | 0 | 2 | 1–2 | 0 |
| Temporary pacing | 10 | 0.1 | 6 | 0.1 | 6 | 0.1 | 2 | 1–3 | 0 | 0 | 0–0 | 0 |
| Ventricular assistance | 1 | 0.0 | 1 | 0 | 1 | 0 | 1 | 1–1 | 0 | | | |
| DC-shock | 29 | 0.3 | | | | | | | | 0 | 0–1 | 0 |
| CPR | 58 | 0.6 | | | | | | | | 0 | 0–1 | 0 |
| Massive blood transfusion | 97 | 0.9 | | | | | | | | 0 | 0–0 | 0 |
| ICP monitoring without CSF drainage | 6 | 0.1 | 3 | 0 | 3 | 0 | 6 | 3–10 | 0 | 1 | 0–2 | 0 |
| ICP monitoring with CSF drainage | 30 | 0.3 | 24 | 0.2 | 23 | 0.2 | 2 | 1–2 | 0 | 1 | 0–1 | 0 |
| External ventricular drainage without ICP | 12 | 0.1 | 10 | 0.1 | 7 | 0.1 | 3 | 2–5 | 0 | 0 | 0–0 | 0 |
| Haemofiltration | 70 | 0.7 | 7 | 0.1 | 26 | 0.3 | 5 | 3–10 | 0 | 2 | 1–4 | 0 |
| Haemodialysis | 83 | 0.8 | 18 | 0.2 | 34 | 0.3 | 1 | 0–4 | 0 | 1 | 1–2 | 0 |
| ECMO | 2 | 0.0 | 2 | 0 | 1 | 0 | 30 | 15–44 | 0 | | | |
| Hepatic clearance techniques | 0 | 0.0 | | | | | | | | | | |
| Clearance techniques during sepsis | 8 | 0.1 | 0 | 0 | 0 | 0 | 3 | 1–4 | 0 | 2 | 1–2 | 0 |
| IAP (intra-abdominal pressure) | 67 | 0.7 | | | | | | | | | | |
| Hypothermia | 10 | 0.1 | 4 | 0 | 2 | 0 | 1 | 1–2 | 0 | 0 | 0–9 | 0 |
| Enteral nutrition | 619 | 6.1 | 63 | 0.6 | 456 | 4.5 | 3 | 1–8 | 0 | 1 | 1–3 | 0 |
| Parenteral nutrition | 1157 | 11.3 | 179 | 1.8 | 913 | 8.9 | 2 | 1–4 | 0 | 1 | 0–1 | 0 |
| SDD (Topical, Topical and systemic) | 50 | 0.5 | | | | | | | | | | |
| Patient restraint | 148 | 1.4 | | | | | | | | | | |
| Peridural catheter | 1086 | 10.6 | 1008 | 9.9 | 911 | 8.9 | 1 | 1–2 | 0 | 0 | 0–0 | 0 |
| Electrical cardioversion | 19 | 0.2 | | | | | | | | 2 | 0–4 | 0 |
| Vacuum therapy | 15 | 0.1 | | | | | | | | | | |
| **Antibiotics** | 6120 | 59.9 | | | | | | | | | | |
| Antibiotic prophylaxis | 5546 | 54.3 | 4703 | 46 | 3316 | 32.4 | 1 | 1–1 | 0 | 0 | 0–0 | 0 |
| Empirical antibiotic therapy | 375 | 3.7 | 184 | 1.8 | 208 | 2 | 3 | 2–5 | 0 | 0 | 0–2 | 0 |
| Empirical antibiotic therapy in unconfirmed diagnosis | 148 | 1.4 | 58 | 0.6 | 105 | 1 | 3 | 1–6 | 0 | 0 | 0–2 | 0 |
| Targeted antibiotic therapy | 280 | 2.7 | 96 | 0.9 | 201 | 2 | 4 | 2–10 | 0 | 4 | 2–7 | 0 |

**National report for general ICUs** - **Year 2018**
**Process indicators** - Adult elective surgical patients evaluated in the GiViTI model

| **Invasive ventilation** (N=5556) | N | % | Length (days) Mean | SD | Median | Q1-Q3 | Missing |
|---|---|---|---|---|---|---|---|
| Due to pulmonary failure | 453 | 6.9 | 5.3 | 9.3 | 2 | 1−5 | 0 |
| For airway mainteinance | 812 | 12.4 | 2.7 | 6.2 | 1 | 0−2 | 0 |
| In weaning | 3940 | 60.0 | 0.4 | 0.5 | 0 | 0−1 | 0 |
| Not evaluable | 1367 | 20.8 | 1.6 | 3.8 | 1 | 0−1 | 1016 |
| Reintubation within 48 hours | 70 | 1.1 | 9.5 | 14.1 | 5 | 1−10.5 | 0 |

| **Non invasive ventilation** (N=680) | N | % |
|---|---|---|
| Non invasive ventilation only | 395 | 58.1 |
| Non invasive ventilation failed | 54 | 7.9 |
| For weaning | 213 | 31.3 |
| Other | 18 | 2.6 |
| Missing | 0 | |

| **Tracheostomy not present on admission** (N=118) | N | % |
|---|---|---|
| Surgical | 45 | 38.1 |
| Percutwist | 6 | 5.1 |
| Ciaglia | 12 | 10.2 |
| Monodil. Ciaglia | 30 | 25.4 |
| Fantoni | 7 | 5.9 |
| Griggs | 13 | 11.0 |
| Other Kind | 4 | 3.4 |
| Unknown | 1 | 0.8 |
| Missing | 0 | |

| **Tracheostomy - Days after the beginning of inv. vent. Not present on admission** (N=111) | |
|---|---|
| Mean | 8.4 |
| SD | 7.5 |
| Median | 6 |
| Q1−Q3 | 3−13 |
| Missing | 0 |

| **Invasive monitoring of C.O.** (N=133) | N | % |
|---|---|---|
| Swan Ganz | 22 | 16.5 |
| PICCO | 41 | 30.8 |
| LIDCO | 0 | 0.0 |
| Vigileo-PRAM | 61 | 45.9 |
| Other | 9 | 6.8 |
| Missing | 0 | |

| **SDD** (N=50) | N | % |
|---|---|---|
| Topical | 49 | 98.0 |
| Topical and systemic | 1 | 2.0 |
| Missing | 0 | |

| **Antibiotic therapy Pt. infected in ICU only** (N=151) | N | % |
|---|---|---|
| Only empirical | 50 | 38.8 |
| Only targeted | 26 | 20.2 |
| Targeted after empirical | 44 | 34.1 |
| Other | 9 | 7.0 |
| Missing | 22 | |

| **Surgical interventions** | N | % |
|---|---|---|
| No | 10136 | 99.1 |
| Yes | 87 | 0.9 |
| Missing | 0 | |

| **Number of surgical interventions** | N | % |
|---|---|---|
| 0 | 10136 | 99.1 |
| 1 | 68 | 0.7 |
| 2 | 13 | 0.1 |
| 3 | 3 | 0.0 |
| >3 | 3 | 0.0 |
| Missing | 0 | |

| **Surgical interventions Days from admission** | |
|---|---|
| Mean | 8.7 |
| SD | 9.0 |
| Median | 6 |
| Q1−Q3 | 3−11 |
| Missing | 0 |

| **Surgical interventions (top 10)** | N | % |
|---|---|---|
| Gastrointestinal surgery | 45 | 0.4 |
| Thoracic surgery | 15 | 0.1 |
| Other surgery | 8 | 0.1 |
| ENT surgery | 7 | 0.1 |
| Orthopaedic surgery | 6 | 0.1 |
| Neurosurgery | 6 | 0.1 |
| Esophageal surgery | 5 | 0.0 |
| Maxillo-Facial surgery | 4 | 0.0 |
| Abdominal vascular surgery | 4 | 0.0 |
| Biliary tract surgery | 4 | 0.0 |
| Missing | 0 | |

| **Non surgical interventions** | N | % |
|---|---|---|
| No | 10178 | 99.6 |
| Yes | 45 | 0.4 |
| Missing | 0 | |

| **Non surgical interventions Days from admission** | |
|---|---|
| Mean | 8.9 |
| SD | 8.3 |
| Median | 6 |
| Q1−Q3 | 4−11.5 |
| Missing | 3 |

| **Non surgical interventions** | N | % |
|---|---|---|
| Interventional endoscopy | 25 | 0.2 |
| Interventional radiology | 20 | 0.2 |
| Interventional cardiology | 5 | 0.0 |
| Interventional neuroradiology | 1 | 0.0 |
| Missing | 0 | |

**National report for general ICUs** - **Year 2018**
**Outcome indicators** - Adult elective surgical patients evaluated in the GiViTI model

| **ICU outcome** | N | % |
|---|---|---|
| Dead | 220 | 2.2 |
| Transferred to same hospital | 9777 | 95.6 |
| Transferred to other hospital | 194 | 1.9 |
| Discharged home | 29 | 0.3 |
| Disch. terminally ill | 3 | 0.0 |
| Missing | 0 | |

| **Transferred to** (N=9971) | N | % |
|---|---|---|
| Ward | 9673 | 97.0 |
| Other ICU | 59 | 0.6 |
| High dependency care unit | 197 | 2.0 |
| Rehabilitation | 31 | 0.3 |
| Day hospital or Long-term care | 11 | 0.1 |
| Missing | 0 | |

| **Reason of transfer to Other ICU** (N=61) | N | % |
|---|---|---|
| Specialist expertise | 23 | 37.7 |
| Step-up care | 0 | 0.0 |
| Logistical/organizational reasons | 37 | 60.7 |
| Step-down care | 1 | 1.6 |
| Missing | 0 | |

| **Transferred to Same hospital** (N=9777) | N | % |
|---|---|---|
| Ward | 9540 | 97.6 |
| Other ICU | 28 | 0.3 |
| High dependency care unit | 192 | 2.0 |
| Rehabilitation | 11 | 0.1 |
| Day hospital or Long-term care | 6 | 0.1 |
| Missing | 0 | |

| **Transferred to Other hospital** (N=194) | N | % |
|---|---|---|
| Ward | 133 | 68.6 |
| Other ICU | 31 | 16.0 |
| High dependency care unit | 5 | 2.6 |
| Rehabilitation | 20 | 10.3 |
| Day hospital or Long-term care | 5 | 2.6 |
| Missing | 0 | |

| **ICU mortality** | N | % |
|---|---|---|
| Alive | 10000 | 97.8 |
| Dead | 223 | 2.2 |
| Missing | 0 | |

| **Timing of ICU mortality** (N=223) | N | % |
|---|---|---|
| Daytime (08:00AM - 07:59PM) | 154 | 69.1 |
| Nighttime (08:00PM - 07:59AM) | 69 | 30.9 |
| Weekdays (Monday - Friday) | 176 | 78.9 |
| Weekend (Saturday - Sunday) | 47 | 21.1 |
| Missing | 0 | |

| **C.A.M. activation** (N=223) | N | % |
|---|---|---|
| Yes, with organ donation | 4 | 1.8 |
| Yes, without organ donation | 8 | 3.6 |
| No, with organ donation | 0 | 0.0 |
| No, without organ donation | 208 | 94.5 |
| Missing | 3 | |

| **Tissue removal** (N=223) | N | % |
|---|---|---|
| Yes, with C.A.M. activation | 3 | 1.3 |
| Yes, without C.A.M. activation | 12 | 5.4 |
| No | 208 | 93.3 |
| Missing | 0 | |

| **Hospital mortality** | N | % |
|---|---|---|
| Dead | 575 | 5.6 |
| Transf. to other acute-care hospital | 320 | 3.1 |
| Transf. to other type of hosp. stay | 944 | 9.2 |
| Nursing home | 165 | 1.6 |
| Voluntary discharge | 22 | 0.2 |
| Discharged home | 8197 | 80.2 |
| Missing | 0 | |

| **To other type of H stay** (N=944) | N | % |
|---|---|---|
| Rehabilitation in the same institute | 179 | 19.0 |
| Rehabilitation in other institute | 473 | 50.1 |
| DH/long-term care, same inst. | 105 | 11.1 |
| DH/long-term care, other inst. | 187 | 19.8 |
| Missing | 0 | |

| **Disch. terminally ill** (N=9648) | N | % |
|---|---|---|
| Yes | 66 | 0.7 |
| No | 9582 | 99.3 |
| Missing | 0 | |

| **Hospital mortality** | N | % |
|---|---|---|
| Alive | 9582 | 93.7 |
| Dead | 641 | 6.3 |
| Missing | 0 | |

| **Timing of hosp. mortality** (N=641) | N | % |
|---|---|---|
| In ICU | 223 | 34.8 |
| Within 24 hours after ICU | 37 | 5.8 |
| 24-47 hours after ICU | 17 | 2.7 |
| 48-71 hours after ICU | 13 | 2.0 |
| 72-95 hours after ICU | 14 | 2.2 |
| After 95 hours after ICU | 337 | 52.6 |
| Missing | 0 | |

| **Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU** (N=418) | |
|---|---|
| Mean | 20.9 |
| SD | 23.6 |
| Median | 15 |
| Q1−Q3 | 6−27 |
| Missing | 0 |

**National report for general ICUs** - **Year 2018**
**Outcome indicators** - Adult elective surgical patients evaluated in the GiViTI model

| **Last hospital mortality** | N | % |
|---|---|---|
| Alive | 9578 | 93.7 |
| Dead | 645 | 6.3 |
| Missing | 0 | |

| **ICU stay (days)** | |
|---|---|
| Mean | 2.0 |
| SD | 4.2 |
| Median | 1 |
| Q1−Q3 | 1−1 |
| Missing | 0 |

| **ICU stay (days)** **Alive** (N=10000) | |
|---|---|
| Mean | 1.8 |
| SD | 3.4 |
| Median | 1 |
| Q1−Q3 | 1−1 |
| Missing | 0 |

| **ICU stay (days)** **Dead** (N=223) | |
|---|---|
| Mean | 10.0 |
| SD | 14.9 |
| Median | 4 |
| Q1−Q3 | 1−10.5 |
| Missing | 0 |

| **Stay after ICU (days)** **Alive** (N=10000) | |
|---|---|
| Mean | 12.1 |
| SD | 17.3 |
| Median | 8 |
| Q1−Q3 | 4−14 |
| Missing | 3 |

| **Hospital stay (days)** | |
|---|---|
| Mean | 17.8 |
| SD | 20.6 |
| Median | 12 |
| Q1−Q3 | 7−21 |
| Missing | 0 |

| **Hospital stay (days)** **Alive** (N=9582) | |
|---|---|
| Mean | 17.2 |
| SD | 20.0 |
| Median | 12 |
| Q1−Q3 | 7−21 |
| Missing | 0 |

| **Hospital stay (days)** **Dead** (N=641) | |
|---|---|
| Mean | 27.0 |
| SD | 25.8 |
| Median | 20 |
| Q1−Q3 | 9−36 |
| Missing | 0 |

**National report for general ICUs** - **Year 2018**
**Characteristics on admission** - Adult emergency surgical patients evaluated in the GiViTI model

**Patients** (N): 9853

| **Sex** | N | % |
|---|---|---|
| Male | 5629 | 57.1 |
| Female | 4224 | 42.9 |
| Missing | 0 | |

| **Age (years)** | N | % |
|---|---|---|
| 17-45 | 1492 | 15.1 |
| 46-65 | 2394 | 24.3 |
| 66-75 | 2128 | 21.6 |
| >75 | 3839 | 39.0 |
| Missing | 0 | |
| Mean | 66.3 | |
| SD | 18.1 | |
| Median | 71 | |
| Q1−Q3 | 55−80 | |
| Min−Max | 17−103 | |

| **Body mass Index (BMI)** | N | % |
|---|---|---|
| Underweight | 640 | 6.5 |
| Normal | 4636 | 47.1 |
| Overweight | 3027 | 30.7 |
| Obese | 1550 | 15.7 |
| Missing | 0 | |

| **Pregnancy status** **Females** (N=4224) | N | % |
|---|---|---|
| Not fertile | 2339 | 55.4 |
| Not pregnant/Unknown | 1567 | 37.1 |
| Currently pregnant | 9 | 0.2 |
| Post partum | 307 | 7.3 |
| Missing | 2 | |

| **Comorbidities** | N | % |
|---|---|---|
| No | 1965 | 19.9 |
| Yes | 7888 | 80.1 |
| Missing | 0 | |

| **Comorbidities (top 10)** | N | % |
|---|---|---|
| Hypertension | 4941 | 50.1 |
| Arrhythmia | 1635 | 16.6 |
| Moderate COPD | 1135 | 11.5 |
| Any tumour without metastasis | 1112 | 11.3 |
| Diabetes Type II without insulin tr. | 1100 | 11.2 |
| Myocardial infarction | 1074 | 10.9 |
| Cerebrovascular disease | 1004 | 10.2 |
| Peripheral vascular disease | 964 | 9.8 |
| Antiplatelet therapy | 896 | 9.1 |
| Moderate or severe renal disease | 852 | 8.6 |
| Missing | 0 | |

| **Stay before ICU (days)** | |
|---|---|
| Mean | 3.7 |
| SD | 9.2 |
| Median | 1 |
| Q1−Q3 | 0−3 |
| Missing | 0 |

| **Source of admission** | N | % |
|---|---|---|
| Same hospital | 9012 | 91.5 |
| Other hospital | 823 | 8.4 |
| Long-term chronic care hospital | 18 | 0.2 |
| Directly from the community | 0 | 0.0 |
| Missing | 0 | |

| **Ward of admission** **Hospital** (N=9835) | N | % |
|---|---|---|
| Medical ward | 714 | 7.3 |
| Surgical ward | 5948 | 60.5 |
| Emergency room | 2712 | 27.6 |
| Other ICU | 326 | 3.3 |
| High dependency care unit | 135 | 1.4 |
| Missing | 0 | |

| **Reason for transfer from** **Other ICU** (N=326) | N | % |
|---|---|---|
| Specialist expertise | 189 | 58.0 |
| Step-up care | 47 | 14.4 |
| Logistical/organizational reasons | 90 | 27.6 |
| Step-down care | 0 | 0.0 |
| Missing | 0 | |

| **Ward of admission** **Same hospital** (N=9012) | N | % |
|---|---|---|
| Medical ward | 671 | 7.4 |
| Surgical ward | 5788 | 64.2 |
| Emergency room | 2296 | 25.5 |
| Other ICU | 129 | 1.4 |
| High dependency care unit | 128 | 1.4 |
| Missing | 0 | |

| **Ward of admission** **Other hospital** (N=823) | N | % |
|---|---|---|
| Medical ward | 43 | 5.2 |
| Surgical ward | 160 | 19.4 |
| Emergency room | 416 | 50.5 |
| Other ICU | 197 | 23.9 |
| High dependency care unit | 7 | 0.9 |
| Missing | 0 | |

