

GiViTI

Gruppo Italiano per la Valutazione degli Interventi In Terapia Intensiva

**Report
PROSAFE project**

Year 2013

National report for general ICUs (178 ICUs)

ITALY

PROSAFE project - National report for general ICUs (178 ICUs) - ITALY

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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 2013 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 Neuro Petal, that aims to collect relevant information to better characterize patients admitted to the ICU for a 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 300 ICUs collected data during 2013, 280 Italian and 20 foreign ICUs, for a total of 96890 patients registered in PROSAFE. Only the ICUs that collected valid data (245) 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 89802 patients admitted to intensive care during 2013.

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 (Italian) national report on the pediatric ICUs.
5. 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). An analysis application form is available on the GiViTI website to obtain a report on particular subgroups of patients in which each unit may be interested.

Description of the statistics

Project participation and location of Italian participating ICUs

The table on page 15 summarizes the participation in the project of the 245 ICUs which collected valid data in 2013 for a period of at least 4 months.

The map on page 17 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 in the grey box, which is the result of joint analysis of data reported at the time of registration and those collected during the year via the software) is taken from the PROSAFE project registration forms. 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. Data on the number of staffed beds, total admissions in 2013 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.

$$\text{Occupation rate} = \frac{\text{ICU stay days}}{\text{Days} \times \text{Number of beds}} \quad (1)$$

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.

$$\text{Rotation index} = \frac{\text{Number of patients}}{\text{Number of beds}} \quad (2)$$

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.

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

Study flow-chart

The flow chart, or tree diagram, on page 21 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 (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 269 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 2011

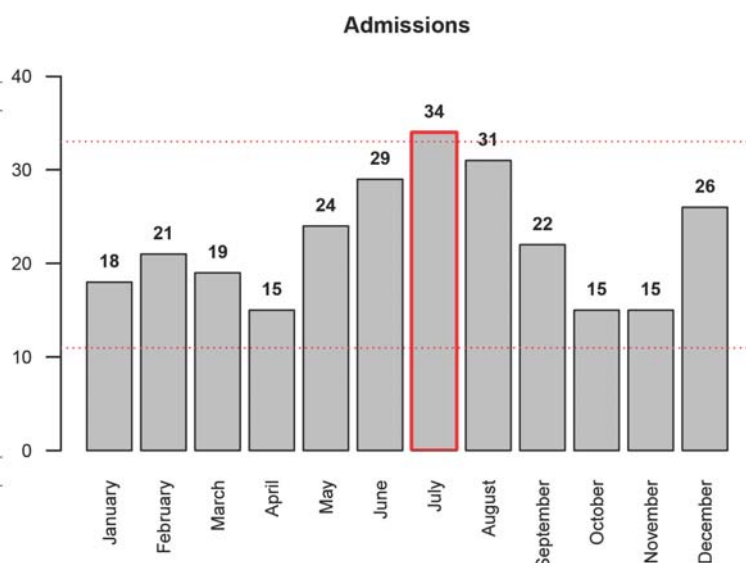
Data validity

Patients admitted: 269

Month	N	%
January	18	6.7
February	21	7.8
March	19	7.1
April	15	5.6
May	24	8.9
June	29	10.8
July	34	12.6
August	31	11.5
September	22	8.2
October	15	5.6
November	15	5.6
December	26	9.7

Admissions

Mean	22.4
Median	21.5
SD	6.5
VC	29.0



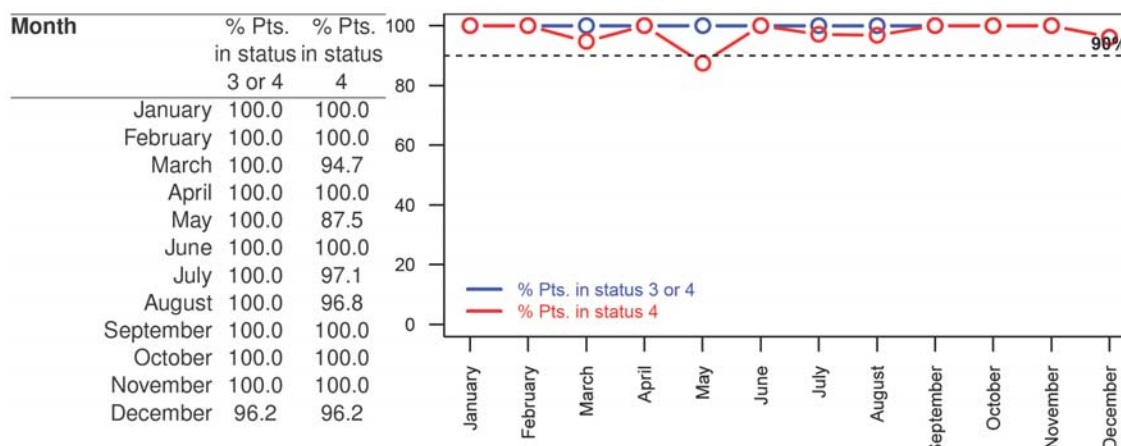
WARNING! The highlighted months have a number of patients quite different from the average. Please verify the correctness of the data and, particularly, that all consecutive patients have been registered in the Prosafe software.

The second table divides the recruited patients by admission month and form completion status. Overall, the ICU in question presents complete data for the majority of recruited patients. Only 7 patients still present incomplete data.

Status (N)						
Month	1	2	3	4	5	Total
January	0	0	0	18	0	18
February	0	0	0	21	0	21
March	0	0	1	18	0	19
April	0	0	0	15	0	15
May	0	0	3	21	0	24
June	0	0	0	29	0	29
July	0	0	1	33	0	34
August	0	0	1	30	0	31
September	0	0	0	22	0	22
October	0	0	0	15	0	15
November	0	0	0	15	0	15
December	0	1	0	25	0	26
Total	0	1	6	262	0	269

The final graph shows level of data completeness in the various months.

According to our elimination criterion, the overall analysis of hospital mortality will exclude those patients admitted in the month of May since they present a validity percentage below 90% (in that month, information on hospital outcome was still missing for 3 out of 24 patients). Accordingly, 245 patients have valid data for this type of analysis (after subtracting the 24 patients admitted in the month of May from the total of 269 patients).



Patients admitted in months with more than 90% of patients in status 3 or 4: **269**; status 4: **245**.

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 less than 90% admissions in statuses 3 and 4 are omitted from the analysis group. This part presents patient characteristics at ICU admission and during ICU stay, severity scores, process indicators, and outcomes for the various patient subgroups.

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

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

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

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

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 surgical 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:

$$\text{Predicted hospital mortality} = \frac{e^{\text{Logit}}}{1 + e^{\text{Logit}}} \quad (5)$$

where

$$\text{Logit} = -7.763 + 0.074 \times \text{SAPSII} + 0.997 \times \ln(\text{SAPSII} + 1) \quad (6)$$

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

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

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

$$\text{Predicted ICU mortality} = \frac{e^{\text{PIM2}}}{1 + e^{\text{PIM2}}} \quad (8)$$

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 SEVERE SEPSIS (15/17=88.2%). Conversely, the condition of SEVERE SEPSIS developed into SEPTIC SHOCK in 2 patients (2/17=11.8%).