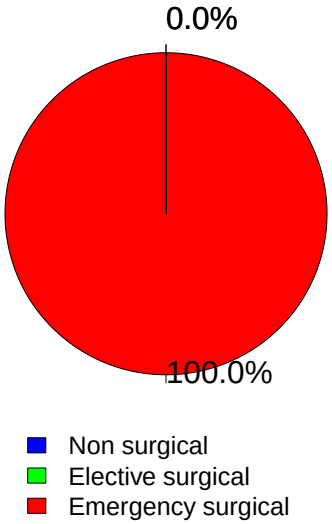
| **Scheduled admission** | N | % |
|---|---|---|
| No | 9837 | 99.8 |
| Yes | 16 | 0.2 |
| Missing | 0 | |

**National report for general ICUs** - **Year 2018**
**Characteristics on admission** - Adult emergency surgical patients evaluated in the GiViTI model

| **Trauma** | N | % |
|---|---|---|
| No | 7754 | 78.7 |
| Yes | 2099 | 21.3 |
| Multiple trauma | 912 | 9.3 |
| Missing | 0 | |

| **Surgical status** | N | % |
|---|---|---|
| Non surgical | 0 | 0.0 |
| Elective surgical | 0 | 0.0 |
| Emergency surgical | 9853 | 100.0 |
| Missing | 0 | |

**Surgical status**




| **Source of admission**<br>**Surgical pt.** (N=9853) | N | % |
|---|---|---|
| Operating theatre of surgical ward | 5439 | 55.3 |
| Operating theatre of emergency room | 1773 | 18.0 |
| Surgical ward | 509 | 5.2 |
| Other | 2114 | 21.5 |
| Missing | 18 | |

| **Surgical interventions (top 10)**<br>**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**<br>**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)**<br>**Emergency surgical** (N=9853) | N | % |
|---|---|---|
| Gastrointestinal surgery | 4495 | 45.6 |
| Neurosurgery | 1260 | 12.8 |
| Orthopaedic surgery | 1128 | 11.4 |
| Nephro/Urological surgery | 501 | 5.1 |
| Biliary tract surgery | 435 | 4.4 |
| Abdominal vascular surgery | 365 | 3.7 |
| Peripheral vascular surgery | 360 | 3.7 |
| ENT surgery | 296 | 3.0 |
| Obstetric surgery | 282 | 2.9 |
| Splenectomy | 240 | 2.4 |
| Missing | 491 | |

| **Timing**<br>**Emergency surgical** (N=9853) | N | % |
|---|---|---|
| From -7 to -3 days | 272 | 2.8 |
| From -2 to -1 days | 1170 | 11.9 |
| On ICU admission day | 8687 | 88.2 |
| The day after ICU admission | 465 | 4.7 |
| Missing | 29 | |

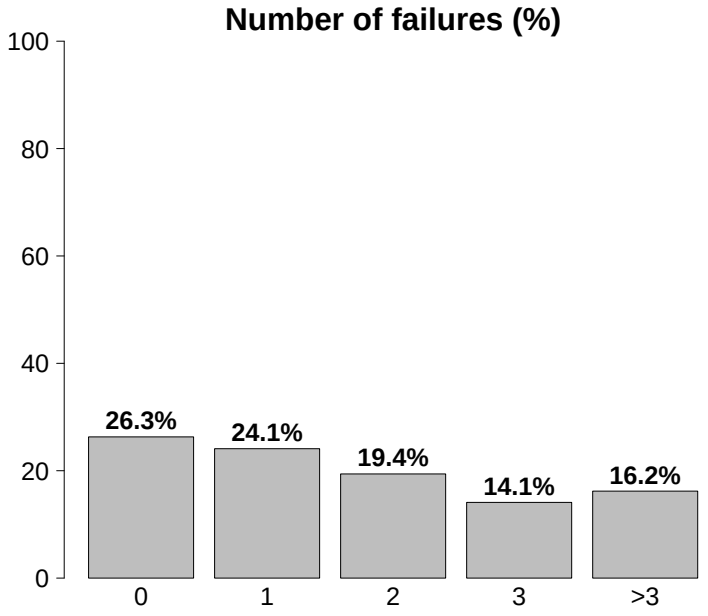
| **Non surgical interventions** | N | % |
|---|---|---|
| None | 9221 | 93.6 |
| Elective | 74 | 0.8 |
| Emergency | 558 | 5.7 |
| Missing | 0 | |

| **Non surgical interventions**<br>**Elective** (N=74) | N | % |
|---|---|---|
| Interventional endoscopy | 21 | 28.4 |
| Interventional radiology | 15 | 20.3 |
| Interventional neuroradiology | 7 | 9.5 |
| Interventional cardiology | 5 | 6.8 |
| Missing | 26 | |

| **Non surgical interventions**<br>**Emergency** (N=558) | N | % |
|---|---|---|
| Interventional radiology | 223 | 40.0 |
| Interventional endoscopy | 131 | 23.5 |
| Interventional neuroradiology | 122 | 21.9 |
| Interventional cardiology | 27 | 4.8 |
| Missing | 55 | |

**National report for general ICUs** - **Year 2018**
**Characteristics on admission** - Adult emergency surgical patients evaluated in the GiViTI model

| Reason for admission | N | % |
|---|---|---|
| Monitoring/Weaning | 3912 | 39.7 |
| Post surgical weaning | 1950 | 19.8 |
| Surgical monitoring | 1938 | 19.7 |
| Post interventional weaning | 3 | 0.0 |
| Interventional monitoring | 14 | 0.1 |
| Non surgical monitoring | 0 | 0.0 |
| Missing | 7 | |
| Admission for procedures/treatments | 0 | 0.0 |
| Intensive Treatment | 5940 | 60.3 |
| Only ventilatory support | 2308 | 23.4 |
| Only cardiovascular support | 467 | 4.7 |
| Ventilatory and cardiovascular support | 3165 | 32.1 |
| Missing | 0 | |
| Palliative Sedation | 0 | 0.0 |
| Diagnosis of death/Organ donation | 0 | 0.0 |
| Missing | 1 | |




| Failures on admission | N | % |
|---|---|---|
| No | 2590 | 26.3 |
| Yes | 7263 | 73.7 |
| A: Respiratory failure | 5474 | 55.6 |
| B: Cardiovascular failure | 3632 | 36.9 |
| C: Neurological failure | 1011 | 10.3 |
| D: Hepatic failure | 38 | 0.4 |
| E: Renal failure | 3887 | 39.4 |
| F: Acute skin failure | 1 | 0.0 |
| G: Metabolic failure | 2832 | 28.7 |
| H: Coagulation failure | 145 | 1.5 |
| Missing | 0 | |

| Failures on admission (top 10) | N | % |
|---|---|---|
| A | 1193 | 12.1 |
| ABEG | 1130 | 11.5 |
| E | 779 | 7.9 |
| AB | 674 | 6.8 |
| ABE | 464 | 4.7 |
| AC | 345 | 3.5 |
| AE | 325 | 3.3 |
| ABG | 290 | 2.9 |
| EG | 263 | 2.7 |
| G | 221 | 2.2 |
| Missing | 0 | |

| Respiratory failure | N | % |
|---|---|---|
| None | 4379 | 44.4 |
| Only hypoxic failure | 1641 | 16.7 |
| Only hypercapnic failure | 62 | 0.6 |
| Hypoxic-hypercapnic failure | 211 | 2.1 |
| Intubation for airway maint. | 3560 | 36.1 |
| Missing | 0 | |

| Cardiovascular failure | N | % |
|---|---|---|
| None | 6221 | 63.1 |
| Without shock | 622 | 6.3 |
| Cardiogenic shock | 133 | 1.3 |
| Septic shock | 1148 | 11.7 |
| Haemorrhagic/hypovolemic shock | 844 | 8.6 |
| Hypovolemic shock | 433 | 4.4 |
| Anaphylactic shock | 3 | 0.0 |
| Neurogenic shock | 124 | 1.3 |
| Other shock | 113 | 1.1 |
| Mixed shock | 212 | 2.2 |
| Missing | 0 | |

| Neurologic failure | N | % |
|---|---|---|
| None | 6659 | 86.8 |
| Cerebral coma | 776 | 10.1 |
| Metabolic coma | 141 | 1.8 |
| Postanoxic coma | 75 | 1.0 |
| Toxic coma | 19 | 0.2 |
| Missing or not evaluable | 2183 | |

| Renal failure (AKIN) | N | % |
|---|---|---|
| None | 5966 | 60.6 |
| Mild | 1937 | 19.7 |
| Moderate | 935 | 9.5 |
| Severe | 1015 | 10.3 |
| Missing | 0 | |

| Metabolic failure | N | % |
|---|---|---|
| None | 7021 | 71.3 |
| pH <= 7.3, PaCO2 < 45 mmHg | 639 | 6.5 |
| Base deficit >= 5 mmol/L, lactate >1.5x | 2193 | 22.3 |
| Missing | 0 | |

**National report for general ICUs - Year 2018**
**Characteristics on admission** - Adult emergency surgical patients evaluated in the GiViTI model

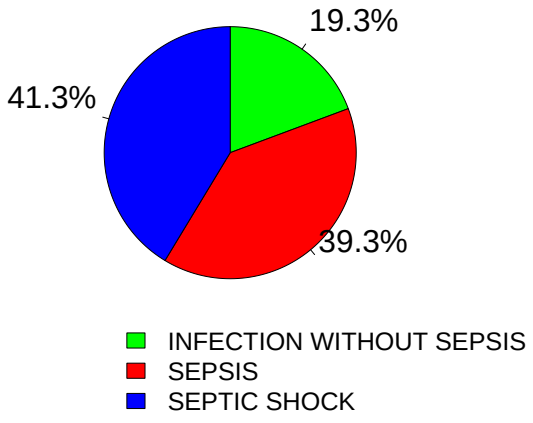
| Clinical conditions on admission | N | % |
|---|---|---|
| Respiratory | 842 | 8.5 |
| Pleural effusion | 237 | 2.4 |
| Upper respiratory tract disease | 135 | 1.4 |
| Aspiration pneumonia | 120 | 1.2 |
| Atelectasis | 113 | 1.1 |
| Pulmonary embolism | 66 | 0.7 |
| Cardiovascular | 970 | 9.8 |
| Ruptured or fissured aneurysm | 265 | 2.7 |
| Peripheral vascular disease | 200 | 2.0 |
| Acute severe arrhythmia: tachycardias | 147 | 1.5 |
| Cardiac arrest | 106 | 1.1 |
| Left heart failure without pulm. edema | 81 | 0.8 |
| Neurological | 861 | 8.7 |
| Spontaneous Intraparenchymal bleeding | 325 | 3.3 |
| Spontaneous Subarachnoid haemorrhage | 223 | 2.3 |
| Cerebral Aneurysm | 160 | 1.6 |
| Cerebral artery stroke | 100 | 1.0 |
| Chronic Subdural haematoma | 78 | 0.8 |
| Gastrointestinal and hepatic | 3973 | 40.3 |
| Gastrointestinal perforation | 1312 | 13.3 |
| Intestinal occlusion | 1147 | 11.6 |
| Bowel ischaemia | 490 | 5.0 |
| Digestive tract malignancy | 395 | 4.0 |
| Intrabdominal bleeding (non traumatic) | 312 | 3.2 |
| Trauma (anatomical districts) | 2099 | 21.3 |
| Pelvis/bone/joint & muscle | 1157 | 11.7 |
| Head | 727 | 7.4 |
| Chest | 639 | 6.5 |
| Abdomen | 562 | 5.7 |
| Spine | 465 | 4.7 |
| Major vessels injury | 132 | 1.3 |
| Miscellaneous | 20 | 0.2 |
| Other | 1673 | 17.0 |
| Nephrourologic disease | 333 | 3.4 |
| Metabolic disorder | 320 | 3.2 |
| Other disease | 282 | 2.9 |
| Coagulation disorder | 145 | 1.5 |
| Orthopaedic disease | 144 | 1.5 |
| Post transplantation | 169 | 1.7 |
| Liver transplantation | 80 | 0.8 |
| Renal transplantation | 58 | 0.6 |
| Infections | 3267 | 33.2 |
| NON-surgical secondary peritonitis | 1107 | 11.2 |
| Post-surgical peritonitis | 537 | 5.5 |
| Pneumonia | 302 | 3.1 |
| Cholecystitis/cholangitis | 285 | 2.9 |
| Primary peritonitis | 280 | 2.8 |
| NON-surgical skin/soft tissue infection | 209 | 2.1 |
| NON-surgical urinary tract infection | 203 | 2.1 |
| L.R.T.I. other than pneumonia | 85 | 0.9 |
| Clinical sepsis | 55 | 0.6 |
| Post-surgical skin/soft tissue infection | 51 | 0.5 |
| Missing | 0 | |

| Trauma (anatomical districts) | N | % |
|---|---|---|
| Head | 727 | 7.4 |
| Traumatic Subdural haematoma | 323 | 3.3 |
| Maxillofacial fracture | 249 | 2.5 |
| Traumatic subarachnoid haemorrhage | 208 | 2.1 |
| Cerebral contusion/laceration | 200 | 2.0 |
| Skull fracture | 180 | 1.8 |
| Spine | 465 | 4.7 |
| Vertebral fracture, without deficit | 361 | 3.7 |
| Cervical injury, incomplete deficit | 31 | 0.3 |
| Tetraplegia | 28 | 0.3 |
| Chest | 639 | 6.5 |
| Other injuries of the chest | 330 | 3.3 |
| Traum. haemothorax/pneumothorax | 273 | 2.8 |
| Severe lung contusion/laceration | 166 | 1.7 |
| Abdomen | 562 | 5.7 |
| Spleen: Massive rupture | 146 | 1.5 |
| Spleen: Moderate-Severe laceration | 145 | 1.5 |
| Minor injuries of the abdomen | 134 | 1.4 |
| Pelvis/bone/joint & muscle | 1157 | 11.7 |
| Long bone fracture | 991 | 10.1 |
| Multiple fracture of the pelvis | 239 | 2.4 |
| Very severe or open fracture of the pelvis | 63 | 0.6 |
| Major vessels injury | 132 | 1.3 |
| Proximal limbs vessels: transection | 62 | 0.6 |
| Neck vessels: dissection/transection | 24 | 0.2 |
| Major abdominal vessels: transection | 24 | 0.2 |
| Miscellaneous | 20 | 0.2 |
| Burns (>30% BSA) | 15 | 0.2 |
| Inhalation injury | 8 | 0.1 |
| Missing | 0 | |

| Infection severity on admission | N | % |
|---|---|---|
| None | 6586 | 67.3 |
| INFECTION WITHOUT SEPSIS | 618 | 6.3 |
| SEPSIS | 1259 | 12.9 |
| SEPTIC SHOCK | 1323 | 13.5 |
| Missing | 67 | |

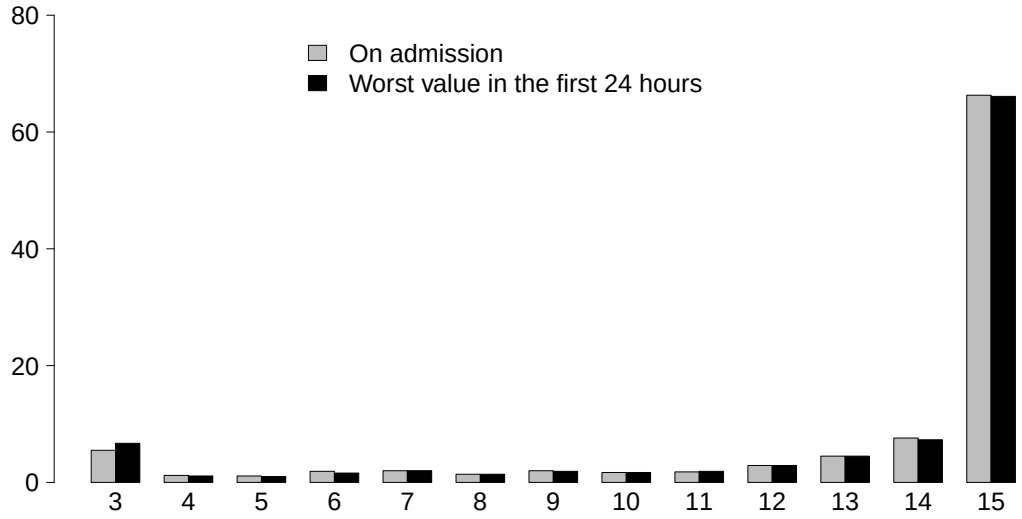
**Infection severity on admission**

Patients infected (N=3200)



**National report for general ICUs** - **Year 2018**
**Severity scores** - Adult emergency surgical patients evaluated in the GiViTI model

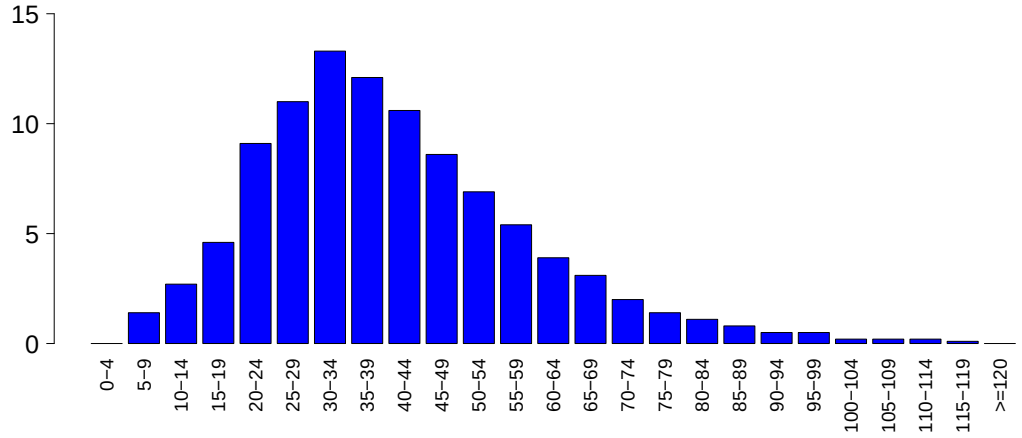
## Glasgow Coma Scale (%)




| GCS (admission) | |
|---|---|
| Median | 15 |
| Q1−Q3 | 13−15 |
| Not evaluable | 2183 |
| Missing | 0 |