Evoluzione della gravità		Degenza				
N (R %)		Nessuna	Infezione con o senza SIRS	SEPSI GRAVE	SHOCK SETTICO	TOT
Ammissione	Nessuna	173 (93.0%)	9 (4.8%)	1 (0.5%)	3 (1.6%)	186
	Infezione con o senza SIRS	-	19 (95.0%)	0 (0.0%)	1 (5.0%)	20
	SEPSI GRAVE	-	-	15 (88.2%)	2 (11.8%)	17
	SHOCK SETTICO	-	-	-	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:

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

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.

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

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:

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

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

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 maintenance -> 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 90% 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 90% of patients were in status 4.

Patients	Model	Mortality
Adults non CS	GiViTI 2013 (GiViTI 2013 $\geq 24h$ and $< 24h$ union)	Last hospital mortality
Adults non CS with LOS $\geq 24h$	GiViTI 2013, $\geq 24h$	Last hospital mortality
	SAPS2	Hospital mortality
Adults non CS with LOS $< 24h$	GiViTI 2013, $< 24h$	Last hospital mortality
Pediatric	PIM 2	ICU mortality
	PELOD	ICU mortality

Analysis of mortality: forest plot The graph shows the various O/E scores of the ICUs involved in the project. The O/E score is given by the ratio between the total number of expected deaths (according to the indicated reference model) and the total number of observed deaths. 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.

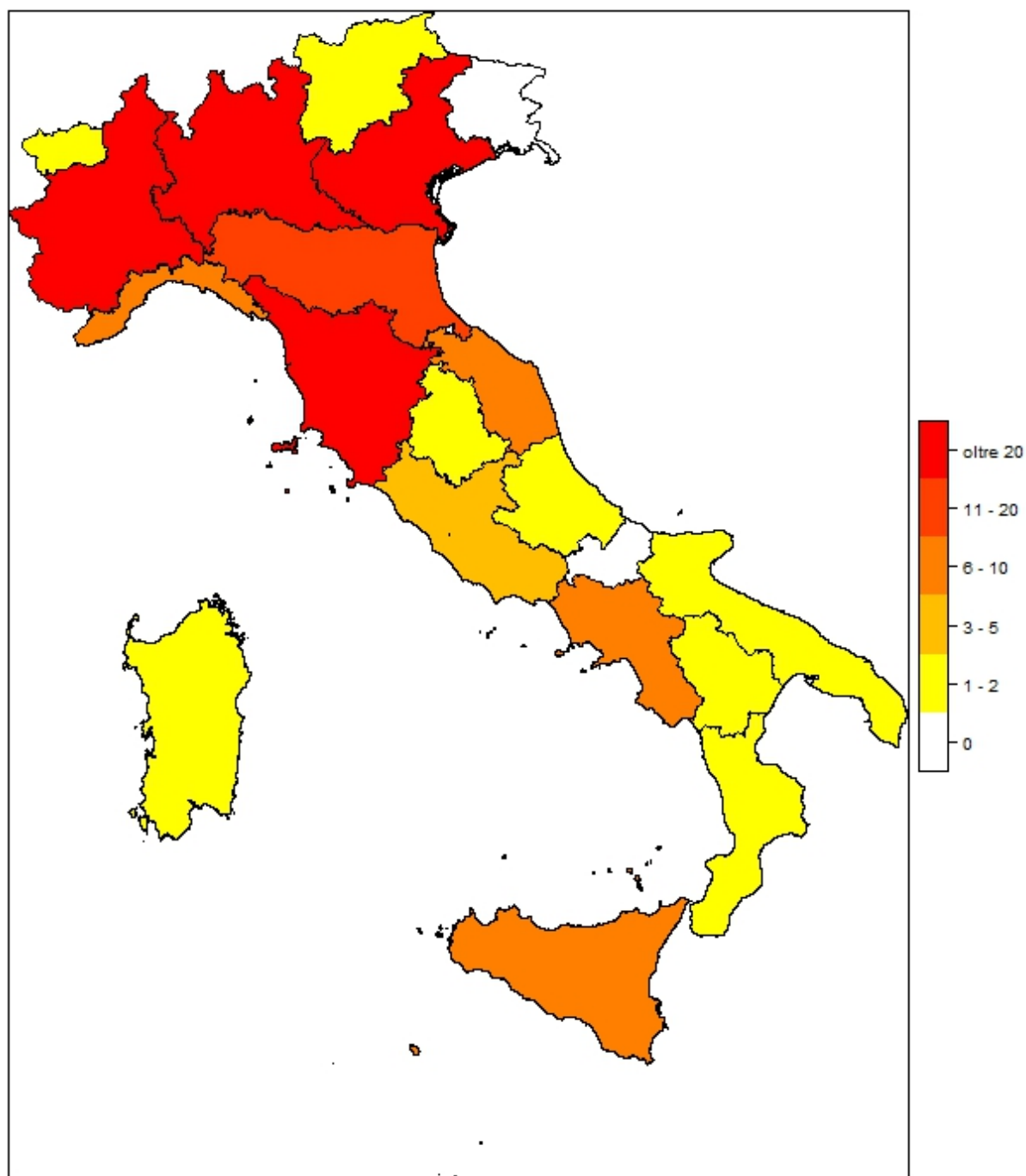
Statistics

TYPE							
Nation	General	Cardiosurgical	Surgical	Neurosurgical	Pediatrics	Other	Total
 Afghanistan	1 ICUs 242 patients						1 ICUs 242 patients
 Cyprus	1 ICUs 807 patients						1 ICUs 807 patients
 Italy	178 ICUs 61311 patients	18 ICUs 10549 patients	12 ICUs 5975 patients	10 ICUs 3523 patients	9 ICUs 2434 patients	9 ICUs 3208 patients	236 ICUs 87000 patients
 Poland	2 ICUs 119 patients						2 ICUs 119 patients
 Slovenia			1 ICUs 137 patients			2 ICUs 691 patients	3 ICUs 828 patients
 Hungary	2 ICUs 806 patients						2 ICUs 806 patients
Total	184 ICUs 63285 patients	18 ICUs 10549 patients	13 ICUs 6112 patients	10 ICUs 3523 patients	9 ICUs 2434 patients	11 ICUs 3899 patients	245 ICUs 89802 patients

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

Location of Italian participating ICUs (N=178)

ICUs per region



Region	N	%
Abruzzo	1	0.6
Basilicata	1	0.6
Calabria	2	1.1
Campania	9	5.1
Emilia Romagna	17	9.6
Friuli-Venezia Giulia	0	0
Lazio	4	2.2
Liguria	6	3.4
Lombardia	43	24.2
Marche	7	3.9
Molise	0	0
Piemonte	24	13.5
Puglia	2	1.1
Sardegna	2	1.1
Sicilia	6	3.4

Region	N	%
Toscana	26	14.6
Trentino Alto Adige	1	0.6
Umbria	2	1.1
Valle d'Aosta	1	0.6
Veneto	24	13.5

Geographical area	N	%
Northern Italy	116	65.2
Central Italy	40	22.5
Southern Italy	22	12.4

Description of hospitals (N=178) - Year 2013

Number of beds in hospital	N	%
< 300 beds	91	51.1
300 - 800 beds	69	38.8
> 800 beds	18	10.1
Missing	0	

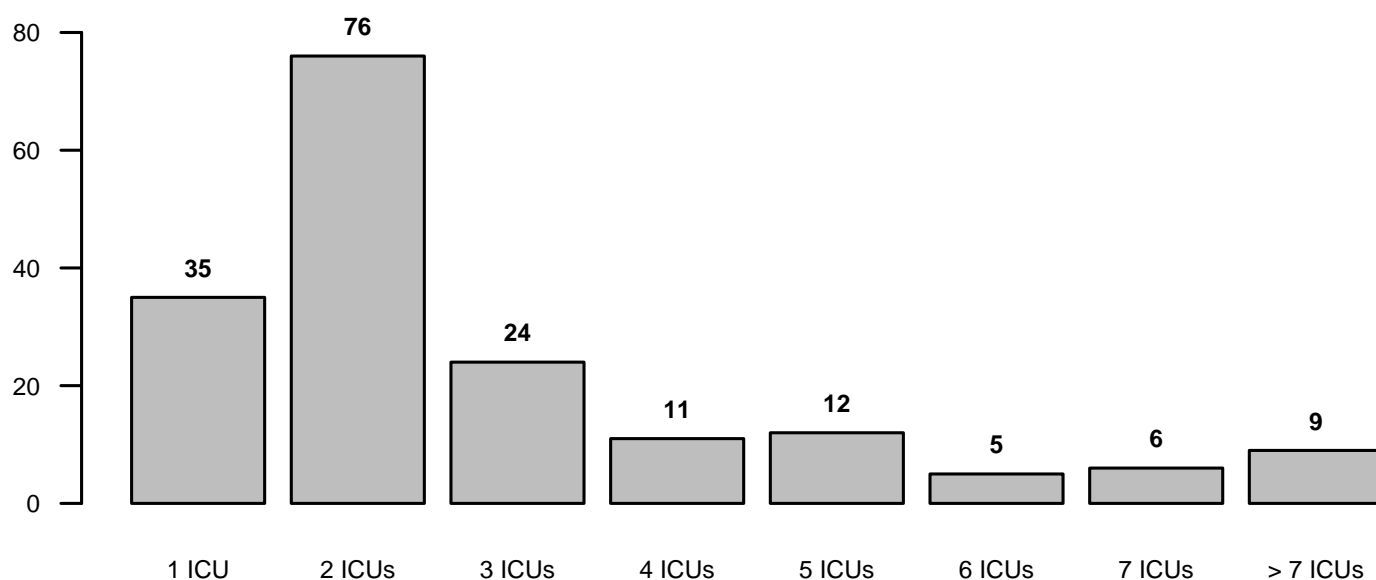
Non surgical specialties	N	%
Cardiology	171	96.1
Pneumology	91	51.1
Nephrology	137	77.0
Infectious diseases	70	39.3
Pediatrics	142	79.8
Neonatology	99	55.6
Neurology	130	73.0
Haematology	74	41.6

Surgical specialties (independent ward)	N	%
Neurosurgery	58	32.6
Cardiosurgery	46	25.8
Major vascular surgery	84	47.2
Thoracic surgery	69	38.8
Pediatric surgery	37	20.8
Transplantation activities (excluding corneal transplants)	30	16.9

Surgical specialties (procedures only)	N	%
Neurosurgery	9	5.1
Cardiosurgery	6	3.4
Major vascular surgery	20	11.2
Thoracic surgery	38	21.3
Pediatric surgery	34	19.1
Transplantation activities (excluding corneal transplants)	13	7.3

Type of ICUs present in hospital	N	%
General	178	100.0
Medical	1	0.6
Surgical	10	5.6
Neurosurgical	24	13.5
Cardiosurgical	41	23.0
Coronary unit	135	75.8
Burns	8	4.5
Transplants	12	6.7
Pediatrics	17	9.6
High dependency unit	31	17.4
Respiratory Intensive Care Unit	18	10.1
Other	33	18.5

Services/activities available in H	N	%
Invasive radiology	93	52.2
Invasive cardiology	120	67.4
Endoscopy	162	91.0
Microbiology	147	82.6
Emergency department	157	88.2

Number of ICUs in hospital

Description of ICUs (N=178) - Year 2013

Number of functioning beds

Mean	7.3
SD	2.9
Median	6
Q1-Q3	5-8.8
Missing	0

University affiliation

	N	%
Yes	35	19.7
No	143	80.3
Missing	0	

Number of physician

Mean	10.9
SD	4.5
Median	10
Q1-Q3	8-13
Missing	0

Physicians

	N	%
Dedicated to ICU only	45	25.6
Dedicated to ICU on a rotation basis	16	9.1
Dedicated to ICU only and on a rotation basis	115	65.3
Missing	2	

Beds per physician (average)

Mean	4.5
SD	1.8
Median	4.1
Q1-Q3	3.3-5.6
Missing	0

Beds per physician (night-time)

Mean	6.2
SD	2.7
Median	6
Q1-Q3	4-8
Missing	0

Number of nurses

Mean	23.9
SD	12.2
Median	20
Q1-Q3	16-28
Missing	0

Nurses

	N	%
Dedicated to ICU only	113	63.5
Dedicated to ICU on a rotation basis	6	3.4
Dedicated to ICU only and on a rotation basis	59	33.1
Missing	0	

Beds per nurse (average)

Mean	2.1
SD	0.5
Median	2
Q1-Q3	1.8-2.2
Missing	0

Beds per nurse (night-time)

Mean	2.3
SD	0.5
Median	2
Q1-Q3	2-2.5
Missing	0

Biomedical devices per bed

	Mean	SD	Q1-Q3
Basic ICU monitors (ECG, NIBP, SaO2)	0.6	0.6	0.2-1.0
Advanced ICU Monitors with invasive pressure	1.1	0.5	1.0-1.2
Cardiac output monitors	0.4	0.3	0.2-0.5
Ventilators	1.4	0.4	1.2-1.5
Syringe pumps	4.4	2.1	3.0-5.6
IV. infusion pumps	2.6	1.5	1.5-3.4
Enteral nutrition pumps	1.2	0.4	1.0-1.3

Biomedical equipment in ICU

	N	%
Transoesophageal ECHO (TOE)	46	25.8
Basic ultrasound with linear probe	139	78.1
Advanced ultrasound with abdominal probe	117	65.7
Blood gas analyser	172	96.6
Haemodialysis/haemofiltration system	142	79.8
Transport ventilator	161	90.4
Fiberscope	178	100.0

Patients admitted

Mean	353.1
SD	192.1
Median	301.8
Q1-Q3	227.8-440.2

Occupancy rate (%)

Mean	85.5
SD	14.0
Median	86
Q1-Q3	76.6-93.2

Rotation index (patients/bed)