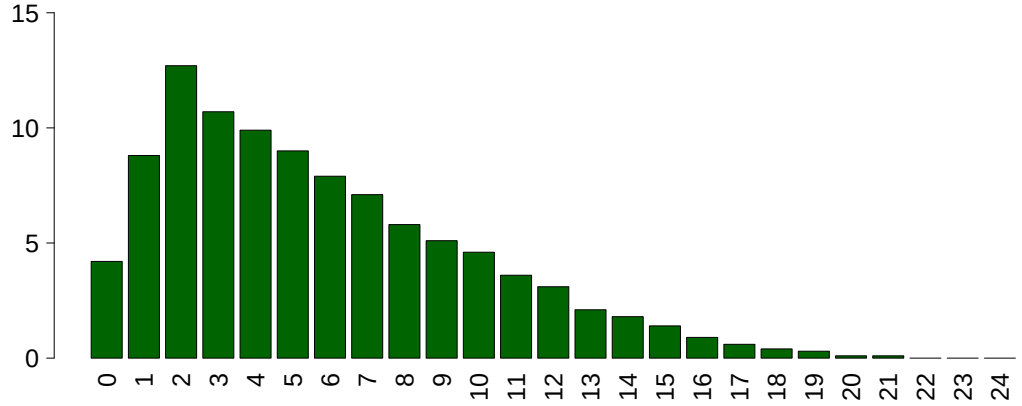
| GCS (first 24 hours) | |
|---|---|
| Median | 15 |
| Q1−Q3 | 13−15 |
| Not evaluable | 1756 |
| Missing | 0 |

## SAPS II (%)




| SAPSII | |
|---|---|
| Mean | 40.6 |
| SD | 18.3 |
| Median | 38 |
| Q1−Q3 | 28−50 |
| Not evaluable | 1756 |
| Missing | 0 |

## SOFA (%)




| SOFA | |
|---|---|
| Mean | 5.8 |
| SD | 4.1 |
| Median | 5 |
| Q1−Q3 | 2−8 |
| Not evaluable | 1756 |
| Missing | 0 |

**National report for general ICUs** - **Year 2018**
**Characteristics during the stay** - Adult emergency surgical patients evaluated in the GiViTI model

| **Complications during the stay** | N | % |
|---|---|---|
| No | 6535 | 66.3 |
| Yes | 3317 | 33.7 |
| Missing | 1 | |

| **Failures during the stay** | N | % |
|---|---|---|
| No | 8390 | 85.2 |
| Yes | 1463 | 14.8 |
| A: Respiratory failure | 675 | 6.9 |
| B: Cardiovascular failure | 629 | 6.4 |
| C: Neurological failure | 88 | 0.9 |
| D: Hepatic failure | 44 | 0.4 |
| E: Renal failure (AKIN) | 439 | 4.5 |
| F: Acute skin failure | 3 | 0.0 |
| G: Metabolic failure | 138 | 1.4 |
| H: Coagulation failure | 75 | 0.8 |
| Missing | 0 | |

| **Failures during the stay (top 10)** | N | % |
|---|---|---|
| A | 390 | 4.0 |
| B | 312 | 3.2 |
| E | 193 | 2.0 |
| AB | 117 | 1.2 |
| G | 89 | 0.9 |
| BE | 64 | 0.6 |
| ABE | 46 | 0.5 |
| AE | 38 | 0.4 |
| C | 22 | 0.2 |
| D | 16 | 0.2 |
| Missing | 0 | |

| **Respiratory failure occured** | N | % |
|---|---|---|
| None | 9177 | 93.1 |
| Intubation for airway maint. | 224 | 2.3 |
| Hypoxic failure | 443 | 4.5 |
| Hypercapnic failure | 95 | 1.0 |
| Missing | 1 | |

| **Cardiovascular failure occured** | N | % |
|---|---|---|
| None | 9223 | 93.6 |
| Cardiogenic shock | 84 | 0.9 |
| Hypovolemic shock | 118 | 1.2 |
| Haemorrhagic/hypovolemic shock | 106 | 1.1 |
| Septic shock | 264 | 2.7 |
| Anaphylactic shock | 1 | 0.0 |
| Neurogenic shock | 40 | 0.4 |
| Other shock | 64 | 0.6 |
| Missing | 1 | |

| **Neurological failure occured** | N | % |
|---|---|---|
| None | 9764 | 99.1 |
| Cerebral coma | 52 | 0.5 |
| Metabolic coma | 34 | 0.3 |
| Postanoxic coma | 2 | 0.0 |
| Missing | 1 | |

| **Renal failure occured (AKIN)** | N | % |
|---|---|---|
| None | 9413 | 95.5 |
| Mild | 67 | 0.7 |
| Moderate | 53 | 0.5 |
| Severe | 319 | 3.2 |
| Missing | 1 | |

| **Complications during the stay** | N | % |
|---|---|---|
| Respiratory | 578 | 5.9 |
| Pleural effusion | 275 | 2.8 |
| Atelectasis | 183 | 1.9 |
| Pneumothorax/Pneumomediastinum | 54 | 0.5 |
| Severe ARDS | 48 | 0.5 |
| Upper resp. tract disease | 34 | 0.3 |
| Cardiovascular | 784 | 8.0 |
| Acute severe arrhythmia: tachycardias | 357 | 3.6 |
| Cardiac arrest | 208 | 2.1 |
| Deep venous thrombosis | 81 | 0.8 |
| Acute severe arrhythmia: bradycardias | 58 | 0.6 |
| Peripheral vascular disease | 43 | 0.4 |
| Neurological | 752 | 7.6 |
| Drowsiness/agitation/delirium | 392 | 4.0 |
| Intracranial hypertension | 118 | 1.2 |
| Seizures | 100 | 1.0 |
| Brain edema | 99 | 1.0 |
| New ischaemic stroke | 76 | 0.8 |
| Gastrointestinal and hepatic | 523 | 5.3 |
| Bowel ischaemia | 102 | 1.0 |
| Gastrointestinal perforation | 79 | 0.8 |
| Anastomotic dehiscence | 77 | 0.8 |
| Paralytic Ileus | 68 | 0.7 |
| Intrabdominal bleeding | 63 | 0.6 |
| Other | 357 | 3.6 |
| Metabolic disorder | 138 | 1.4 |
| Nephrourologic disease | 73 | 0.7 |
| Other disease | 70 | 0.7 |
| Other skin and/or soft tissue pathology | 34 | 0.3 |
| Category/Stage II: Partial Thickness Skin Loss | 28 | 0.3 |
| Extremity compartment syndrome (severe) | 28 | 0.3 |
| Category/Stage I: Nonblanchable Erythema | 12 | 0.1 |
| Infections | 1121 | 11.4 |
| Pneumonia | 398 | 4.0 |
| L.R.T.I. other than pneumonia | 220 | 2.2 |
| Catheter-related bacteremia (CR-BSI) | 139 | 1.4 |
| Primary bacteraemia of unknown origin | 120 | 1.2 |
| NON-surgical urinary tract infection | 94 | 1.0 |
| Post-surgical peritonitis | 93 | 0.9 |
| Post-surgical skin/soft tissue infection | 77 | 0.8 |
| Clinical sepsis | 40 | 0.4 |
| Upper respiratory tract infection | 38 | 0.4 |
| NON-surgical skin/soft tissue infection | 34 | 0.3 |
| Missing | 1 | |

**National report for general ICUs** - **Year 2018**
**Characteristics during the stay** - Adult emergency surgical patients evaluated in the GiViTI model

| **Infections** | N | % |
|---|---|---|
| None | 5826 | 59.1 |
| Only on admission | 2905 | 29.5 |
| On admission and during ICU stay | 361 | 3.7 |
| Only during ICU stay | 760 | 7.7 |
| Missing | 1 | |

| **Maximum severity of infection** | N | % |
|---|---|---|
| None | 5826 | 59.9 |
| INFECTION WITHOUT SEPSIS | 735 | 7.6 |
| SEPSIS | 1693 | 17.4 |
| SEPTIC SHOCK | 1480 | 15.2 |
| Missing | 119 | |

**Severity evolution**

| | | **During the stay** | | | | |
|---|---|---|---|---|---|---|
| | N (R %) | None | INFECTION WITHOUT SEPSIS | SEPSIS | SEPTIC SHOCK | TOT |
| **Admission** | None | 5826 (89.2%) | 222 (3.4%) | 403 (6.2%) | 81 (1.2%) | 6532 |
| | INFECTION WITHOUT SEPSIS | - | 512 (82.8%) | 95 (15.4%) | 11 (1.8%) | 618 |
| | SEPSIS | - | - | 1194 (94.8%) | 65 (5.2%) | 1259 |
| | SEPTIC SHOCK | - | - | - | 1323 (100.0%) | 1323 |
| | TOT | 5826 | 734 | 1692 | 1480 | 9732 |

| **Ventil. Associat. Pneumonia (VAP)** | N | % |
|---|---|---|
| No | 9496 | 96.4 |
| Yes | 356 | 3.6 |
| Missing | 1 | |

| **Catheter Bacteraemia (CR-BSI)** | N | % |
|---|---|---|
| No | 9713 | 98.6 |
| Yes | 139 | 1.4 |
| Missing | 1 | |

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

| | |
|---|---|
| Estimate | 11.9 |
| CI (95%) | 10.7−13.2 |

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

| | |
|---|---|
| Estimate | 2.8 |
| CI (95%) | 2.3−3.3 |

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

| | |
|---|---|
| Estimate | 9.5% |
| CI (95%) | 8.5−10.5 |

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

| | |
|---|---|
| Estimate | 3.3% |
| CI (95%) | 2.8−3.9 |

**National report for general ICUs** - **Year 2018**

**Process indicators** - Adult emergency surgical 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 |
| **Procedures (antibiotics excluded)** | 9549 | 96.9 | | | | | | | | | | |
| Invasive ventilation | 7808 | 79.2 | 6528 | 66.3 | 1252 | 12.7 | 1 | 1–5 | 1 | 0 | 0–0 | 0 |
| Non invasive ventilation | 987 | 10.0 | 118 | 1.2 | 187 | 1.9 | 2 | 1–3 | 0 | 1 | 0–4 | 0 |
| Tracheostomy | 922 | 9.4 | 132 | 1.3 | 774 | 7.9 | 12 | 5–22 | 0 | 8 | 5–12 | 0 |
| iNO (inhaled nitric oxide) | 13 | 0.1 | 0 | 0 | 2 | 0 | 3 | 1–4 | 0 | 0 | 0–6 | 0 |
| Central Venous Catheter | 6896 | 70.0 | 3899 | 39.6 | 5631 | 57.2 | 4 | 2–9 | 1 | 0 | 0–0 | 0 |
| PICC | 192 | 1.9 | 79 | 0.8 | 164 | 1.7 | 4 | 1–7 | 0 | 5 | 1–16 | 0 |
| Arterial Catheter | 8230 | 83.5 | 5184 | 52.6 | 2087 | 21.2 | 3 | 1–7 | 1 | 0 | 0–0 | 0 |
| Vasoactive drugs | 4333 | 44.0 | 2521 | 25.6 | 785 | 8 | 2 | 1–4 | 1 | 0 | 0–0 | 0 |
| Antiarrhythmics | 778 | 7.9 | 191 | 1.9 | 399 | 4 | 3 | 1–6 | 0 | 1 | 0–2 | 0 |
| IABP | 3 | 0.0 | 2 | 0 | 1 | 0 | 0 | 0–0 | 0 | 0 | 0–0 | 0 |
| Invasive monitoring of C.O. | 471 | 4.8 | 131 | 1.3 | 75 | 0.8 | 4 | 2–7 | 0 | 0 | 0–1 | 0 |
| Continous monitoring of ScVO2 | 29 | 0.3 | 15 | 0.2 | 9 | 0.1 | 2 | 1–5 | 0 | 0 | 0–1 | 0 |
| Temporary pacing | 16 | 0.2 | 5 | 0.1 | 7 | 0.1 | 1 | 1–4 | 0 | 1 | 0–2 | 0 |
| Ventricular assistance | 0 | 0.0 | | | | | | | | | | |
| DC-shock | 81 | 0.8 | | | | | | | | 1 | 0–3 | 0 |
| CPR | 170 | 1.7 | | | | | | | | 0 | 0–2 | 0 |
| Massive blood transfusion | 304 | 3.1 | | | | | | | | 0 | 0–0 | 0 |
| ICP monitoring without CSF drainage | 176 | 1.8 | 73 | 0.7 | 26 | 0.3 | 7 | 4–10 | 0 | 0 | 0–1 | 0 |
| ICP monitoring with CSF drainage | 202 | 2.1 | 101 | 1 | 92 | 0.9 | 9 | 4–17 | 0 | 0 | 0–0 | 0 |
| External ventricular drainage without ICP | 105 | 1.1 | 60 | 0.6 | 60 | 0.6 | 9 | 3–18 | 0 | 0 | 0–1 | 0 |
| Haemofiltration | 376 | 3.8 | 27 | 0.3 | 83 | 0.8 | 4 | 2–8 | 0 | 1 | 0–3 | 0 |
| Haemodialysis | 215 | 2.2 | 36 | 0.4 | 83 | 0.8 | 3 | 1–7 | 1 | 1 | 1–5 | 0 |
| ECMO | 8 | 0.1 | 5 | 0.1 | 1 | 0 | 2 | 2–5 | 0 | 1 | 0–6 | 0 |
| Hepatic clearance techniques | 3 | 0.0 | | | | | | | | | | |
| Clearance techniques during sepsis | 94 | 1.0 | 7 | 0.1 | 8 | 0.1 | 3 | 1–4 | 0 | 1 | 0–1 | 0 |
| IAP (intra-abdominal pressure) | 262 | 2.7 | | | | | | | | | | |
| Hypothermia | 15 | 0.2 | 0 | 0 | 0 | 0 | 2 | 1–4 | 0 | 3 | 0–6 | 0 |
| Enteral nutrition | 2678 | 27.2 | 270 | 2.7 | 1859 | 18.9 | 7 | 3–15 | 1 | 2 | 1–3 | 0 |
| Parenteral nutrition | 2595 | 26.3 | 286 | 2.9 | 1753 | 17.8 | 4 | 2–8 | 1 | 1 | 0–2 | 0 |
| SDD (Topical, Topical and systemic) | 127 | 1.3 | | | | | | | | | | |
| Patient restraint | 232 | 2.4 | | | | | | | | | | |
| Peridural catheter | 136 | 1.4 | 109 | 1.1 | 99 | 1 | 2 | 1–3 | 0 | 1 | 0–2 | 0 |
| Electrical cardioversion | 63 | 0.6 | | | | | | | | 2 | 0–4 | 0 |
| Vacuum therapy | 147 | 1.5 | | | | | | | | | | |
| **Antibiotics** | 7771 | 78.9 | | | | | | | | | | |
| Antibiotic prophylaxis | 4291 | 43.6 | 2925 | 29.7 | 2278 | 23.1 | 2 | 1–3 | 0 | 0 | 0–0 | 0 |
| Empirical antibiotic therapy | 2824 | 28.7 | 1596 | 16.2 | 1452 | 14.7 | 3 | 2–5 | 1 | 0 | 0–2 | 0 |
| Empirical antibiotic therapy in unconfirmed diagnosis | 704 | 7.1 | 335 | 3.4 | 418 | 4.2 | 3 | 2–6 | 0 | 0 | 0–3 | 0 |
| Targeted antibiotic therapy | 1551 | 15.7 | 187 | 1.9 | 1015 | 10.3 | 7 | 3–12 | 0 | 4 | 3–8 | 0 |

**National report for general ICUs** - **Year 2018**
**Process indicators** - Adult emergency surgical patients evaluated in the GiViTI model

| **Invasive ventilation** (N=7808) | N | % | Length (days) Mean | SD | Median | Q1-Q3 | Missing |
|---|---|---|---|---|---|---|---|
| Due to pulmonary failure | 1905 | 23.1 | 6.5 | 9.6 | 3 | 1−8 | 0 |
| For airway mainteinance | 3482 | 42.3 | 5.9 | 9.1 | 2 | 1−7 | 1 |
| In weaning | 1919 | 23.3 | 0.5 | 0.5 | 0 | 0−1 | 0 |
| Not evaluable | 935 | 11.3 | 2.7 | 6.6 | 1 | 0−2 | 441 |
| Reintubation within 48 hours | 160 | 1.9 | 6.2 | 6.7 | 4 | 2−9 | 1 |

| **Non invasive ventilation** (N=987) | N | % |
|---|---|---|
| Non invasive ventilation only | 285 | 28.9 |
| Non invasive ventilation failed | 91 | 9.2 |
| For weaning | 537 | 54.4 |
| Other | 74 | 7.5 |
| Missing | 0 | |

| **Tracheostomy not present on admission** (N=790) | N | % |
|---|---|---|
| Surgical | 157 | 19.9 |
| Percutwist | 58 | 7.3 |
| Ciaglia | 96 | 12.2 |
| Monodil. Ciaglia | 284 | 35.9 |
| Fantoni | 36 | 4.6 |
| Griggs | 132 | 16.7 |
| Other Kind | 19 | 2.4 |
| Unknown | 8 | 1.0 |
| Missing | 0 | |

| **Tracheostomy - Days after the beginning of inv. vent. Not present on admission** (N=785) | |
|---|---|
| Mean | 9.0 |
| SD | 6.0 |
| Median | 8 |
| Q1−Q3 | 5−12 |
| Missing | 0 |

| **Invasive monitoring of C.O.** (N=471) | N | % |
|---|---|---|
| Swan Ganz | 126 | 26.8 |
| PICCO | 265 | 56.3 |
| LIDCO | 2 | 0.4 |
| Vigileo-PRAM | 58 | 12.3 |
| Other | 20 | 4.2 |
| Missing | 0 | |

| **SDD** (N=127) | N | % |
|---|---|---|
| Topical | 124 | 97.6 |
| Topical and systemic | 3 | 2.4 |
| Missing | 0 | |

| **Antibiotic therapy Pt. infected in ICU only** (N=760) | N | % |
|---|---|---|
| Only empirical | 157 | 24.3 |
| Only targeted | 206 | 31.8 |
| Targeted after empirical | 234 | 36.2 |
| Other | 50 | 7.7 |
| Missing | 113 | |

| **Surgical interventions** | N | % |
|---|---|---|
| No | 9050 | 91.9 |
| Yes | 803 | 8.1 |
| Missing | 0 | |

| **Number of surgical interventions** | N | % |
|---|---|---|
| 0 | 9050 | 91.9 |
| 1 | 540 | 5.5 |
| 2 | 146 | 1.5 |
| 3 | 60 | 0.6 |
| >3 | 57 | 0.6 |
| Missing | 0 | |

| **Surgical interventions Days from admission** | |
|---|---|
| Mean | 10.1 |
| SD | 10.6 |
| Median | 7 |
| Q1−Q3 | 3−13 |
| Missing | 1 |

| **Surgical interventions (top 10)** | N | % |
|---|---|---|
| Gastrointestinal surgery | 537 | 5.5 |
| Orthopaedic surgery | 216 | 2.2 |
| Neurosurgery | 132 | 1.3 |
| Other surgery | 99 | 1.0 |
| ENT surgery | 74 | 0.8 |
| Plastic surgery | 47 | 0.5 |
| Maxillo-Facial surgery | 40 | 0.4 |
| Thoracic surgery | 30 | 0.3 |
| Nephro/Urological surgery | 27 | 0.3 |
| Hepatic surgery | 25 | 0.3 |
| Missing | 0 | |

| **Non surgical interventions** | N | % |
|---|---|---|
| No | 9639 | 97.8 |
| Yes | 214 | 2.2 |
| Missing | 0 | |

| **Non surgical interventions Days from admission** | |
|---|---|
| Mean | 13.4 |
| SD | 11.6 |
| Median | 10 |
| Q1−Q3 | 4−18.5 |
| Missing | 6 |

| **Non surgical interventions** | N | % |
|---|---|---|
| Interventional endoscopy | 133 | 1.3 |
| Interventional radiology | 67 | 0.7 |
| Interventional neuroradiology | 40 | 0.4 |
| Interventional cardiology | 17 | 0.2 |
| Missing | 0 | |

**National report for general ICUs** - **Year 2018**
**Outcome indicators** - Adult emergency surgical patients evaluated in the GiViTI model

| **ICU outcome** | N | % |
|---|---|---|
| Dead | 1569 | 15.9 |
| Transferred to same hospital | 7682 | 78.0 |
| Transferred to other hospital | 567 | 5.8 |
| Discharged home | 18 | 0.2 |
| Disch. terminally ill | 17 | 0.2 |
| Missing | 0 | |

| **Transferred to** (N=8249) | N | % |
|---|---|---|
| Ward | 7152 | 86.7 |
| Other ICU | 422 | 5.1 |
| High dependency care unit | 510 | 6.2 |
| Rehabilitation | 148 | 1.8 |
| Day hospital or Long-term care | 17 | 0.2 |
| Missing | 0 | |

| **Reason of transfer to Other ICU** (N=433) | N | % |
|---|---|---|
| Specialist expertise | 171 | 39.5 |
| Step-up care | 24 | 5.5 |
| Logistical/organizational reasons | 235 | 54.3 |
| Step-down care | 3 | 0.7 |
| Missing | 0 | |

| **Transferred to Same hospital** (N=7682) | N | % |
|---|---|---|
| Ward | 7033 | 91.6 |
| Other ICU | 120 | 1.6 |
| High dependency care unit | 480 | 6.2 |
| Rehabilitation | 37 | 0.5 |
| Day hospital or Long-term care | 12 | 0.2 |
| Missing | 0 | |

| **Transferred to Other hospital** (N=567) | N | % |
|---|---|---|
| Ward | 119 | 21.0 |
| Other ICU | 302 | 53.3 |
| High dependency care unit | 30 | 5.3 |
| Rehabilitation | 111 | 19.6 |
| Day hospital or Long-term care | 5 | 0.9 |
| Missing | 0 | |

| **ICU mortality** | N | % |
|---|---|---|
| Alive | 8267 | 83.9 |
| Dead | 1586 | 16.1 |
| Missing | 0 | |

| **Timing of ICU mortality** (N=1586) | N | % |
|---|---|---|
| Daytime (08:00AM - 07:59PM) | 1031 | 65.0 |
| Nighttime (08:00PM - 07:59AM) | 555 | 35.0 |
| Weekdays (Monday - Friday) | 1217 | 76.7 |
| Weekend (Saturday - Sunday) | 369 | 23.3 |
| Missing | 0 | |

| **C.A.M. activation** (N=1586) | N | % |
|---|---|---|
| Yes, with organ donation | 70 | 4.5 |
| Yes, without organ donation | 62 | 4.0 |
| No, with organ donation | 2 | 0.1 |
| No, without organ donation | 1435 | 91.5 |
| Missing | 17 | |

| **Tissue removal** (N=1586) | N | % |
|---|---|---|
| Yes, with C.A.M. activation | 56 | 3.5 |
| Yes, without C.A.M. activation | 85 | 5.4 |
| No | 1445 | 91.1 |
| Missing | 0 | |

| **Hospital mortality** | N | % |
|---|---|---|
| Dead | 2293 | 23.3 |
| Transf. to other acute-care hospital | 784 | 8.0 |
| Transf. to other type of hosp. stay | 1585 | 16.1 |
| Nursing home | 171 | 1.7 |
| Voluntary discharge | 43 | 0.4 |
| Discharged home | 4977 | 50.5 |
| Missing | 0 | |

| **To other type of H stay** (N=1585) | N | % |
|---|---|---|
| Rehabilitation in the same institute | 306 | 19.3 |
| Rehabilitation in other institute | 780 | 49.2 |
| DH/long-term care, same inst. | 191 | 12.1 |
| DH/long-term care, other inst. | 308 | 19.4 |
| Missing | 0 | |

| **Disch. terminally ill** (N=7560) | N | % |
|---|---|---|
| Yes | 105 | 1.4 |
| No | 7455 | 98.6 |
| Missing | 0 | |

| **Hospital mortality** | N | % |
|---|---|---|
| Alive | 7455 | 75.7 |
| Dead | 2398 | 24.3 |
| Missing | 0 | |

| **Timing of hosp. mortality** (N=2398) | N | % |
|---|---|---|
| In ICU | 1586 | 66.1 |
| Within 24 hours after ICU | 44 | 1.8 |
| 24-47 hours after ICU | 37 | 1.5 |
| 48-71 hours after ICU | 38 | 1.6 |
| 72-95 hours after ICU | 48 | 2.0 |
| After 95 hours after ICU | 645 | 26.9 |
| Missing | 0 | |

| **Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU** (N=812) | |
|---|---|
| Mean | 17.4 |
| SD | 22.0 |
| Median | 10 |
| Q1−Q3 | 4−21 |
| Missing | 0 |

**National report for general ICUs** - **Year 2018**
**Outcome indicators** - Adult emergency surgical patients evaluated in the GiViTI model

| **Last hospital mortality** | N | % |
|---|---|---|
| Alive | 7406 | 75.2 |
| Dead | 2447 | 24.8 |
| Missing | 0 | |

| **ICU stay (days)** | |
|---|---|
| Mean | 6.2 |
| SD | 9.7 |
| Median | 2 |
| Q1−Q3 | 1−7 |
| Missing | 0 |

| **ICU stay (days)** **Alive** (N=8267) | |
|---|---|
| Mean | 5.9 |
| SD | 9.5 |
| Median | 2 |
| Q1−Q3 | 1−6 |
| Missing | 0 |

| **ICU stay (days)** **Dead** (N=1586) | |
|---|---|
| Mean | 7.9 |
| SD | 10.7 |
| Median | 4 |
| Q1−Q3 | 1−10 |
| Missing | 0 |

| **Stay after ICU (days)** **Alive** (N=8267) | |
|---|---|
| Mean | 15.3 |
| SD | 18.4 |
| Median | 10 |
| Q1−Q3 | 5−19 |
| Missing | 3 |

| **Hospital stay (days)** | |
|---|---|
| Mean | 22.4 |
| SD | 22.8 |
| Median | 16 |
| Q1−Q3 | 9−29 |
| Missing | 0 |

| **Hospital stay (days)** **Alive** (N=7455) | |
|---|---|
| Mean | 23.9 |
| SD | 22.8 |
| Median | 17 |
| Q1−Q3 | 10−30 |
| Missing | 0 |

| **Hospital stay (days)** **Dead** (N=2398) | |
|---|---|
| Mean | 17.9 |
| SD | 22.0 |
| Median | 11 |
| Q1−Q3 | 4−24 |
| Missing | 0 |

**National report for general ICUs** - **Year 2018**
**Characteristics on admission** - Pediatric patients evaluated with PIM 3

**Patients** (N): 511

| **Sex** | N | % |
|---|---|---|
| Male | 299 | 58.5 |
| Female | 212 | 41.5 |
| Missing | 0 | |

| **Age** | N | % |
|---|---|---|
| Newborn (0-4 weeks) | 1 | 0.2 |
| 1-6 months | 2 | 0.4 |
| 6-12 months | 18 | 3.5 |
| 12-24 months | 35 | 6.8 |
| 2-4 years | 62 | 12.1 |
| 5-8 years | 94 | 18.4 |
| 9-16 years | 299 | 58.5 |
| Missing | 0 | |
| Mean | 9.4 | |
| SD | 5.3 | |
| Median | 10 | |
| Q1−Q3 | 5−14.5 | |
| Min−Max | 0−16 | |

| **Weight (kg)** | |
|---|---|
| **Newborns** (N=1) | |
| Mean | 26.0 |
| SD | |
| Median | 26 |
| Q1−Q3 | 26−26 |
| Missing | 0 |

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

| **Comorbidities** | N | % |
|---|---|---|
| No | 300 | 58.7 |
| Yes | 211 | 41.3 |
| Missing | 0 | |

| **Comorbidities (top 10)** | N | % |
|---|---|---|
| Encephalopathy | 43 | 8.4 |
| Genetic diseases | 34 | 6.7 |
| Asthma | 23 | 4.5 |
| Skeletal malformations/disorders | 23 | 4.5 |
| Hemiplegia or paraplegia or quadriplegia | 20 | 3.9 |
| Neurodegenerative/Neuromuscular disease | 20 | 3.9 |
| Any tumour without metastasis | 14 | 2.7 |
| Brain and skull malformations | 13 | 2.5 |
| Congenital heart defect | 12 | 2.3 |
| Restrictive lung disease | 12 | 2.3 |
| Missing | 0 | |

| **Previous ICU admissions** | N | % |
|---|---|---|
| None | 350 | 68.5 |
| <=2 | 68 | 13.3 |
| >2 | 23 | 4.5 |
| Unknown | 70 | 13.7 |
| Missing | 0 | |

| **Previous ICU admissions** (N=91) | N | % |
|---|---|---|
| Paediatric | 36 | 39.6 |
| Neonatal | 23 | 25.3 |
| General - adult | 40 | 44.0 |
| Other/Unknown | 2 | 2.2 |
| Missing | 0 | |

| **Stay before ICU (days)** | |
|---|---|
| Mean | 1.5 |
| SD | 5.0 |
| Median | 0 |
| Q1−Q3 | 0−1 |
| Missing | 1 |

| **Source of admission** | N | % |
|---|---|---|
| Same hospital | 412 | 80.6 |
| Other hospital | 69 | 13.5 |
| Long-term chronic care hospital | 0 | 0.0 |
| Directly from the community | 30 | 5.9 |
| Missing | 0 | |

| **Ward of admission** | | |
|---|---|---|
| **Hospital** (N=481) | N | % |
| Medical ward | 89 | 18.5 |
| Surgical ward | 147 | 30.6 |
| Emergency room | 228 | 47.4 |
| Other ICU | 17 | 3.5 |
| High dependency care unit | 0 | 0.0 |
| Neonatology | 0 | 0.0 |
| Missing | 0 | |

| **Reason for transfer from** | | |
|---|---|---|
| **Other ICU** (N=17) | N | % |
| Specialist expertise | 12 | 70.6 |
| Step-up care | 1 | 5.9 |
| Logistical/organizational reasons | 4 | 23.5 |
| Step-down care | 0 | 0.0 |
| Missing | 0 | |

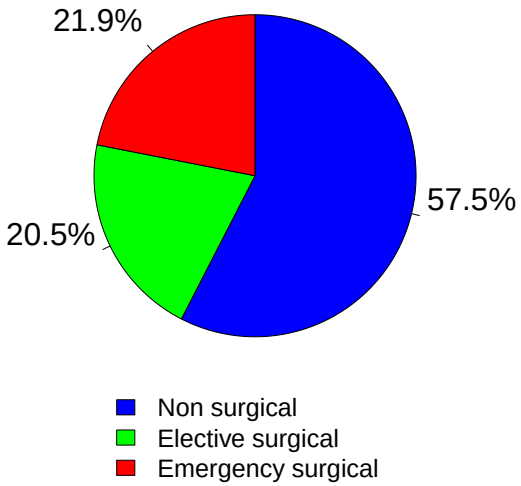
| **Scheduled admission** | N | % |
|---|---|---|
| No | 420 | 82.2 |
| Yes | 91 | 17.8 |
| Missing | 0 | |

**National report for general ICUs** - **Year 2018**
**Characteristics on admission** - Pediatric patients evaluated with PIM 3

| **Trauma** | N | % |
|---|---|---|
| No | 380 | 74.4 |
| Yes | 131 | 25.6 |
| Multiple trauma | 51 | 10.0 |
| Missing | 0 | |

| **Surgical status** | N | % |
|---|---|---|
| Non surgical | 294 | 57.5 |
| Elective surgical | 105 | 20.5 |
| Emergency surgical | 112 | 21.9 |
| Missing | 0 | |

**Surgical status**




| **Source of admission** **Surgical pt.** (N=217) | N | % |
|---|---|---|
| Operating theatre of surgical ward | 132 | 62.3 |
| Operating theatre of emergency room | 23 | 10.8 |
| Surgical ward | 5 | 2.4 |
| Other | 52 | 24.5 |
| Missing | 5 | |

| **Surgical interventions (top 10)** **Elective surgical** (N=105) | N | % |
|---|---|---|
| Maxillo-Facial surgery | 20 | 19.0 |
| ENT surgery | 17 | 16.2 |
| Orthopaedic surgery | 16 | 15.2 |
| Nephro/Urological surgery | 11 | 10.5 |
| Gastrointestinal surgery | 11 | 10.5 |
| Neurosurgery | 11 | 10.5 |
| Thoracic surgery | 9 | 8.6 |
| Splenectomy | 4 | 3.8 |
| Other surgery | 3 | 2.9 |
| Hepatic surgery | 2 | 1.9 |
| Missing | 1 | |

| **Timing** **Elective surgical** (N=105) | N | % |
|---|---|---|
| From -7 to -3 days | 0 | 0.0 |
| From -2 to -1 days | 3 | 2.9 |
| On ICU admission day | 101 | 96.2 |
| The day after ICU admission | 4 | 3.8 |
| Missing | 0 | |

| **Surgical interventions (top 10)** **Emergency surgical** (N=112) | N | % |
|---|---|---|
| Gastrointestinal surgery | 36 | 32.1 |
| Orthopaedic surgery | 22 | 19.6 |
| Neurosurgery | 18 | 16.1 |
| Thoracic surgery | 10 | 8.9 |
| ENT surgery | 9 | 8.0 |
| Maxillo-Facial surgery | 4 | 3.6 |
| Peripheral vascular surgery | 4 | 3.6 |
| Splenectomy | 4 | 3.6 |
| Other surgery | 4 | 3.6 |
| Gynaecological surgery | 3 | 2.7 |
| Missing | 0 | |

| **Timing** **Emergency surgical** (N=112) | N | % |
|---|---|---|
| From -7 to -3 days | 1 | 0.9 |
| From -2 to -1 days | 14 | 12.5 |
| On ICU admission day | 97 | 86.6 |
| The day after ICU admission | 11 | 9.8 |
| Missing | 1 | |

| **Non surgical interventions** | N | % |
|---|---|---|
| None | 477 | 93.3 |
| Elective | 7 | 1.4 |
| Emergency | 27 | 5.3 |
| Missing | 0 | |

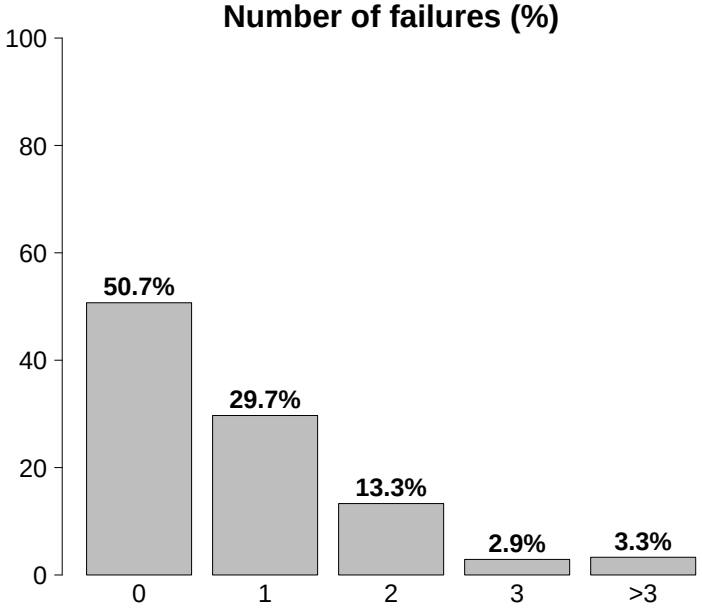
| **Non surgical interventions** **Elective** (N=7) | N | % |
|---|---|---|
| Interventional radiology | 4 | 57.1 |
| Interventional neuroradiology | 1 | 14.3 |
| Diagnostic bronchoscopy on admission | 1 | 14.3 |
| Interventional cardiology | 0 | 0.0 |
| Interventional endoscopy | 0 | 0.0 |
| Therapeutic endoscopy (bronchoscopy excluded) | 0 | 0.0 |
| Missing | 1 | |

| **Non surgical interventions** **Emergency** (N=27) | N | % |
|---|---|---|
| Interventional radiology | 12 | 44.4 |
| Interventional neuroradiology | 3 | 11.1 |
| Therapeutic endoscopy (bronchoscopy excluded) | 3 | 11.1 |
| Therapeutic bronchoscopy | 3 | 11.1 |
| Diagnostic bronchoscopy on admission | 1 | 3.7 |
| Interventional cardiology | 0 | 0.0 |
| Missing | 5 | |