Mean	48.7
SD	16.2
Median	46.8
Q1-Q3	37.8-58.4

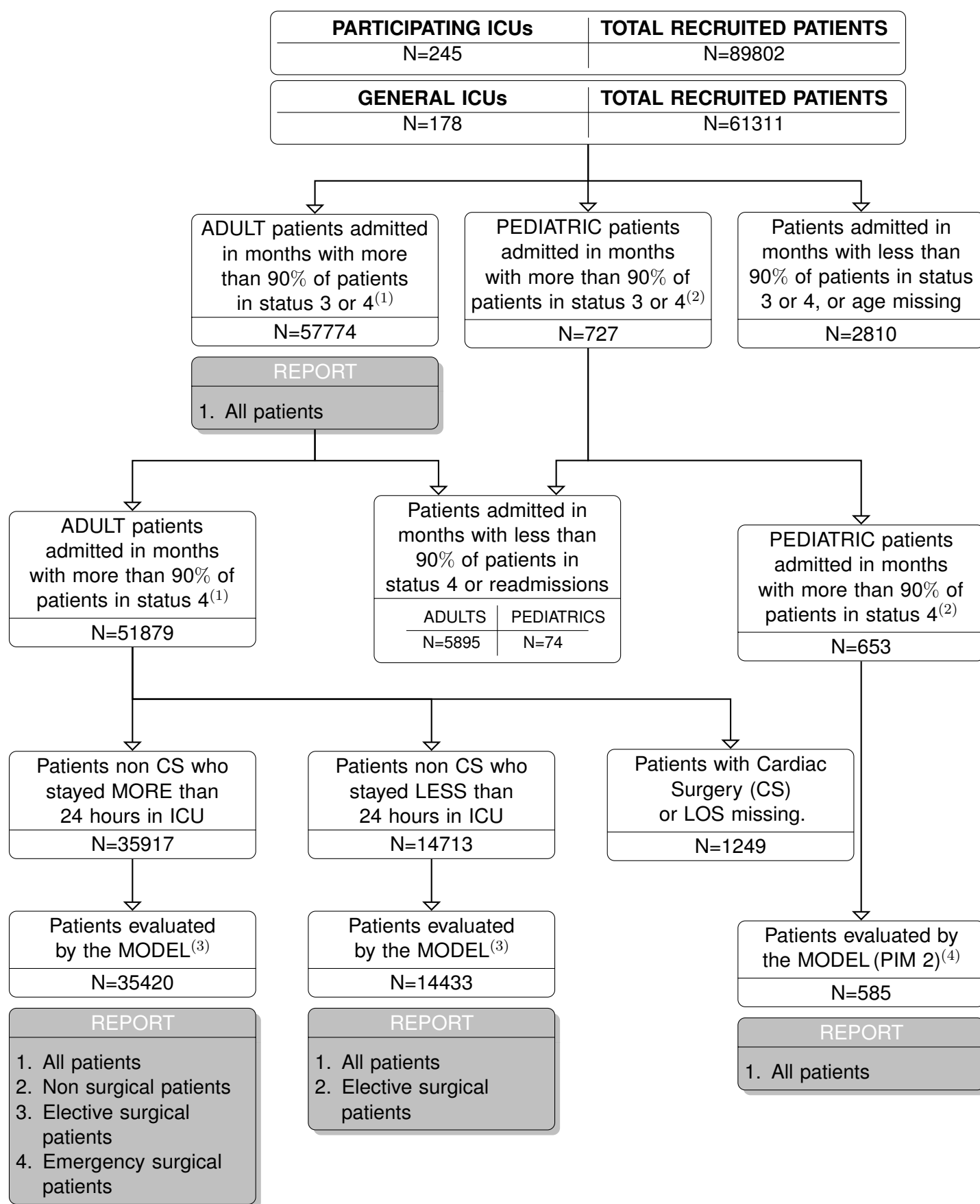
Turnover (hours)

Mean	33.3
SD	40.0
Median	26.1
Q1-Q3	10-46.2

Data source: ICU registration form of PROSAFE project.

National report for general ICUs (178 ICUs) - Year 2013

Study flow-chart



(1) Patients older than 17 years are considered ADULT.

(2) Patients under 17 years old 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.

(4) Patients transferred to other ICU are excluded.

National report for general ICUs - Year 2013
Characteristics on admission - Adult patients

Patients (N): 57774

Sex	N	%
Male	34126	59.1
Female	23622	40.9
Missing	26	

Age (years)	N	%
17-45	6889	11.9
46-65	14872	25.7
66-75	15535	26.9
>75	20478	35.4
Missing	0	
Mean	66.9	
SD	16.1	
Median	71	
Q1-Q3	58-79	
Min-Max	17-105	

Body mass Index (BMI)	N	%
Underweight	3177	5.5
Normal	26408	46.1
Overweight	17891	31.3
Obese	9771	17.1
Missing	527	

Pregnancy status	N	%
Females (N=23622)		
Not fertile	12858	54.6
Not pregnant/Unknown	10120	43.0
Currently pregnant	78	0.3
Post partum	480	2.0
Missing	86	

Comorbidities	N	%
No	8883	15.4
Yes	48819	84.6
Missing	72	

Comorbidities (top 10)	N	%
Hypertension	30438	52.8
Arrhythmia	9761	16.9
Moderate COPD	9378	16.3
Myocardial infarction	7738	13.4
Any tumour without metastasis	7566	13.1
Diabetes Type II without insulin tr.	7149	12.4
Cerebrovascular disease	6574	11.4
NYHA class II-III	6389	11.1
Peripheral vascular disease	6148	10.7
Moderate or severe renal disease	5241	9.1
Missing	72	

Stay before ICU (days)	Mean	SD
	4.8	11.9
	Median	1
	Q1-Q3	0-4
	Missing	76

Source of admission	N	%
Same hospital	51949	90.0
Other hospital	5562	9.6
Long-term chronic care hospital	219	0.4
Directly from the community (e.g., ambulance, home, ...)	5	0.0
Missing	39	

Ward of admission	N	%
Hospital (N=57511)		
Medical ward	8091	14.1
Surgical ward	28146	48.9
Emergency room	17090	29.7
Other ICU	2904	5.0
High dependency care unit	1278	2.2
Missing	2	

Reason for transfer from	N	%
Other ICU (N=2904)		
Specialist expertise	621	21.4
Step-up care	677	23.3
Logistical/organizational reasons	1499	51.6
Step-down care	106	3.7
Missing	1	

Ward of admission	N	%
Same hospital (N=51949)		
Medical ward	7177	13.8
Surgical ward	27619	53.2
Emergency room	14900	28.7
Other ICU	1120	2.2
High dependency care unit	1131	2.2
Missing	2	

Ward of admission	N	%
Other hospital (N=5562)		
Medical ward	914	16.4
Surgical ward	527	9.5
Emergency room	2190	39.4
Other ICU	1784	32.1
High dependency care unit	147	2.6
Missing	0	

Scheduled admission	N	%
No	42837	74.2
Yes	14863	25.8
Missing	74	

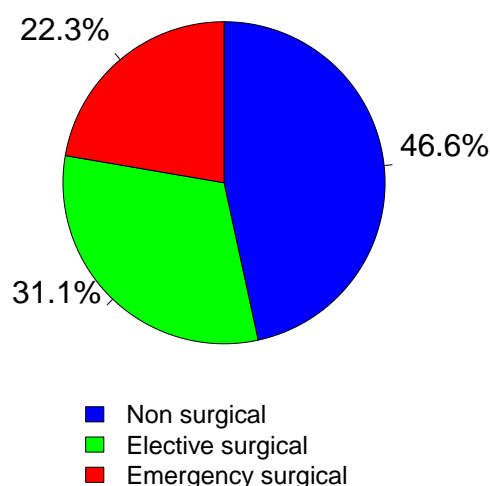
National report for general ICUs - Year 2013

Characteristics on admission - Adult patients

Trauma	N	%
No	51142	88.6
Yes	6566	11.4
Multiple trauma	2567	4.4
Missing	66	

Surgical status	N	%
Non surgical	26878	46.6
Elective surgical	17955	31.1
Emergency surgical	12874	22.3
Missing	67	

Surgical status



Source of admission	N	%
Surgical pts. (N=30829)		
Operating theatre of surgical ward	24411	79.2
Operating theatre of emergency room	1962	6.4
Surgical ward	1392	4.5
Other	3039	9.9
Missing	25	

Surgical interventions (top 10)	N	%
Elective surgical (N=17955)		
Gastrointestinal surgery	4723	26.3
Orthopaedic surgery	2190	12.2
Nephro/Urological surgery	2118	11.8
Neurosurgery	1274	7.1
Thoracic surgery	1108	6.2
Abdominal vascular surgery	1087	6.1
ENT surgery	908	5.1
Gynaecological surgery	780	4.3
Peripheral vascular surgery	774	4.3
Pancreatic surgery	655	3.6
Missing	0	

Timing	N	%
Elective surgical (N=17955)		
From -7 to -3 days	250	1.4
From -2 to -1 days	443	2.5
On ICU admission day	18355	102.2
The day after ICU admission	206	1.1
Missing	54	

Surgical interventions (top 10)	N	%
Emergency surgical (N=12874)		
Gastrointestinal surgery	5639	43.8
Neurosurgery	1624	12.6
Orthopaedic surgery	1290	10.0
Abdominal vascular surgery	648	5.0
Biliary tract surgery	539	4.2
Peripheral vascular surgery	524	4.1
Nephro/Urological surgery	513	4.0
Splenectomy	374	2.9
Obstetric surgery	327	2.5
Organ/s transplantation	320	2.5
Missing	0	

Timing	N	%
Emergency surgical (N=12874)		
From -7 to -3 days	310	2.4
From -2 to -1 days	1400	10.9
On ICU admission day	11378	88.4
The day after ICU admission	523	4.1
Missing	53	

Non surgical interventions	N	%
None	53672	93.0
Elective	951	1.6
Emergency	3073	5.3
Missing	78	

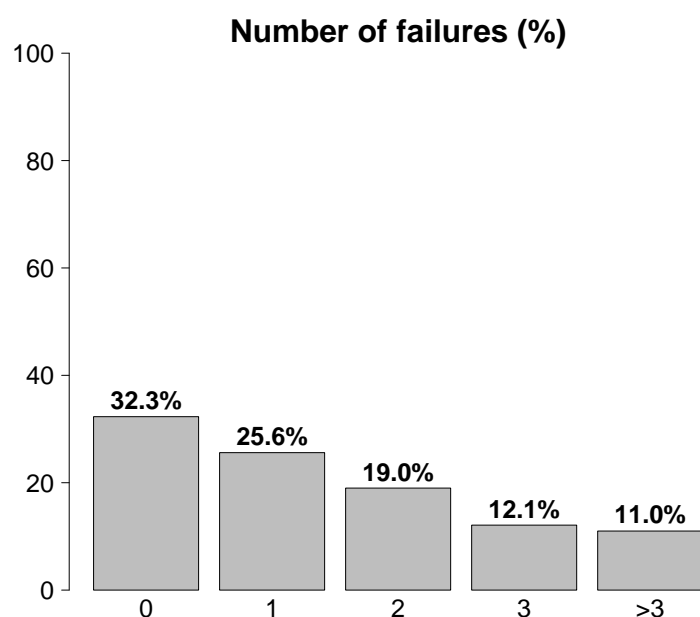
Non surgical interventions	N	%
Elective (N=951)		
Interventional endoscopy	235	24.7
Interventional cardiology	219	23.0
Interventional radiology	162	17.0
Interventional neuroradiology	130	13.7
Missing	205	

Surgical interventions	N	%
Emergency (N=3073)		
Interventional cardiology	1246	40.5
Interventional endoscopy	715	23.3
Interventional radiology	642	20.9
Interventional neuroradiology	384	12.5
Missing	83	

National report for general ICUs - Year 2013

Characteristics on admission - Adult patients

Reason for admission	N	%
Monitoring/Weaning	24611	42.6
Post surgical weaning	9425	16.4
Surgical monitoring	9630	16.7
Post interventional weaning	138	0.2
Interventional monitoring	658	1.1
Non surgical monitoring	4606	8.0
Missing	154	
Admission for procedures/treatments	7	0.0
Intensive Treatment	32891	57.0
Only ventilatory support	18012	31.2
Only cardiovascular support	2548	4.4
Ventilatory and cardiovascular support	12327	21.4
Missing	4	
Palliative Sedation	135	0.2
Diagnosis of death/Organ donation	65	0.1
Missing	65	



Failures on admission	N	%
No	18674	32.3
Yes	39098	67.7
A: Respiratory failure	30336	52.5
B: Cardiovascular failure	14875	25.7
C: Neurological failure	7111	12.3
D: Hepatic failure	494	0.9
E: Renal failure	19021	32.9
F: Acute skin failure	45	0.1
G: Metabolic failure	12074	20.9
H: Coagulation failure	1004	1.7
Missing	2	

Failures on admission (top 10)	N	%
A	8952	15.5
E	3737	6.5
ABEG	3222	5.6
AB	2795	4.8
AE	2757	4.8
AC	2501	4.3
ABE	1976	3.4
AEG	1443	2.5
ABCEG	1174	2.0
EG	1020	1.8
Missing	2	

Respiratory failure	N	%
None	27435	47.5
Only hypoxic failure	9395	16.3
Only hypercapnic failure	2001	3.5
Hypoxic-hypercapnic failure	4470	7.7
Intubation for airway maint.	14470	25.0
Missing	3	

Cardiovascular failure	N	%
None	42899	74.3
Without shock	3201	5.5
Cardiogenic shock	3362	5.8
Septic shock	3563	6.2
Haemorrhagic/hypovolemic shock	2040	3.5
Hypovolemic shock	996	1.7
Anaphylactic shock	50	0.1
Neurogenic shock	372	0.6
Other shock	454	0.8
Mixed shock	835	1.4
Missing	2	

Neurologic failure	N	%
None	37879	84.2
Cerebral coma	3596	8.0
Metabolic coma	1290	2.9
Postanoxic coma	1936	4.3
Toxic coma	288	0.6
Missing or not evaluable	12785	

Renal failure (AKIN)	N	%
None	38606	67.0
Mild	9991	17.3
Moderate	4346	7.5
Severe	4684	8.1
Missing	147	