**National report for general ICUs** - **Year 2018**
**Characteristics on admission** - Pediatric patients evaluated with PIM 3

| **Reason for admission** | N | % |
|---|---|---|
| Monitoring/Weaning | 291 | 58.8 |
| Post surgical weaning | 77 | 15.9 |
| Surgical monitoring | 72 | 14.9 |
| Post interventional weaning | 3 | 0.6 |
| Interventional monitoring | 9 | 1.9 |
| Non surgical monitoring | 118 | 24.4 |
| Missing | 12 | |
| Admission for procedures/treatments | 0 | 0.0 |
| Intensive Treatment | 204 | 41.2 |
| Ventilatory support | 190 | 37.2 |
| Cardiovascular support | 33 | 6.5 |
| Metabolic support | 21 | 4.1 |
| Missing | 0 | |
| Palliative Sedation | 0 | 0.0 |
| Diagnosis of death/Organ donation | 0 | 0.0 |
| Missing | 16 | |

**Number of failures (%)**




| **Failures on admission** | N | % |
|---|---|---|
| No | 259 | 50.7 |
| Yes | 252 | 49.3 |
| A: Respiratory failure | 161 | 31.5 |
| B: Cardiovascular failure | 79 | 15.5 |
| C: Neurological failure | 48 | 9.4 |
| D: Hepatic failure | 43 | 8.4 |
| E: Renal failure | 57 | 11.2 |
| F: Acute skin failure | 0 | 0.0 |
| G: Metabolic failure | 15 | 2.9 |
| H: Coagulation failure | 4 | 0.8 |
| Missing | 0 | |

| **Failures on admission (top 10)** | N | % |
|---|---|---|
| A | 82 | 16.0 |
| AB | 24 | 4.7 |
| B | 23 | 4.5 |
| C | 17 | 3.3 |
| E | 17 | 3.3 |
| AE | 10 | 2.0 |
| AD | 8 | 1.6 |
| D | 8 | 1.6 |
| AC | 7 | 1.4 |
| ABCD | 5 | 1.0 |
| Missing | 0 | |

| **Respiratory failure** | N | % |
|---|---|---|
| None | 321 | 62.8 |
| Only hypoxic failure | 58 | 11.4 |
| Only hypercapnic failure | 15 | 2.9 |
| Hypoxic-hypercapnic failure | 20 | 3.9 |
| Intubation for airway maint. | 97 | 19.0 |
| Missing | 0 | |

| **Cardiovascular failure** | N | % |
|---|---|---|
| None | 478 | 93.5 |
| Without shock | 10 | 2.0 |
| Cardiogenic shock | 7 | 1.4 |
| Septic shock | 6 | 1.2 |
| Haemorrhagic/hypovolemic shock | 5 | 1.0 |
| Hypovolemic shock | 0 | 0.0 |
| Anaphylactic shock | 0 | 0.0 |
| Neurogenic shock | 3 | 0.6 |
| Other shock | 1 | 0.2 |
| Mixed shock | 1 | 0.2 |
| Missing | 0 | |

| **Neurologic failure** | N | % |
|---|---|---|
| None | 373 | 85.6 |
| Cerebral coma | 40 | 9.2 |
| Metabolic coma | 9 | 2.1 |
| Postanoxic coma | 8 | 1.8 |
| Toxic coma | 6 | 1.4 |
| Missing or not evaluable | 75 | |

| **Renal failure (RIFLE)** | N | % |
|---|---|---|
| None | 454 | 88.8 |
| Risk | 42 | 8.2 |
| Injury | 9 | 1.8 |
| Failure | 4 | 0.8 |
| Loss | 2 | 0.4 |
| End-stage renal disease | 0 | 0.0 |
| Missing | 0 | |

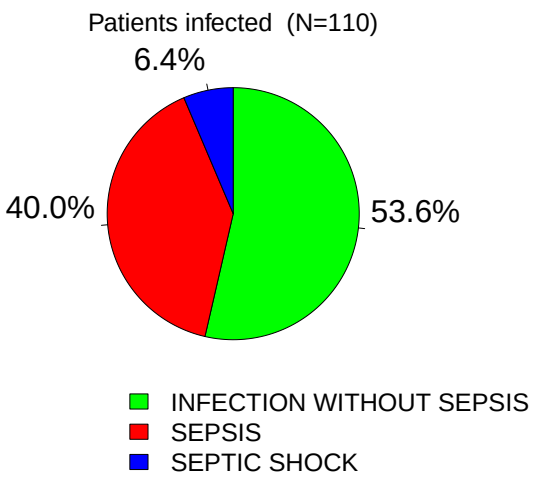
**National report for general ICUs** - **Year 2018**
**Characteristics on admission** - Pediatric patients evaluated with PIM 3

| Clinical conditions on admission | N | % |
|---|---|---|
| Respiratory | 88 | 17.2 |
| Acute asthma/bronchospasm | 29 | 5.7 |
| Upper respiratory tract disease | 15 | 2.9 |
| Pleural effusion | 8 | 1.6 |
| Aspiration pneumonia | 8 | 1.6 |
| Atelectasis | 7 | 1.4 |
| Cardiovascular | 18 | 3.5 |
| Cardiac arrest | 10 | 2.0 |
| Left heart failure with pulmonary edema | 3 | 0.6 |
| Pericardial effusion (non traumatic) | 2 | 0.4 |
| Deep venous thrombosis | 2 | 0.4 |
| Acute severe arrhythmia: tachycardias | 1 | 0.2 |
| Neurological | 93 | 18.2 |
| Seizures | 64 | 12.5 |
| Brain tumour | 12 | 2.3 |
| Spontaneous Hydrocephalus | 5 | 1.0 |
| Spontaneous Subarachnoid haemorrhage | 5 | 1.0 |
| Metabolic/postanoxic encephalopathy | 4 | 0.8 |
| Gastrointestinal and hepatic | 34 | 6.7 |
| Intestinal occlusion | 11 | 2.2 |
| Gastrointestinal perforation | 8 | 1.6 |
| Oesophago-gastro-intestinal malf. | 5 | 1.0 |
| Bowel ischaemia | 3 | 0.6 |
| Acute inflammatory bowel disease | 2 | 0.4 |
| Trauma (anatomical districts) | 131 | 25.6 |
| Head | 58 | 11.4 |
| Pelvis/bone/joint & muscle | 45 | 8.8 |
| Abdomen | 42 | 8.2 |
| Chest | 35 | 6.8 |
| Spine | 17 | 3.3 |
| Major vessels injury | 6 | 1.2 |
| Miscellaneous | 2 | 0.4 |
| Other | 145 | 28.4 |
| Other disease | 38 | 7.4 |
| Acute intoxication | 31 | 6.1 |
| ENT/maxillofacial disease | 25 | 4.9 |
| Metabolic disorder | 15 | 2.9 |
| Orthopaedic disease | 13 | 2.5 |
| Post transplantation | 2 | 0.4 |
| Bilateral lung transplantation | 1 | 0.2 |
| Lung transplantation | 1 | 0.2 |
| Infections | 114 | 22.3 |
| Pneumonia | 52 | 10.2 |
| NON-surgical secondary peritonitis | 11 | 2.2 |
| L.R.T.I. other than pneumonia | 7 | 1.4 |
| Pleurisy/Pleural empyema | 7 | 1.4 |
| Upper respiratory tract infection | 7 | 1.4 |
| NON-surgical CNS infection | 6 | 1.2 |
| Primary peritonitis | 4 | 0.8 |
| Gastroenteritis | 3 | 0.6 |
| NON-surgical skin/soft tissue infection | 3 | 0.6 |
| NON-surgical urinary tract infection | 3 | 0.6 |
| Missing | 0 | |

| Trauma (anatomical districts) | N | % |
|---|---|---|
| Head | 58 | 11.4 |
| Maxillofacial fracture | 27 | 5.3 |
| Skull fracture | 21 | 4.1 |
| Cerebral contusion/laceration | 15 | 2.9 |
| Traumatic subarachnoid haemorrhage | 13 | 2.5 |
| Extradural/epidural haematoma | 6 | 1.2 |
| Spine | 17 | 3.3 |
| Vertebral fracture, without deficit | 15 | 2.9 |
| Cervical injury, incomplete deficit | 1 | 0.2 |
| Paraplegia | 1 | 0.2 |
| Chest | 35 | 6.8 |
| Other injuries of the chest | 19 | 3.7 |
| Severe lung contusion/laceration | 13 | 2.5 |
| Traum. haemothorax/pneumothorax | 12 | 2.3 |
| Abdomen | 42 | 8.2 |
| Spleen: Moderate-Severe laceration | 17 | 3.3 |
| Liver: Moderate-Severe laceration | 13 | 2.5 |
| Minor injuries of the abdomen | 10 | 2.0 |
| Pelvis/bone/joint & muscle | 45 | 8.8 |
| Long bone fracture | 34 | 6.7 |
| Multiple fracture of the pelvis | 14 | 2.7 |
| Massive crush/amputation | 4 | 0.8 |
| Major vessels injury | 6 | 1.2 |
| Proximal limbs vessels: transection | 3 | 0.6 |
| Neck vessels: dissection/transection | 1 | 0.2 |
| Aorta: rupture/dissection | 1 | 0.2 |
| Miscellaneous | 2 | 0.4 |
| Inhalation injury | 2 | 0.4 |
| - | 0 | 0.0 |
| Missing | 0 | |

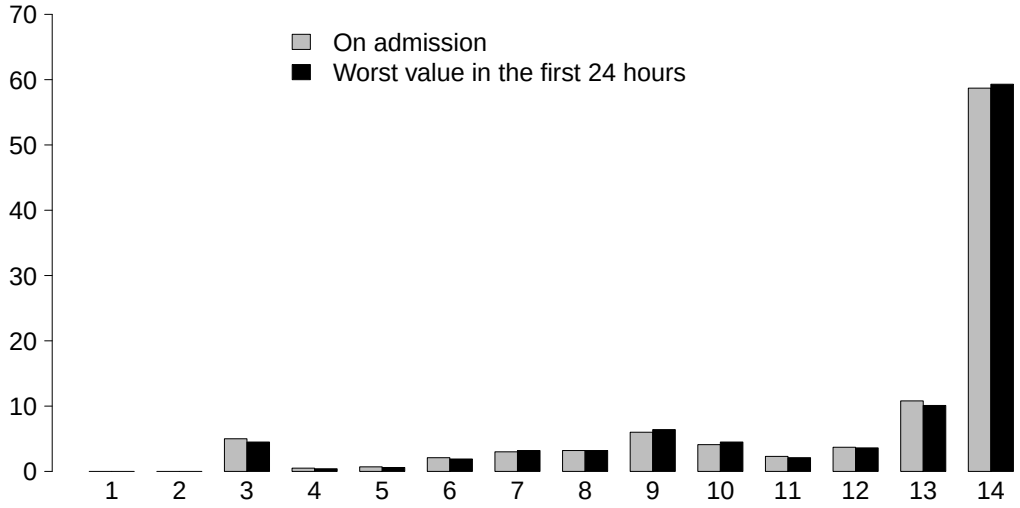
| Infection severity on admission | N | % |
|---|---|---|
| None | 397 | 78.3 |
| INFECTION WITHOUT SEPSIS | 59 | 11.6 |
| SEPSIS | 44 | 8.7 |
| SEPTIC SHOCK | 7 | 1.4 |
| Missing | 4 | |

**Infection severity on admission**



**National report for general ICUs** - **Year 2018**
**Severity scores** - Pediatric patients evaluated with PIM 3

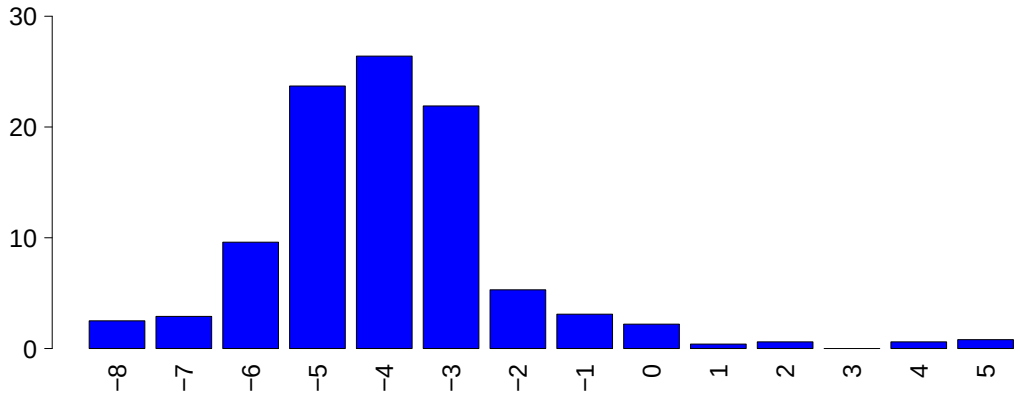
## Glasgow Coma Scale (%)




| GCS (admission) | |
|---|---|
| Median | 14 |
| Q1−Q3 | 11−14 |
| Not evaluable | 75 |
| Missing | 0 |

| GCS (first 24 hours) | |
|---|---|
| Median | 14 |
| Q1−Q3 | 11−14 |
| Not evaluable | 44 |
| Missing | 0 |

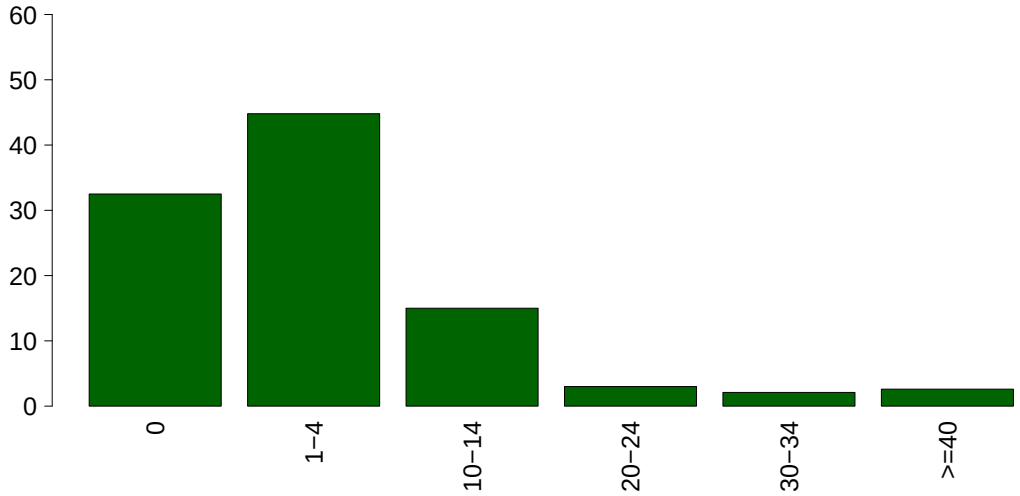
## PIM 2 (%)




| PIM 2 | |
|---|---|
| Median | -4.2 |
| Q1−Q3 | -4.8−-3.1 |
| Not evaluable | 0 |
| Missing | 0 |

| PIM 3 | |
|---|---|
| Median | -4.4 |
| Q1−Q3 | -5.4−-3.4 |
| Not evaluable | 0 |
| Missing | 0 |

## PELOD (%)




| PELOD | |
|---|---|
| Mean | 4.7 |
| SD | 9.3 |
| Median | 1 |
| Q1−Q3 | 0−2 |
| Not evaluable | 44 |
| Missing | 0 |

**National report for general ICUs** - **Year 2018**
**Characteristics during the stay** - Pediatric patients evaluated with PIM 3

| Complications during the stay | N | % |
|---|---|---|
| No | 440 | 86.1 |
| Yes | 71 | 13.9 |
| Missing | 0 | |

| Failures during the stay | N | % |
|---|---|---|
| No | 485 | 94.9 |
| Yes | 26 | 5.1 |
| A: Respiratory failure | 16 | 3.1 |
| B: Cardiovascular failure | 3 | 0.6 |
| C: Neurological failure | 4 | 0.8 |
| D: Hepatic failure | 1 | 0.2 |
| E: Renal failure (AKIN) | 5 | 1.0 |
| F: Acute skin failure | 0 | 0.0 |
| G: Metabolic failure | 1 | 0.2 |
| H: Coagulation failure | 0 | 0.0 |
| Missing | 0 | |

| Failures during the stay (top 10) | N | % |
|---|---|---|
| A | 15 | 2.9 |
| E | 4 | 0.8 |
| C | 3 | 0.6 |
| B | 2 | 0.4 |
| ABCE | 1 | 0.2 |
| DG | 1 | 0.2 |
| - | 0 | 0.0 |
| - | 0 | 0.0 |
| - | 0 | 0.0 |
| - | 0 | 0.0 |
| Missing | 0 | |

| Respiratory failure occured | N | % |
|---|---|---|
| None | 495 | 96.9 |
| Intubation for airway maint. | 6 | 1.2 |
| Hypoxic failure | 9 | 1.8 |
| Hypercapnic failure | 3 | 0.6 |
| Missing | 0 | |

| Cardiovascular failure occured | N | % |
|---|---|---|
| None | 508 | 99.4 |
| Cardiogenic shock | 1 | 0.2 |
| Hypovolemic shock | 0 | 0.0 |
| Haemorrhagic/hypovolemic shock | 1 | 0.2 |
| Septic shock | 0 | 0.0 |
| Anaphylactic shock | 0 | 0.0 |
| Neurogenic shock | 0 | 0.0 |
| Other shock | 1 | 0.2 |
| Missing | 0 | |

| Neurological failure occured | N | % |
|---|---|---|
| None | 507 | 99.2 |
| Cerebral coma | 1 | 0.2 |
| Metabolic coma | 0 | 0.0 |
| Postanoxic coma | 3 | 0.6 |
| Missing | 0 | |

| Renal failure occured (AKIN) | N | % |
|---|---|---|
| None | 506 | 99.0 |
| Mild | 0 | 0.0 |
| Moderate | 0 | 0.0 |
| Severe | 5 | 1.0 |
| Missing | 0 | |

| Complications during the stay | N | % |
|---|---|---|
| Respiratory | 20 | 3.9 |
| Atelectasis | 5 | 1.0 |
| Acute asthma/bronchospasm | 4 | 0.8 |
| Pneumothorax/Pneumomediastinum | 4 | 0.8 |
| Severe ARDS | 3 | 0.6 |
| Pleural effusion | 3 | 0.6 |
| Cardiovascular | 6 | 1.2 |
| Cardiac arrest | 3 | 0.6 |
| Acute ischaemia | 1 | 0.2 |
| Acute severe arrhythmia: bradycardias | 1 | 0.2 |
| Peripheral vascular disease | 1 | 0.2 |
| - | 0 | 0.0 |
| Neurological | 18 | 3.5 |
| Drowsiness/agitation/delirium | 7 | 1.4 |
| Brain edema | 4 | 0.8 |
| Postanoxic encephalopathy | 4 | 0.8 |
| Intracranial hypertension | 3 | 0.6 |
| Seizures | 3 | 0.6 |
| Gastrointestinal and hepatic | 3 | 0.6 |
| Abdominal compartment syndrome | 1 | 0.2 |
| Anastomotic dehiscence | 1 | 0.2 |
| Liver Dysfunction Syndrome | 1 | 0.2 |
| Paralytic Ileus | 1 | 0.2 |
| - | 0 | 0.0 |
| Other | 4 | 0.8 |
| Metabolic disorder | 1 | 0.2 |
| Nephrourologic disease | 1 | 0.2 |
| Other disease | 1 | 0.2 |
| Other skin and/or soft tissue pathology | 1 | 0.2 |
| - | 0 | 0.0 |
| - | 0 | 0.0 |
| - | 0 | 0.0 |
| Infections | 23 | 4.5 |
| Pneumonia | 9 | 1.8 |
| L.R.T.I. other than pneumonia | 8 | 1.6 |
| NON-surgical urinary tract infection | 4 | 0.8 |
| Catheter-related bacteremia (CR-BSI) | 2 | 0.4 |
| Catheter-related local infection | 2 | 0.4 |
| Primary bacteraemia of unknown origin | 1 | 0.2 |
| F.U.O. fever of unknown origin | 1 | 0.2 |
| Upper respiratory tract infection | 1 | 0.2 |
| - | 0 | 0.0 |
| - | 0 | 0.0 |
| Missing | 0 | |

**National report for general ICUs** - **Year 2018**
**Characteristics during the stay** - Pediatric patients evaluated with PIM 3

| **Infections** | N | % |
|---|---|---|
| None | 382 | 74.8 |
| Only on admission | 106 | 20.7 |
| On admission and during ICU stay | 8 | 1.6 |
| Only during ICU stay | 15 | 2.9 |
| Missing | 0 | |

| **Maximum severity of infection** | N | % |
|---|---|---|
| None | 382 | 75.5 |
| INFECTION WITHOUT SEPSIS | 65 | 12.8 |
| SEPSIS | 52 | 10.3 |
| SEPTIC SHOCK | 7 | 1.4 |
| Missing | 5 | |

| **Severity evolution** | | **During the stay** | | | | |
|---|---|---|---|---|---|---|
| | N (R %) | None | INFECTION WITHOUT SEPSIS | SEPSIS | SEPTIC SHOCK | TOT |
| **Admission** | None | 382 (96.5%) | 10 (2.5%) | 4 (1.0%) | 0 (0.0%) | 396 |
| | INFECTION WITHOUT SEPSIS | - | 55 (93.2%) | 4 (6.8%) | 0 (0.0%) | 59 |
| | SEPSIS | - | - | 44 (100.0%) | 0 (0.0%) | 44 |
| | SEPTIC SHOCK | - | - | - | 7 (100.0%) | 7 |
| | TOT | 382 | 65 | 52 | 7 | 506 |

| **Ventil. Associat. Pneumonia (VAP)** | N | % |
|---|---|---|
| No | 504 | 98.6 |
| Yes | 7 | 1.4 |
| Missing | 0 | |

| **Catheter Bacteraemia (CR-BSI)** | N | % |
|---|---|---|
| No | 509 | 99.6 |
| Yes | 2 | 0.4 |
| Missing | 0 | |

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

| | |
|---|---|
| Estimate | 10.7 |
| CI (95%) | 4.3−22.0 |

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

| | |
|---|---|
| Estimate | 2.1 |
| CI (95%) | 0.3−7.6 |

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

| | |
|---|---|
| Estimate | 8.5% |
| CI (95%) | 3.4−17.6 |

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

| | |
|---|---|
| Estimate | 2.5% |
| CI (95%) | 0.3−9.2 |

**National report for general ICUs** - **Year 2018**

**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 |
| **Procedures (antibiotics excluded)** | 414 | 81.0 | | | | | | | | | | |
| Invasive ventilation | 263 | 51.5 | 219 | 42.9 | 26 | 5.1 | 1 | 0–3 | 0 | 0 | 0–1 | 0 |
| Non invasive ventilation | 45 | 8.8 | 15 | 2.9 | 10 | 2 | 1 | 1–2 | 0 | 0 | 0–0 | 0 |
| Tracheostomy | 26 | 5.1 | 11 | 2.2 | 23 | 4.5 | 12 | 3–19 | 0 | 9 | 4–15 | 0 |
| iNO (inhaled nitric oxide) | 2 | 0.4 | 0 | 0 | 0 | 0 | 3 | 2–4 | 0 | 2 | 1–2 | 0 |
| Central Venous Catheter | 163 | 31.9 | 88 | 17.2 | 131 | 25.6 | 3 | 1–6 | 0 | 0 | 0–0 | 0 |
| PICC | 7 | 1.4 | 2 | 0.4 | 6 | 1.2 | 2 | 2–3 | 0 | 1 | 0–3 | 0 |
| Arterial Catheter | 262 | 51.3 | 131 | 25.6 | 42 | 8.2 | 2 | 1–4 | 0 | 0 | 0–0 | 0 |
| Vasoactive drugs | 40 | 7.8 | 20 | 3.9 | 12 | 2.3 | 1 | 1–5 | 0 | 0 | 0–0 | 0 |
| Antiarrhythmics | 1 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0–0 | 0 | 1 | 1–1 | 0 |
| IABP | 0 | 0.0 | | | | | | | | | | |
| Invasive monitoring of C.O. | 4 | 0.8 | 1 | 0.2 | 2 | 0.4 | 2 | 1–2 | 0 | 1 | 0–1 | 0 |
| Continous monitoring of ScVO2 | 1 | 0.2 | 0 | 0 | 1 | 0.2 | 2 | 2–2 | 0 | 0 | 0–0 | 0 |
| Temporary pacing | 0 | 0.0 | | | | | | | | | | |
| Ventricular assistance | 0 | 0.0 | | | | | | | | | | |
| DC-shock | 2 | 0.4 | | | | | | | | 0 | 0–0 | 0 |
| CPR | 5 | 1.0 | | | | | | | | 1 | 0–9 | 0 |
| Massive transfusion | 2 | 0.4 | | | | | | | | 0 | 0–0 | 0 |
| ICP monitoring without CSF drainage | 6 | 1.2 | 3 | 0.6 | 0 | 0 | 4 | 4–6 | 0 | 0 | 0–1 | 0 |
| ICP monitoring with CSF drainage | 5 | 1.0 | 1 | 0.2 | 4 | 0.8 | 4 | 3–9 | 0 | 0 | 0–0 | 0 |
| External ventricular drainage without ICP | 1 | 0.2 | 1 | 0.2 | 1 | 0.2 | 4 | 4–4 | 0 | | | |
| Haemofiltration | 3 | 0.6 | 0 | 0 | 1 | 0.2 | 6 | 4–10 | 0 | 0 | 0–1 | 0 |
| Haemodialysis | 4 | 0.8 | 0 | 0 | 1 | 0.2 | 2 | 1–6 | 0 | 2 | 0–7 | 0 |
| ECMO | 1 | 0.2 | 0 | 0 | 1 | 0.2 | 0 | 0–0 | 0 | 1 | 1–1 | 0 |
| Hepatic clearance techniques | 0 | 0.0 | | | | | | | | | | |
| Clearance techniques during sepsis | 0 | 0.0 | | | | | | | | | | |
| IAP (intra-abdominal pressure) | 3 | 0.6 | | | | | | | | | | |
| Hypothermia | 5 | 1.0 | 1 | 0.2 | 1 | 0.2 | 1 | 1–2 | 0 | 0 | 0–6 | 0 |
| Enteral nutrition | 102 | 20.0 | 28 | 5.5 | 68 | 13.3 | 5 | 3–10 | 0 | 1 | 0–1 | 0 |
| Parenteral nutrition | 38 | 7.4 | 8 | 1.6 | 25 | 4.9 | 3 | 2–5 | 0 | 1 | 0–3 | 0 |
| SDD (Topical, Topical and systemic) | 4 | 0.8 | | | | | | | | | | |
| Patient restraint | 8 | 1.6 | | | | | | | | | | |
| Diagnostic fibrobronchoscopy | 8 | 1.6 | | | | | | | | 0 | 0–1 | 0 |
| Surfactant treatment | 1 | 0.2 | 0 | 0 | 0 | 0 | | | 1 | | | |
| Vacuum therapy | 3 | 0.6 | | | | | | | | | | |
| Oxygen therapy | 78 | 15.3 | 41 | 8 | 47 | 9.2 | 1 | 1–1 | 0 | 1 | 0–1 | 0 |
| Blood transfusion | 0 | 0.0 | | | | | | | | | | |
| Peritoneal dialysis | 0 | 0.0 | | | | | | | | | | |
| Plasmapheresis | 1 | 0.2 | | | | | | | | | | |
| Thoracic drainage | 6 | 1.2 | 4 | 0.8 | 4 | 0.8 | 4 | 2–6 | 0 | 0 | 0–1 | 0 |
| Peridural catheter | 14 | 2.7 | 12 | 2.3 | 14 | 2.7 | 1 | 1–2 | 0 | 0 | 0–1 | 0 |
| Urinary catheter | 62 | 12.1 | 40 | 7.8 | 50 | 9.8 | 2 | 1–4 | 0 | 0 | 0–0 | 0 |
| Near-infrared spectroscopy | 0 | 0.0 | | | | | | | | | | |
| Phototherapy | 0 | 0.0 | | | | | | | | | | |
| Electrical cardioversion | 0 | 0.0 | | | | | | | | | | |
| **Antibiotics** | 262 | 51.3 | | | | | | | | | | |
| Antibiotic prophylaxis | 141 | 27.6 | 96 | 18.8 | 97 | 19 | 1 | 1–3 | 0 | 0 | 0–0 | 0 |
| Empirical antibiotic therapy | 93 | 18.2 | 50 | 9.8 | 58 | 11.4 | 2 | 1–4 | 0 | 0 | 0–1 | 0 |
| Empirical antibiotic therapy in unconfirmed diagnosis | 22 | 4.3 | 8 | 1.6 | 15 | 2.9 | 2 | 2–5 | 0 | 0 | 0–0 | 0 |
| Targeted antibiotic therapy | 41 | 8.0 | 5 | 1 | 29 | 5.7 | 6 | 3–9 | 0 | 2 | 1–4 | 0 |

**National report for general ICUs** - **Year 2018**
**Process indicators** - Pediatric patients evaluated with PIM 3

| **Invasive ventilation** (N=263) | N | % | Length (days) Mean | SD | Median | Q1-Q3 | Missing |
|---|---|---|---|---|---|---|---|
| Due to pulmonary failure | 65 | 21.2 | 6.2 | 9.1 | 3 | 1−7 | 0 |
| For airway mainteinance | 95 | 30.9 | 3.1 | 5.8 | 1 | 1−3 | 0 |
| In weaning | 90 | 29.3 | 0.4 | 0.5 | 0 | 0−1 | 0 |
| Not evaluable | 57 | 18.6 | 4.6 | 11.8 | 1 | 0−2 | 44 |
| Reintubation within 48 hours | 1 | 0.3 | 0.0 | | 0 | 0−0 | 0 |

| **Non invasive ventilation** (N=45) | N | % |
|---|---|---|
| Non invasive ventilation only | 31 | 68.9 |
| Non invasive ventilation failed | 6 | 13.3 |
| For weaning | 7 | 15.6 |
| Other | 1 | 2.2 |
| Missing | 0 | |

| **Tracheostomy not present on admission** (N=15) | N | % |
|---|---|---|
| Surgical | 7 | 46.7 |
| Percutwist | 0 | 0.0 |
| Ciaglia | 1 | 6.7 |
| Monodil. Ciaglia | 4 | 26.7 |
| Fantoni | 0 | 0.0 |
| Griggs | 1 | 6.7 |
| Other Kind | 0 | 0.0 |
| Unknown | 2 | 13.3 |
| Missing | 0 | |

| **Tracheostomy - Days after the beginning of inv. vent. Not present on admission** (N=14) | |
|---|---|
| Mean | 14.2 |
| SD | 13.0 |
| Median | 11 |
| Q1−Q3 | 6.2−15 |
| Missing | 0 |

| **Invasive monitoring of C.O.** (N=4) | N | % |
|---|---|---|
| Swan Ganz | 3 | 75.0 |
| PICCO | 1 | 25.0 |
| LIDCO | 0 | 0.0 |
| Vigileo-PRAM | 0 | 0.0 |
| Other | 0 | 0.0 |
| Missing | 0 | |

| **SDD** (N=4) | N | % |
|---|---|---|
| Topical | 4 | 100.0 |
| Topical and systemic | 0 | 0.0 |
| Missing | 0 | |

| **Antibiotic therapy Pt. infected in ICU only** (N=15) | N | % |
|---|---|---|
| Only empirical | 7 | 50.0 |
| Only targeted | 3 | 21.4 |
| Targeted after empirical | 1 | 7.1 |
| Other | 3 | 21.4 |
| Missing | 1 | |

| **Surgical interventions** | N | % |
|---|---|---|
| No | 503 | 98.4 |
| Yes | 8 | 1.6 |
| Missing | 0 | |

| **Number of surgical interventions** | N | % |
|---|---|---|
| 0 | 503 | 98.4 |
| 1 | 6 | 1.2 |
| 2 | 2 | 0.4 |
| 3 | 0 | 0.0 |
| >3 | 0 | 0.0 |
| Missing | 0 | |

| **Surgical interventions Days from admission** | |
|---|---|
| Mean | 9.1 |
| SD | 4.9 |
| Median | 7 |
| Q1−Q3 | 5.2−14 |
| Missing | 0 |

| **Surgical interventions (top 10)** | N | % |
|---|---|---|
| Orthopaedic surgery | 3 | 0.6 |
| Gastrointestinal surgery | 3 | 0.6 |
| Thoracic surgery | 2 | 0.4 |
| Plastic surgery | 1 | 0.2 |
| Organ donation | 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 | 509 | 99.6 |
| Yes | 2 | 0.4 |
| Missing | 0 | |

| **Non surgical interventions Days from admission** | |
|---|---|
| Mean | 31.7 |
| SD | 9.5 |
| Median | 32 |
| Q1−Q3 | 27−36.5 |
| Missing | 1 |

| **Non surgical interventions** | N | % |
|---|---|---|
| Therapeutic endoscopy (bronchoscopy excluded) | 3 | 0.6 |
| Interventional radiology | 1 | 0.2 |
| 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 2018**
**Outcome indicators** - Pediatric patients evaluated with PIM 3

| **ICU outcome** | N | % |
|---|---|---|
| Dead | 24 | 4.7 |
| Transferred to same hospital | 422 | 82.6 |
| Transferred to other hospital | 49 | 9.6 |
| Discharged home | 16 | 3.1 |
| Disch. terminally ill | 0 | 0.0 |
| Missing | 0 | |

| **Transferred to** (N=471) | N | % |
|---|---|---|
| Ward | 445 | 94.5 |
| Other ICU | 0 | 0.0 |
| High dependency care unit | 17 | 3.6 |
| Rehabilitation | 9 | 1.9 |
| Day hospital or Long-term care | 0 | 0.0 |
| 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=422) | N | % |
|---|---|---|
| Ward | 409 | 96.9 |
| Other ICU | 0 | 0.0 |
| High dependency care unit | 12 | 2.8 |
| Rehabilitation | 1 | 0.2 |
| Day hospital or Long-term care | 0 | 0.0 |
| Missing | 0 | |

| **Transferred to Other hospital** (N=49) | N | % |
|---|---|---|
| Ward | 36 | 73.5 |
| Other ICU | 0 | 0.0 |
| High dependency care unit | 5 | 10.2 |
| Rehabilitation | 8 | 16.3 |
| Day hospital or Long-term care | 0 | 0.0 |
| Missing | 0 | |

| **ICU mortality** | N | % |
|---|---|---|
| Alive | 487 | 95.3 |
| Dead | 24 | 4.7 |
| Missing | 0 | |

| **Timing of ICU mortality** (N=24) | N | % |
|---|---|---|
| Daytime (08:00AM - 07:59PM) | 17 | 70.8 |
| Nighttime (08:00PM - 07:59AM) | 7 | 29.2 |
| Weekdays (Monday - Friday) | 20 | 83.3 |
| Weekend (Saturday - Sunday) | 4 | 16.7 |
| Missing | 0 | |

| **C.A.M. activation** (N=24) | N | % |
|---|---|---|
| Yes, with organ donation | 4 | 16.7 |
| Yes, without organ donation | 4 | 16.7 |
| No, with organ donation | 0 | 0.0 |
| No, without organ donation | 16 | 66.7 |
| Missing | 0 | |

| **Tissue removal** (N=24) | N | % |
|---|---|---|
| Yes, with C.A.M. activation | 2 | 8.3 |
| Yes, without C.A.M. activation | 0 | 0.0 |
| No | 22 | 91.7 |
| Missing | 0 | |

| **Hospital mortality** | N | % |
|---|---|---|
| Dead | 27 | 5.3 |
| Transf. to other acute-care hospital | 57 | 11.2 |
| Transf. to other type of hosp. stay | 24 | 4.7 |
| Nursing home | 11 | 2.2 |
| Voluntary discharge | 4 | 0.8 |
| Discharged home | 384 | 75.7 |
| Missing | 4 | |

| **To other type of H stay** (N=24) | N | % |
|---|---|---|
| Rehabilitation in the same institute | 6 | 25.0 |
| Rehabilitation in other institute | 15 | 62.5 |
| DH/long-term care, same inst. | 0 | 0.0 |
| DH/long-term care, other inst. | 3 | 12.5 |
| Missing | 0 | |

| **Disch. terminally ill** (N=480) | N | % |
|---|---|---|
| Yes | 2 | 0.4 |
| No | 478 | 99.6 |
| Missing | 0 | |

| **Hospital mortality** | N | % |
|---|---|---|
| Alive | 478 | 94.3 |
| Dead | 29 | 5.7 |
| Missing | 4 | |

| **Timing of hosp. mortality** (N=29) | N | % |
|---|---|---|
| In ICU | 24 | 82.8 |
| Within 24 hours after ICU | 0 | 0.0 |
| 24-47 hours after ICU | 0 | 0.0 |
| 48-71 hours after ICU | 0 | 0.0 |
| 72-95 hours after ICU | 1 | 3.4 |
| After 95 hours after ICU | 4 | 13.8 |
| Missing | 0 | |

| **Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU** (N=5) | |
|---|---|
| Mean | 16.6 |
| SD | 17.1 |
| Median | 11 |
| Q1−Q3 | 5−19 |
| Missing | 0 |