Metabolic failure	N	%
None	45548	79.0
pH \leq 7.3, PaCO ₂ $<$ 45 mmHg	4500	7.8
Base deficit \geq 5 mmol/L, lactate $>$ 1.5x	7574	13.1
Missing	152	

National report for general ICUs - Year 2013

Characteristics on admission - Adult patients

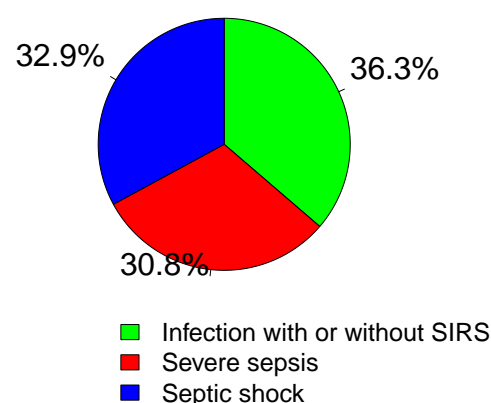
Clinical conditions on admission	N	%
Respiratory	11852	20.5
Acute exacerbation of COPD	3324	5.8
Pleural effusion	2115	3.7
Atelectasis	1140	2.0
Lung cancer	1022	1.8
Aspiration pneumonia	981	1.7
Cardiovascular	12947	22.4
Cardiac arrest	2530	4.4
Left heart failure with pulmonary edema	2387	4.1
Left heart failure without pulm. edema	1527	2.6
Acute severe arrhythmia: tachycardias	1354	2.3
Non-ruptured aneurysm	1222	2.1
Neurological	7871	13.6
Spontaneous Intraparenchymal bleeding	1675	2.9
Cerebral artery stroke	1257	2.2
Seizures	1196	2.1
Brain tumour	1042	1.8
Metabolic/postanoxic encephalopathy	911	1.6
Gastrointestinal and hepatic	12685	22.0
Digestive tract malignancy	3765	6.5
Gastrointestinal perforation	1791	3.1
Intestinal occlusion	1679	2.9
Acute bile-duct disease	932	1.6
Gastrointestinal bleeding: upper tract	797	1.4
Trauma (anatomical districts)	6565	11.4
Pelvis/bone/joint & muscle	3055	5.3
Head	2620	4.5
Chest	2316	4.0
Spine	1284	2.2
Abdomen	1102	1.9
Major vessels injury	189	0.3
Miscellaneous	110	0.2
Other	14216	24.6
Nephro-urologic disease	3253	5.6
Metabolic disorder	2989	5.2
Other disease	2944	5.1
Orthopaedic disease	1463	2.5
ENT/maxillofacial disease	1192	2.1
Post transplantation	519	0.9
Liver transplantation	225	0.4
Renal transplantation	173	0.3
Infections	12755	22.1
Pneumonia	5072	8.8
NON-surgical secondary peritonitis	1324	2.3
NON-surgical urinary tract infection	1050	1.8
Post-surgical peritonitis	894	1.5
L.R.T.I. other than pneumonia	888	1.5
Cholecystitis/choolangitis	542	0.9
NON-surgical skin/soft tissue infection	536	0.9
Clinical sepsis	494	0.9
Primary bacteraemia of unknown origin	467	0.8
NON-surgical CNS infection	356	0.6
Missing	79	

Trauma (anatomical districts)	N	%
Head	2620	4.5
Maxillofacial fracture	795	1.4
Traumatic subarachnoid haemorrhage	772	1.3
Traumatic Subdural haematoma	713	1.2
Skull fracture	595	1.0
Cerebral contusion/laceration	559	1.0
Spine	1284	2.2
Vertebral fracture, without deficit	1049	1.8
Cervical injury, incomplete deficit	71	0.1
Tetraplegia	63	0.1
Chest	2316	4.0
Other injuries of the chest	996	1.7
Traum. haemothorax/pneumothorax	982	1.7
Severe lung contusion/laceration	643	1.1
Abdomen	1102	1.9
Spleen: Moderate-Severe laceration	281	0.5
Minor injuries of the abdomen	257	0.4
Liver: Moderate-Severe laceration	251	0.4
Pelvis/bone/joint & muscle	3055	5.3
Long bone fracture	2458	4.3
Multiple fracture of the pelvis	717	1.2
Very severe or open fracture of the pelvis	150	0.3
Major vessels injury	189	0.3
Proximal limbs vessels: transection	81	0.1
Neck vessels: dissection/transection	35	0.1
Aorta: rupture/dissection	35	0.1
Miscellaneous	110	0.2
Burns (>30% BSA)	69	0.1
Inhalation injury	44	0.1
-	0	0.0
Missing	79	

Infection severity on admission	N	%
None	44940	78.0
Infection with or without SIRS	4607	8.0
Severe sepsis	3899	6.8
Septic shock	4170	7.2
Missing	158	

Infection severity on admission

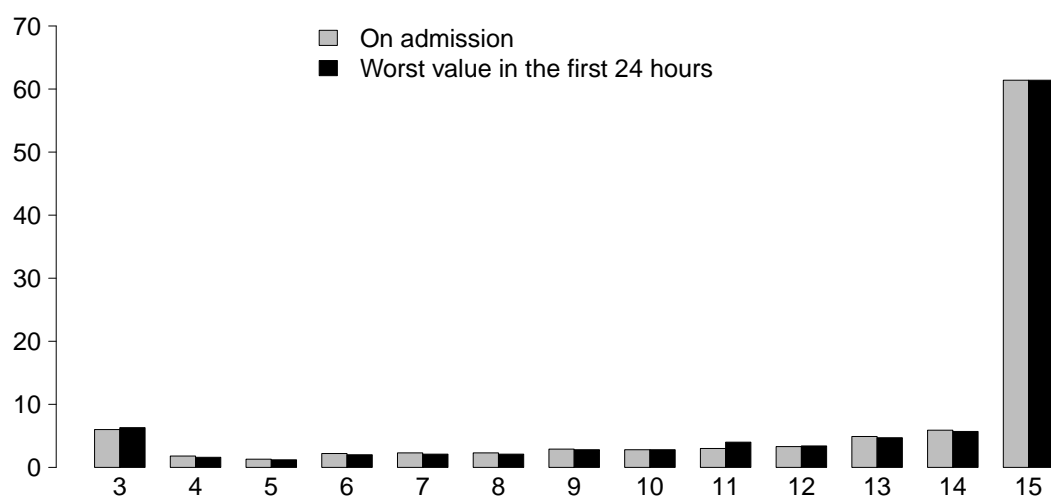
Patients infected (N=12676)



National report for general ICUs - Year 2013

Severity scores - Adult patients

Glasgow Coma Scale (%)