**National report for general ICUs** - **Year 2018**
**Outcome indicators** - Pediatric patients evaluated with PIM 3

| **Last hospital mortality** | N | % |
|---|---|---|
| Alive | 477 | 94.1 |
| Dead | 30 | 5.9 |
| Missing | 4 | |

| **Expected outcome** (N=487) | N | % |
|---|---|---|
| Recovery/resolution of acute episode | 470 | 96.7 |
| Palliative care grade 1 | 8 | 1.6 |
| Palliative care grade 2 | 3 | 0.6 |
| Palliative care grade 3 | 4 | 0.8 |
| Palliative care grade 4 | 1 | 0.2 |
| Missing | 1 | |

| **Outcome treatments** (N=16) | N | % |
|---|---|---|
| NON invasive ventilation | 2 | 12.5 |
| Invasive ventilation | 2 | 12.5 |
| Oxygen therapy | 6 | 37.5 |
| Tracheostomy | 3 | 18.8 |
| Diuretics grugs | 0 | 0.0 |
| Inotropic agents drugs | 1 | 6.2 |
| Antiepileptics drugs | 5 | 31.2 |
| Dialytic therapy | 0 | 0.0 |
| Limb replacement | 0 | 0.0 |
| Nasogastric tube | 5 | 31.2 |
| Ostomies | 2 | 12.5 |
| Home based parenteral nutrition | 1 | 6.2 |
| Motor physiotherapy | 9 | 56.2 |
| Respiratory physiotherapy | 9 | 56.2 |
| Posture | 8 | 50.0 |
| Psychological counselling | 5 | 31.2 |
| Missing | 0 | |

| **ICU stay (days)** | |
|---|---|
| Mean | 3.7 |
| SD | 7.6 |
| Median | 1 |
| Q1−Q3 | 1−3 |
| Missing | 0 |

| **ICU stay (days)** **Alive** (N=487) | |
|---|---|
| Mean | 3.6 |
| SD | 7.7 |
| Median | 1 |
| Q1−Q3 | 1−3 |
| Missing | 0 |

| **ICU stay (days)** **Dead** (N=24) | |
|---|---|
| Mean | 5.4 |
| SD | 5.5 |
| Median | 4 |
| Q1−Q3 | 1−6.8 |
| Missing | 0 |

| **Stay after ICU (days)** **Alive** (N=487) | |
|---|---|
| Mean | 7.9 |
| SD | 12.7 |
| Median | 5 |
| Q1−Q3 | 2−9 |
| Missing | 5 |

| **Hospital stay (days)** | |
|---|---|
| Mean | 12.1 |
| SD | 15.4 |
| Median | 8 |
| Q1−Q3 | 4−13 |
| Missing | 4 |

| **Hospital stay (days)** **Alive** (N=478) | |
|---|---|
| Mean | 12.3 |
| SD | 15.6 |
| Median | 8 |
| Q1−Q3 | 4−14 |
| Missing | 0 |

| **Hospital stay (days)** **Dead** (N=29) | |
|---|---|
| Mean | 9.5 |
| SD | 12.4 |
| Median | 5 |
| Q1−Q3 | 1−11 |
| Missing | 0 |

# Appendix

# National report for general ICUs - Year 2018
## Prognostic models - Adult patients

**Model:** Logistic regression.
**Dependent variable:** Hospital mortality°.
**Sample used for model development:** Adults patients from general Italian ICUs.
**Sample size (TRAINING set):** 36101 patients.

| Independent variables | Coefficients (95% CI) | Odds Ratio (95% CI) | *p* |
|---|---|---|---|
| Intercept | -5.88 (-6.62;-5.14) | / | / |
| **Miscellanea** | | | |
| Min((Age - 54), 0) in decades | 0.37 (0.28;0.46) | 1.45 (1.33;1.59) | |
| Max(Min((Age - 71), 54), 0) in decades | 0.27 (0.2;0.35) | 1.31 (1.22;1.41) | <0.001 |
| Max((Age - 71), 0) in decades | 0.54 (0.47;0.6) | 1.71 (1.6;1.83) | |
| Surgical status (Non surgical vs. Elective surgical) | 0.68 (0.53;0.83) | 1.97 (1.69;2.3) | <0.001 |
| Surgical status (Emergency surgical vs. Elective surgical) | 0.39 (0.25;0.53) | 1.48 (1.29;1.7) | |
| BMI (Underweight vs. Normal) | 0.36 (0.22;0.49) | 1.43 (1.24;1.64) | <0.001 |
| BMI (Overweight-Obese vs. Normal) | -0.15 (-0.22;-0.08) | 0.86 (0.8;0.92) | |
| Min(Stay before ICU (days) -0.9), 0) (logarithm) | 0.58 (-0.01;1.17) | / | × |
| Max(Stay before ICU (days) -0.9), 0) (logarithm) | 0.36 (0.29;0.43) | / | |
| Admitted in hospital the same day of ICU admission (No vs. Yes) | -0.34 (-0.8;0.11) | 0.71 (0.45;1.12) | 0.141 |
| Ward of admission: Medical ward/High dependency care unit vs. Surgical ward | 0.47 (0.35;0.59) | 1.6 (1.42;1.8) | |
| Ward of admission: Emergency room vs. Surgical ward | 0.29 (0.17;0.41) | 1.34 (1.18;1.51) | |
| Ward of admission: Other ICU (Specialist expertise) vs. Surgical ward | 0.12 (-0.13;0.36) | 1.12 (0.88;1.43) | <0.001 |
| Ward of admission: Other ICU (Step-up care) vs. Surgical ward | 0.28 (-0.03;0.58) | 1.32 (0.97;1.79) | |
| Ward of admission: Other ICU (Logistical/organizational reasons) vs. Surgical ward | 0.94 (0.52;1.35) | 2.56 (1.69;3.88) | |
| Ward of admission: Long-term chronic care hospital vs. Surgical ward | 0.5 (0.12;0.88) | 1.65 (1.12;2.41) | |
| Source of admission: Other hospital- Long-term chronic care hospital-Directly from the community vs. Same hospital | -0.18 (-0.28;-0.08) | 0.84 (0.75;0.93) | <0.001 |
| **Physiopatological components** | | | |
| Bilirubin (mg/100ml) (1.2-5.9 vs. <1.2) | 0.18 (0.09;0.26) | 1.19 (1.1;1.29) | |
| Bilirubin (mg/100ml) (6-11.9 vs. <1.2) | 0.41 (0.1;0.72) | 1.5 (1.1;2.05) | <0.001 |
| Bilirubin (mg/100ml) (>=12 vs. <1.2) | 1.08 (0.6;1.56) | 2.95 (1.83;4.77) | |
| WBC ($10^9$/L) (>=20 vs. <20) | 0.25 (0.15;0.35) | / | × |
| Sodium (mEq/L) (>=145 vs. <145) | 0.21 (0.11;0.3) | 1.23 (1.11;1.35) | <0.001 |
| Heart rate (bpm) (<40 vs. 40-119) | 0.65 (0.31;0.98) | 1.91 (1.36;2.67) | <0.001 |
| Heart rate (bpm) (>=120 vs. 40-119) | 0.23 (0.14;0.32) | 1.26 (1.15;1.38) | |
| Serum urea (mg/100 ml) (>=60 vs. <60) | 0.26 (0.18;0.34) | / | × |
| Platelets ($10^3$/mm3) (50-99 vs. >=100) | 0.49 (0.36;0.63) | / | × |
| Platelets ($10^3$/mm3) (<50 vs. >=100) | 0.55 (0.39;0.72) | / | |
| Systolic Blood Pressure (mmHg) (<70 vs. >=100) | 0.59 (0.47;0.71) | / | × |
| Systolic Blood Pressure (mmHg) (70-99 vs. >=100) | 0.2 (0.12;0.28) | / | |
| Urine Output (L/24h) (<0.2 vs. >=1) | 1.43 (1.18;1.68) | / | × |
| Urine Output (L/24h) (0.2-0.49 vs. >=1) | 0.76 (0.61;0.91) | / | |
| Urine Output (L/24h) (0.5-0.99 vs. >=1) | 0.35 (0.26;0.44) | / | |
| PaO2/FiO2 (100*mmHg/%) (<100 vs. >=300) | 1.03 (0.86;1.21) | / | × |
| PaO2/FiO2 (100*mmHg/%) (100-199 vs. >=300) | 0.32 (0.22;0.42) | / | |
| PaO2/FiO2 (100*mmHg/%) (200-299 vs. >=300) | 0.1 (0.01;0.19) | / | |
| HCO3 (mEq/L) (<15 vs. >=20) | 0.33 (0.2;0.47) | / | × |
| HCO3 (mEq/L) (15-20 vs. >=20) | 0.14 (0.05;0.23) | / | |
| **Clinical conditions on admission** | | | |
| Acute intoxication (Yes vs. No) | -1.07 (-1.38;-0.75) | 0.34 (0.25;0.47) | <0.001 |
| Spontaneous Intraparenchymal bleeding (Yes vs. No) | 1.14 (0.93;1.35) | / | × |
| Lung cancer (Yes vs. No) | 0.58 (0.29;0.87) | 1.79 (1.34;2.4) | <0.001 |
| Seizures (Yes vs. No) | -0.27 (-0.47;-0.06) | 0.77 (0.62;0.94) | 0.01 |
| Bowel ischaemia (Yes vs. No) | 0.38 (0.14;0.62) | 1.46 (1.15;1.86) | 0.002 |
| Spontaneous Subarachnoid haemorrhage (Yes vs. No) | 0.67 (0.42;0.91) | 1.95 (1.53;2.49) | <0.001 |
| Bradycardia-Cardiac arrest: Bradycardia vs No | -0.16 (-0.63;0.31) | / | × |
| Bradycardia-Cardiac arrest: Cardiac arrest vs No | 0.67 (0.47;0.88) | / | |
| Left heart failure with pulmonary edema (Yes vs. No) | -0.36 (-0.52;-0.2) | 0.7 (0.59;0.82) | <0.001 |
| Liver Dysfunction Syndrome (Yes vs. No) | 1.24 (0.83;1.66) | 3.47 (2.29;5.27) | <0.001 |
| Haematological disease (Yes vs. No) | 1.33 (0.84;1.82) | / | × |
| ARDS (Yes vs. No) | 0.28 (0.09;0.47) | 1.32 (1.09;1.6) | 0.005 |
| Non traumatic cerebral oedema (Yes vs. No) | 0.89 (0.39;1.38) | 2.43 (1.48;3.99) | <0.001 |
| Atelectasis (Yes vs. No) | 0.29 (0.1;0.48) | 1.34 (1.1;1.62) | 0.003 |
| Acute on chronic liver disease (Yes vs. No) | 0.89 (0.35;1.43) | 2.43 (1.41;4.17) | 0.001 |
| Pancreatic malignancy (Yes vs. No) | 0.87 (0.49;1.24) | 2.38 (1.63;3.47) | <0.001 |
| Metabolic disorder (Yes vs. No) | -0.2 (-0.34;-0.06) | 0.82 (0.71;0.94) | 0.004 |
| Endocarditis (Yes vs. No) | 0.65 (0.2;1.1) | 1.92 (1.23;3) | 0.005 |
| Peritonites (Yes vs. No) | 0.41 (0.25;0.58) | 1.51 (1.28;1.79) | <0.001 |
| Skin or soft tissue infection (Yes vs. No) | 0.4 (0.16;0.65) | 1.5 (1.17;1.92) | 0.002 |
| Cholecystitis/cholangitis (Yes vs. No) | -0.59 (-0.86;-0.32) | 0.55 (0.42;0.73) | <0.001 |
| Urinary tract infection (Yes vs. No) | -0.33 (-0.51;-0.14) | 0.72 (0.6;0.87) | <0.001 |
| Pleurisy/Pleural empyema (Yes vs. No) | 1.06 (0.55;1.57) | 2.88 (1.73;4.81) | <0.001 |
| INFECTION WITHOUT SEPSIS (Yes vs. No) | -0.06 (-0.19;0.07) | / | |
| SEPSIS (Yes vs. No) | 0.3 (0.08;0.52) | / | × |
| SEPTIC SHOCK (Yes vs. No) | -0.01 (-0.15;0.13) | / | |
| Trauma (Yes vs. No) | -0.23 (-0.39;-0.08) | 0.79 (0.68;0.92) | <0.001 |
| Trauma (Politrauma vs No) | -0.48 (-0.68;-0.28) | 0.62 (0.51;0.75) | |
| Traumatic Subdural haematoma (Yes vs. No) | 0.48 (0.23;0.72) | 1.61 (1.26;2.05) | <0.001 |
| Spinal cord injury with complete neurologic deficit (Yes vs. No) | 1.3 (0.68;1.93) | 3.68 (1.98;6.86) | <0.001 |
| Traumatic diffuse injury with oedema (Yes vs. No) | 1.16 (0.65;1.66) | 3.18 (1.91;5.27) | <0.001 |

*(to be continued)*

*° For patients transferred to other ICU or to rehabilitation/high dependency care unit in other hospital, it is considered the outcome at the last hospital discharge.*
*× See interaction significance.*

| | | | |
|---|---|---|---|
| **Comorbidities** | | | |
| COPD (Moderate COPD vs No) | 0.11 (0.02;0.2) | 1.12 (1.02;1.22) | <0.001 |
| COPD (Severe COPD vs No) | 0.55 (0.43;0.67) | 1.73 (1.54;1.96) | |
| Dementia (Yes vs. No) | 0.56 (0.42;0.7) | 1.75 (1.52;2.01) | <0.001 |
| Malignant haematological disease (Yes vs. No) | 0.46 (0.27;0.66) | 1.59 (1.31;1.93) | <0.001 |
| Restrictive lung disease (Yes vs. No) | 0.65 (0.47;0.83) | 1.92 (1.6;2.3) | <0.001 |
| Immunosuppression (Yes vs. No) | 0.39 (0.19;0.6) | 1.48 (1.21;1.82) | <0.001 |
| NYHA class IV (Yes vs. No) | 0.43 (0.23;0.63) | 1.54 (1.26;1.88) | <0.001 |
| Pressure ulcer (Yes vs. No) | 0.66 (0.39;0.92) | 1.93 (1.48;2.52) | <0.001 |
| Any tumour without metastasis (Yes vs. No tumor) | 0.22 (0.12;0.32) | 1.25 (1.12;1.38) | <0.001 |
| Metastatic cancer (Yes vs. No tumor) | 0.92 (0.77;1.07) | 2.5 (2.15;2.9) | |
| Autoimmune disease (Yes vs. No) | 0.33 (0.16;0.5) | 1.39 (1.17;1.65) | <0.001 |
| Severe malnutrition (Yes vs. No) | 0.4 (0.16;0.65) | 1.5 (1.17;1.91) | 0.001 |
| Arrhythmia (Yes vs. No) | 0.12 (0.03;0.2) | 1.12 (1.03;1.22) | 0.006 |
| **Organ failures** | | | |
| GCS (3,4 vs. 15) | 1.89 (1.73;2.06) | / | |
| GCS (5 vs. 15) | 1.45 (1.18;1.73) | / | |
| GCS (6,7,8,9 vs. 15) | 0.93 (0.8;1.06) | / | |
| GCS (10,11,12 vs. 15) | 0.56 (0.44;0.68) | / | × |
| GCS (13,14 vs. 15) | 0.33 (0.22;0.44) | / | |
| GCS (Not evaluable in the first 24 hours in neurological patient* vs. 15) | 0.63 (0.09;1.16) | / | |
| GCS (Not evaluable in the first 24 hours in NON-neurological patient* vs. 15) | 0.06 (-0.42;0.54) | / | |
| Pupils in the first 24 hrs.: Unilaterally dilated and non-reactive vs. Bilaterally reactive and/or miotic | 1.18 (0.91;1.45) | / | |
| Pupils in the first 24 hrs.: Bilaterally dilated and non-reactive vs. Bilaterally reactive and/or miotic | 3.11 (2.7;3.53) | / | × |
| Pupils in the first 24 hrs.: Not available-Not assessable vs. Bilaterally reactive and/or miotic | 0.91 (0.44;1.38) | / | |
| Renal failure (AKIN): Moderate-Severe vs Mild-None | 0.32 (0.21;0.43) | 1.38 (1.24;1.53) | <0.001 |
| Neurologic failure: Toxic coma-Metabolic coma vs Cerebral coma-Postanoxic coma-Not evaluablein neurological patient*-None | -0.53 (-0.71;-0.35) | 0.59 (0.49;0.71) | <0.001 |
| Neurologic failure: Not evaluable in NON-neurological patient* vs Cerebral coma-Postanoxic coma-Not evaluablein neurological patient*-None | 0.37 (0.14;0.61) | 1.45 (1.15;1.84) | |
| Non shock (Yes vs. No) | 0.16 (0.03;0.28) | 1.17 (1.03;1.32) | 0.012 |
| Neurogenic shock (Yes vs. No) | 0.49 (0.15;0.83) | 1.63 (1.16;2.29) | 0.005 |
| Cardiogenic shock (Yes vs. No) | 0.54 (0.38;0.69) | / | × |
| Haemorrhagic-Hypovolemic shock (Yes vs. No) | 0.2 (-0.16;0.56) | / | × |
| Other shock (Yes vs. No) | 0.38 (0.16;0.61) | 1.47 (1.17;1.84) | <0.001 |
| Metabolic failure (Yes vs. No) | 0.21 (0.12;0.3) | 1.23 (1.13;1.35) | <0.001 |
| Respiratory failure (Parenchymal failure vs. No) | 0.4 (0.3;0.5) | 1.5 (1.35;1.66) | <0.001 |
| Respiratory failure (Intubation for airway maint. vs. No) | 0.53 (0.43;0.63) | 1.7 (1.54;1.88) | |
| **Surgical and non surgical procedures** | | | |
| Gastrointestinal surgery (Yes vs. No) | 0.19 (0.07;0.32) | 1.22 (1.07;1.38) | 0.003 |
| Nephro/Urological surgery (Yes vs. No) | -0.43 (-0.68;-0.19) | 0.65 (0.51;0.83) | <0.001 |
| Interventional cardiology (Yes vs. No) | -0.52 (-0.71;-0.32) | 0.6 (0.49;0.72) | <0.001 |
| **Interactions among independent variables** | | | |
| GCS (3,4) × PaO2/FiO2 (100*mmHg/%) (50-99) | -0.86 (-1.22;-0.49) | / | <0.001 |
| GCS (6,7,8,9,Not evaluable in the first 24 hours in NON-neurological patient*) × PaO2/FiO2 (100*mmHg/%) (<100) | -0.38 (-0.62;-0.14) | / | 0.002 |
| WBC ($10^9$/L) (>=20) × PaO2/FiO2 (100*mmHg/%) (<100) | -0.45 (-0.68;-0.21) | / | <0.001 |
| Serum urea (mg/100 ml) (>=60) × Urine Output (L/24h) (<0.2) | -0.45 (-0.71;-0.18) | / | <0.001 |
| GCS (5) × Platelets ($10^3$/mm3) (<50) | -2.06 (-3.32;-0.79) | / | 0.001 |
| GCS (3,4) × Platelets ($10^3$/mm3) (50-99) | -0.71 (-1.08;-0.35) | / | <0.001 |
| Heart rate (bpm) (>=120) × Platelets ($10^3$/mm3) (50-99) | -0.41 (-0.65;-0.16) | / | 0.001 |
| Ward of admission (Other ICU-Logistical/organizational reasons) × Stay before ICU (days) (logarithm) | -0.33 (-0.5;-0.17) | / | <0.001 |
| GCS (3,4) × Stay before ICU (days) (logarithm) | -0.13 (-0.24;-0.02) | / | 0.025 |
| GCS (Not evaluable in the first 24 hours in neurological patient*) × Stay before ICU (days) (logarithm) | -0.23 (-0.4;-0.06) | / | 0.008 |
| Spontaneous Intraparenchymal bleeding × Stay before ICU (days) (logarithm) | -0.49 (-0.68;-0.29) | / | <0.001 |
| Haematological disease × Stay before ICU (days) (logarithm) | -0.39 (-0.67;-0.11) | / | 0.007 |
| Pupils in the first 24 hrs. (Not Bilaterally reactive and/or miotic) × Stay before ICU (days) (logarithm) | -0.07 (-0.15;0.01) | / | 0.091 |
| Haemorrhagic-Hypovolemic shock × Stay before ICU (days) (logarithm) | -0.14 (-0.27;0) | / | 0.043 |
| Cardiac arrest × Stay before ICU (days) (logarithm) | -0.15 (-0.29;0) | / | 0.047 |
| Bradycardia × Heart rate (bpm) (<40) | -1.64 (-2.52;-0.75) | / | <0.001 |
| Cardiac arrest × Heart rate (bpm) (<40) | -0.68 (-1.25;-0.11) | / | |
| Cardiac arrest × Haemorrhagic-Hypovolemic shock | -0.43 (-0.72;-0.14) | / | 0.004 |
| SEPSIS × PaO2/FiO2 (100*mmHg/%) (<300) | -0.49 (-0.71;-0.26) | / | <0.001 |
| Heart rate (bpm) (<40) × Urine Output (L/24h) (<0.2) | 1.06 (0.43;1.68) | / | <0.001 |
| Haemorrhagic-Hypovolemic shock × Systolic Blood Pressure (mmHg) (<70) | 0.44 (0.03;0.85) | / | 0.077 |
| Haemorrhagic-Hypovolemic shock × Systolic Blood Pressure (mmHg) (70-99) | 0.39 (0;0.79) | / | |

**Dependent variable explained**

| | |
|---|---|
| Likelihood Ratio Test: | 15915 |
| Degree of freedom: | 127 |
| p-value: | <0.0001 |

**Goodness-of-fit**

| | |
|---|---|
| Area under the ROC curve: | 0.892 |
| GiViTI Calibration Test: | 1.09 |
| p-value: | 0.298 |
| 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.*

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 2018 data using PIM 2, PIM 3, PELOD, SAPSII, and GiViTI 2018 prognostic models. The latter are reported for both the overall population and 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).

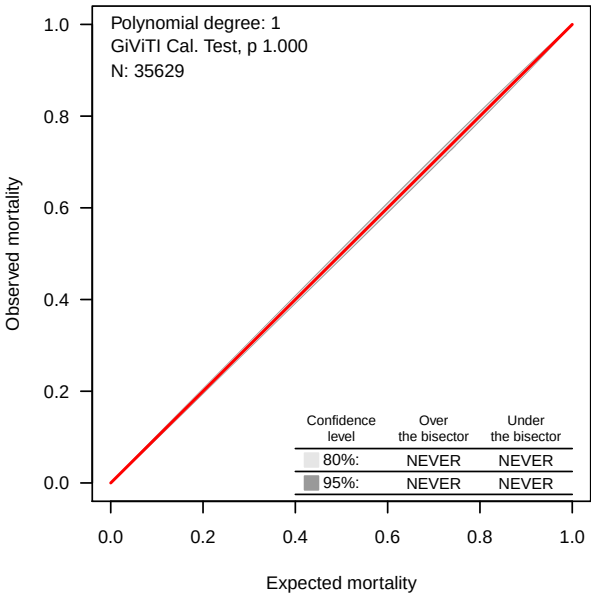
These belts serve as a representation of the validity of the models used to evaluate the performance of each ICU. A model is well calibrated, and thus a useful tool for evaluating individual departments, when the bisector is fully included in the belt. Only when this occurs can a deviation from the bisector 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.

Moreover, the calibration belt built on 2018 data using the GiViTI 2017 model is reported. The aim of this belt is to investigate 2017 to 2018 difference in terms of performance of the GiViTI general ICUs.

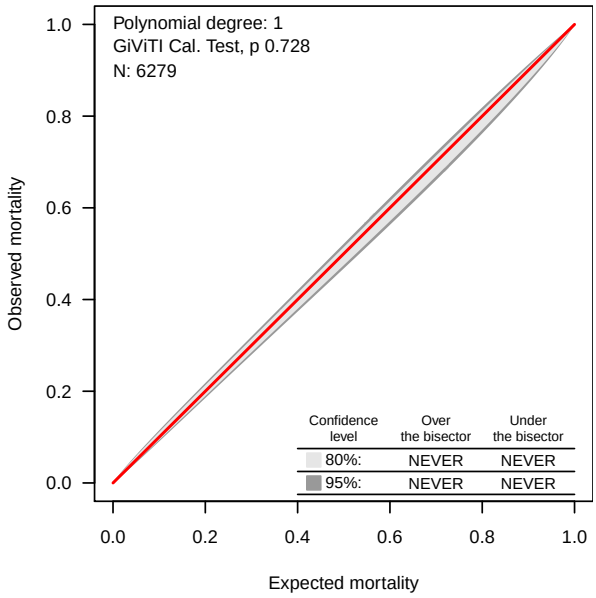
For further informations please look at [PLoS ONE 6(2): e16110].

**National report for general ICUs - Year 2018**
**Validity of the models** - Calibration belts

**Predictive model: GiViTI 2018 (training set)**

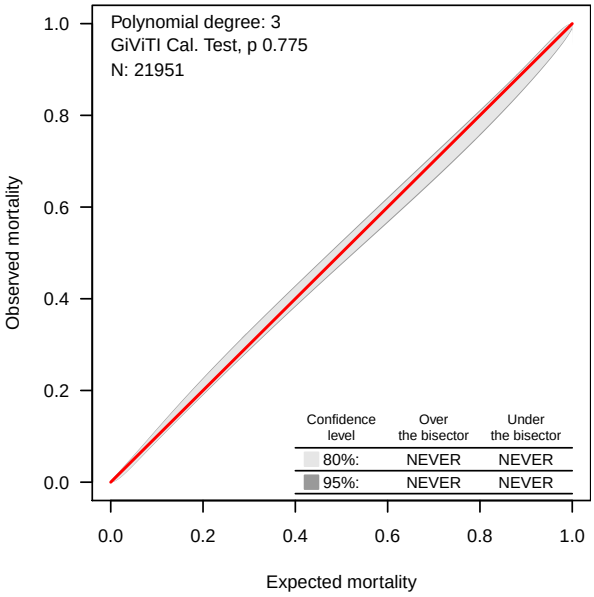



**Predictive model: GiViTI 2018 (validation set)**

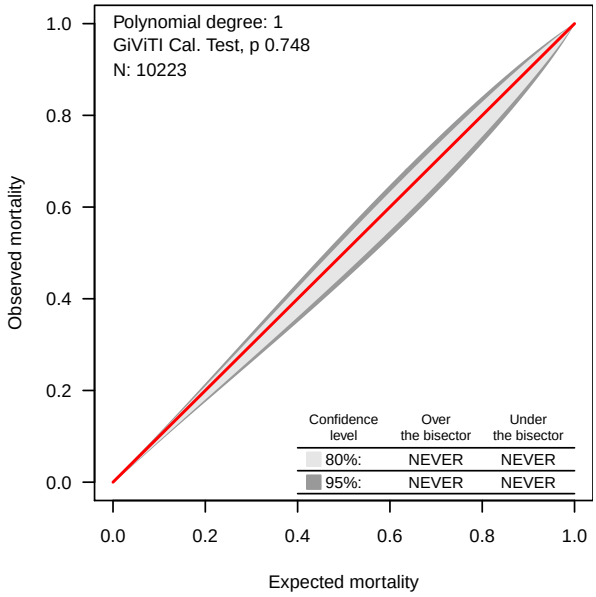



## UNIFORMITY OF FIT

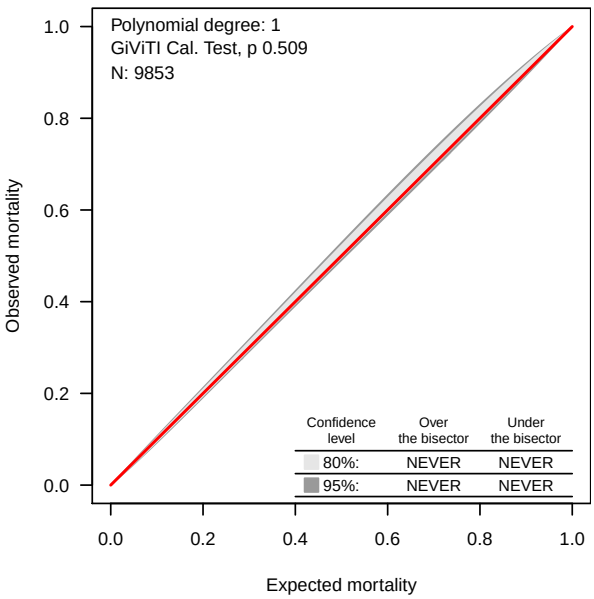
**Predictive model: GiViTI 2018 Non surgical**




**Predictive model: GiViTI 2018 Elective surgical**



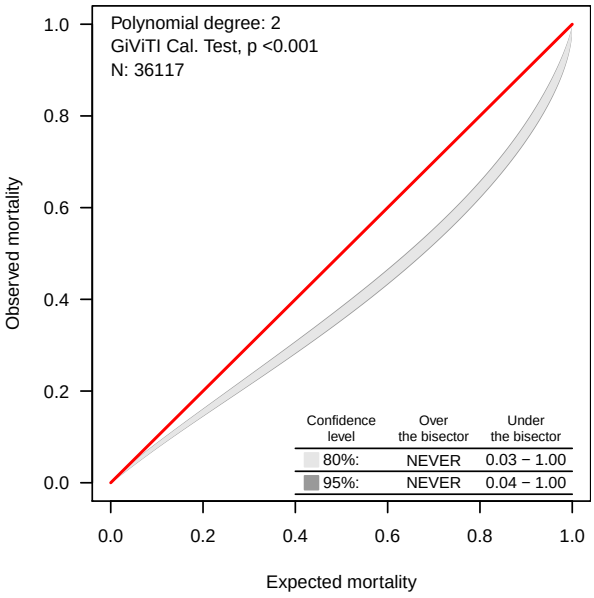

**Predictive model: GiViTI 2018 Emergency surgical**



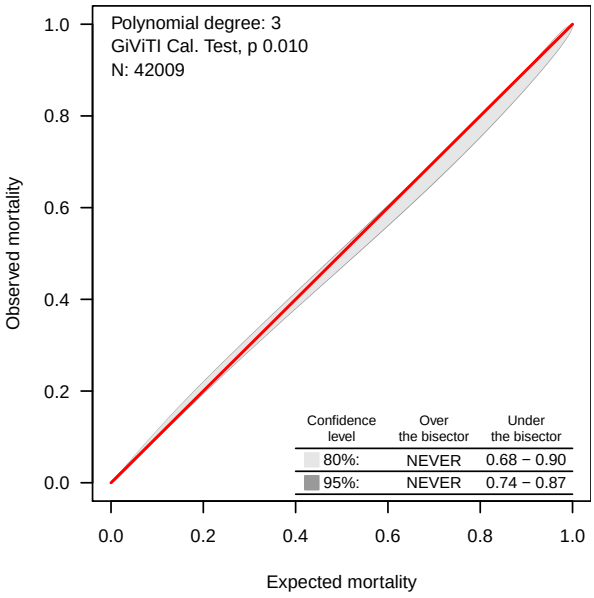
**National report for general ICUs - Year 2018**
**Validity of the models** - Calibration belts

## EXTERNAL SCORE

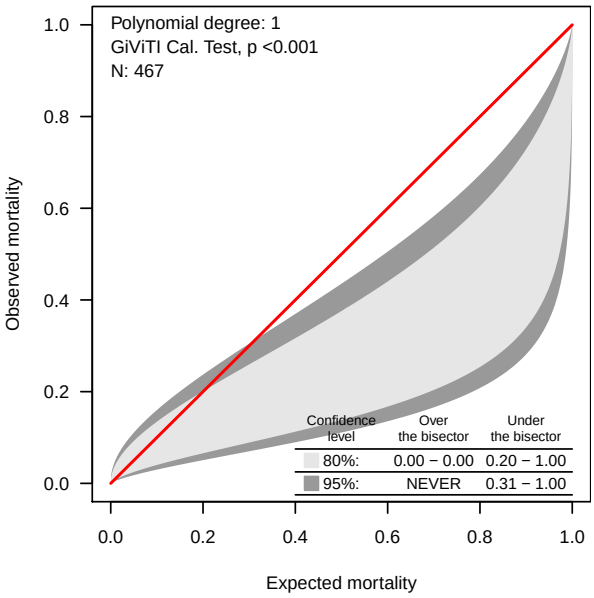
**Predictive model: SAPSII**



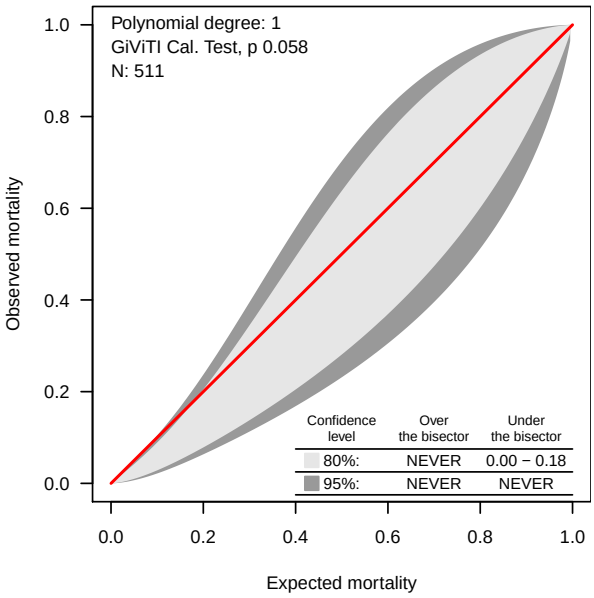

**Predictive model: GiViTI 2017**



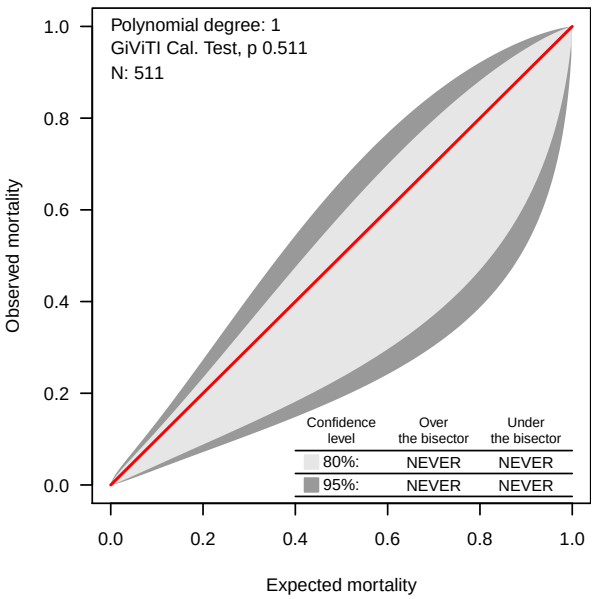

**Predictive model : PELOD**




**Predictive model: PIM2**




**Predictive model: PIM3**



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