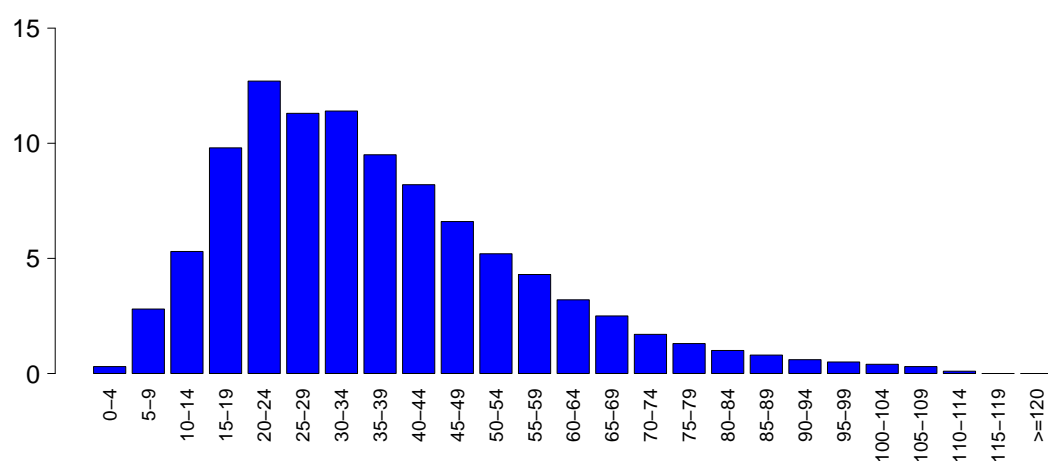
GCS (admission)

Median	15
Q1-Q3	12-15
Not evaluable	12685
Missing	100

GCS (first 24 hours)

Median	15
Q1-Q3	12-15
Not evaluable	8861
Missing	131

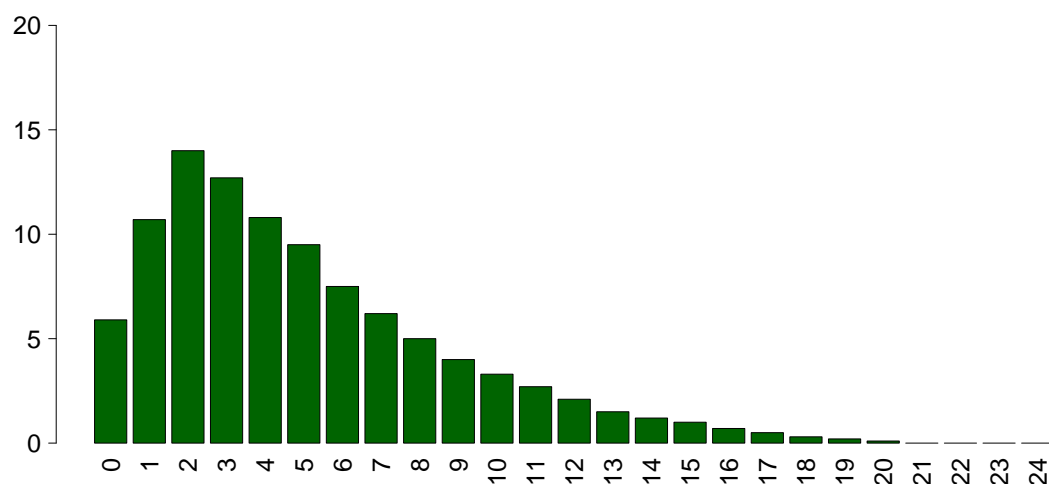
SAPS II (%)



SAPSII

Mean	36.6
SD	19.5
Median	33
Q1-Q3	22-47
Not evaluable	8861
Missing	147

SOFA (%)



SOFA

Mean	5.0
SD	3.9
Median	4
Q1-Q3	2-7
Not evaluable	8861
Missing	146

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Characteristics during the stay - Adult patients

Complications during the stay	N	%
No	41781	72.5
Yes	15862	27.5
Missing	131	

Failures during the stay	N	%
No	51333	88.9
Yes	6439	11.1
A: Respiratory failure	2087	3.6
B: Cardiovascular failure	3384	5.9
C: Neurological failure	493	0.9
D: Hepatic failure	220	0.4
E: Renal failure (AKIN)	2117	3.7
F: Acute skin failure	7	0.0
G: Metabolic failure	515	0.9
H: Coagulation failure	321	0.6
Missing	2	

Failures during the stay (top 10)	N	%
B	1929	3.3
A	1058	1.8
E	912	1.6
BE	414	0.7
AB	406	0.7
G	303	0.5
ABE	190	0.3
C	175	0.3
AE	144	0.2
D	84	0.1
Missing	2	

Respiratory failure occurred	N	%
None	55556	96.4
Intubation for airway maint.	529	0.9
Hypoxic failure	1428	2.5
Hypercapnic failure	487	0.8
Missing	131	

Cardiovascular failure occurred	N	%
None	54259	94.1
Cardiogenic shock	1022	1.8
Hypovolemic shock	278	0.5
Haemorrhagic/hypovolemic shock	316	0.5
Septic shock	1560	2.7
Anaphylactic shock	6	0.0
Neurogenic shock	188	0.3
Other shock	204	0.4
Missing	131	

Neurological failure occurred	N	%
None	57150	99.1
Cerebral coma	285	0.5
Metabolic coma	120	0.2
Postanoxic coma	89	0.2
Missing	131	

Renal failure occurred (AKIN)	N	%
None	55525	96.3
Mild	307	0.5
Moderate	329	0.6
Severe	1482	2.6
Missing	131	

Complications during the stay	N	%
Respiratory	3104	5.4
Pleural effusion	1116	1.9
Atelectasis	676	1.2
Severe ARDS	425	0.7
Pneumothorax/Pneumomediastinum	377	0.7
Moderate ARDS	234	0.4
Cardiovascular	4657	8.1
Acute severe arrhythmia: tachycardias	1609	2.8
Cardiac arrest	1582	2.7
Acute severe arrhythmia: bradycardias	384	0.7
Left heart failure w/o pulm. edema	383	0.7
Pulmonary edema	363	0.6
Neurological	2794	4.8
Drowsiness/agitation/delirium	1330	2.3
Seizures	520	0.9
Brain edema	396	0.7
Intracranial hypertension	307	0.5
New ischaemic stroke	199	0.3
Gastrointestinal and hepatic	1549	2.7
Gastrointestinal bleeding: upper tract	230	0.4
Bowel ischaemia	212	0.4
Paralytic Ileus	187	0.3
Gastrointestinal perforation	175	0.3
Anastomotic dehiscence	173	0.3
Other	1372	2.4
Metabolic disorder	515	0.9
Other disease	450	0.8
Nephro-urologic disease	374	0.6
Other skin and/or soft tissue pathology	81	0.1
Extremity compartment syndrome (severe)	37	0.1
Iatrogenic major vessels injury	18	0.0
Severe graft dysfunction	11	0.0
Infections	4570	7.9
Pneumonia	1755	3.0
L.R.T.I. other than pneumonia	903	1.6
NON-surgical urinary tract infection	766	1.3
Primary bacteraemia of unknown origin	499	0.9
Catheter-related bacteremia (CR-BSI)	459	0.8
Post-surgical peritonitis	242	0.4
Post-surgical skin/soft tissue infection	166	0.3
Upper respiratory tract infection	145	0.3
Clinical sepsis	134	0.2
F.U.O. fever of unknown origin	98	0.2
Missing	131	

National report for general ICUs - Year 2013
Characteristics during the stay - Adult patients

Infections	N	%
None	41782	72.5
Only on admission	11283	19.6
On admission and during ICU stay	1453	2.5
Only during ICU stay	3116	5.4
Missing	140	

Maximum severity of infection	N	%
None	41782	72.7
Infection with or without SIRS	5224	9.1
Severe sepsis	5077	8.8
Septic shock	5400	9.4
Missing	291	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock
Admission	None	41782 (93.2%)	1325 (3.0%)	1127 (2.5%)	577 (1.3%)	44811
	Infection with or without SIRS	-	3892 (84.6%)	506 (11.0%)	200 (4.3%)	4598
	Severe sepsis	-	-	3440 (88.3%)	453 (11.6%)	3894
	Septic shock	-	-	-	4165 (99.9%)	4168
	TOT	41782	5219	5075	5395	57471

Ventil. Associat. Pneumonia (VAP)	N	%
No	56232	97.4
Yes	1503	2.6
Missing	39	

Incidence of VAP

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

Estimate	8.6
CI (95%)	8.2-9.1

Incidence of VAP

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

Estimate	6.9%
CI (95%)	6.6-7.3

Catheter Bacteraemia (CR-BSI)	N	%
No	57184	99.2
Yes	459	0.8
Missing	131	

Incidence of CR-BSI

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

Estimate	1.6
CI (95%)	1.5-1.8

Incidence of CR-BSI

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

Estimate	1.9%
CI (95%)	1.8-2.1

National report for general ICUs - Year 2013
Process indicators - Adult patients

Procedures and/or treatments (Missing=82)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	54553	94.6										
Invasive ventilation	40008	69.3	28473	49.4	6739	11.7	1	0-5	49	0	0-0	4
Non invasive ventilation	9078	15.7	1790	3.1	2246	3.9	2	1-3	13	0	0-2	4
Tracheostomy	5999	10.4	1517	2.6	5020	8.7	10	5-19	14	8	5-12	1
iNO (inhaled nitric oxide)	129	0.2	28	0	23	0	2	1-5	0	2	1-4	0
Central Venous Catheter	39101	67.8	20285	35.2	31485	54.6	3	1-9	59	0	0-0	7
Arterial Catheter	43545	75.5	22736	39.4	11068	19.2	3	1-7	67	0	0-0	7
Vasoactive drugs	17871	31.0	7521	13	3945	6.8	2	1-4	28	0	0-0	4
Antiarrhythmics	4247	7.4	1108	1.9	2062	3.6	3	1-6	4	1	0-2	2
IABP	402	0.7	290	0.5	102	0.2	2	1-3	0	0	0-0	0
Invasive monitoring of C.O.	2150	3.7	583	1	375	0.7	4	2-7	7	0	0-1	1
Continuous monitoring of ScVO2	224	0.4	81	0.1	32	0.1	3	2-6	1	0	0-1	0
Temporary pacing	612	1.1	492	0.9	275	0.5	1	1-2	1	0	0-1	0
Ventricular assistance	11	0.0	6	0	8	0	8	2-17	0	2	2-2	0
DC-shock	1119	1.9								0	0-1	0
CPR	1725	3.0								0	0-1	1
Massive blood transfusion	1094	1.9								0	0-0	1
ICP monitoring without liquor-drainage	378	0.7	118	0.2	56	0.1	7	4-11	1	0	0-1	0
ICP monitoring with liquor-drainage	486	0.8	283	0.5	212	0.4	8	3-14	2	0	0-1	0
External ventricular drainage without ICP	144	0.2	92	0.2	72	0.1	6	2-12	0	1	0-6	0
Haemofiltration	1934	3.4	195	0.3	479	0.8	4	2-8	4	1	0-3	2
Haemodialysis	1159	2.0	214	0.4	452	0.8	3	1-8	3	1	0-3	0
ECMO	109	0.2	47	0.1	34	0.1	7	2-11	0	1	0-6	0
Hepatic clearance techniques	13	0.0										
Clearance techniques during sepsis	248	0.4	18	0	35	0.1	2	1-4	1	1	0-4	1
IAP (intra-abdominal pressure)	645	1.1										
Hypothermia	889	1.5										
Enteral nutrition	16053	27.8	2318	4	9894	17.1	7	3-14	18	1	1-3	6
Parenteral nutrition	13542	23.5	2115	3.7	8282	14.4	4	2-9	20	1	0-2	8
SDD (Topical, Topical and systemic)	273	0.5										
Patient restraint	2483	4.3										
Peridural catheter	2322	4.0	2074	3.6	1881	3.3	1	1-2	3	0	0-1	0
Electrical cardioversion	351	0.6								1	0-3	0
Vacuum therapy	143	0.2										
Antibiotics	42004	72.8										
Antibiotics for surgical prophylaxis	21803	37.8	17589	30.5	13648	23.7	1	1-2	24	0	0-0	1
Antibiotics for medical prophylaxis	8511	14.8	2810	4.9	5089	8.8	4	2-7	11	0	0-0	2
Empirical antibiotic therapy	10528	18.2	4463	7.7	5045	8.7	4	2-6	26	0	0-1	7
Targeted antibiotic therapy	7012	12.2	1292	2.2	4392	7.6	7	4-13	10	4	2-8	6

National report for general ICUs - Year 2013

Process indicators - Adult patients

Invasive ventilation (N=40008)	N	%	Length (days)				
			Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	13184	32.2	7.7	11.5	4	1-9	13
For airway maintenance	14277	34.8	5.7	10.4	2	1-7	21
In weaning	9619	23.5	0.3	0.5	0	0-1	0
Not evaluable	3922	9.6	3.4	7.7	1	0-2	1024
Reintubation within 48 hours	657	1.6	7.9	9.4	5	2.0-10.0	1

Non invasive ventilation (N=9078)	N	%
Non invasive ventilation only	4535	50.0
Non invasive ventilation failed	1373	15.1
For weaning	2807	30.9
Other	363	4.0
Missing	0	

Tracheostomy (N=5999)	N	%
Surgical	1548	25.8
Percutwist	759	12.7
Ciaglia	789	13.2
Monodil. Ciaglia	1574	26.2
Fantoni	338	5.6
Griggs	661	11.0
Other Kind	317	5.3
Missing	13	

Tracheostomy - Days after the beginning of inv. vent.

N	5631
Mean	7.4
SD	9.6
Median	6
Q1-Q3	1-11

Invasive monitoring of C.O. (N=2150)	N	%
Swan Ganz	624	29.0
PICCO	1120	52.1
LIDCO	13	0.6
Vigileo-PRAM	345	16.0
Other	44	2.0
Missing	4	

SDD (N=273)	N	%
Topical	139	50.9
Topical and systemic	134	49.1
Missing	0	

Antibiotic therapy

Pts. infected in ICU only (N=3116)	N	%
Only empirical	602	23.1
Only targeted	1168	44.8
Targeted after empirical	651	25.0
Other	187	7.2
Missing	508	

Surgical interventions	N	%
No	55558	96.3
Yes	2123	3.7
Missing	93	

Number of surgical interventions	N	%
0	55558	96.3
1	1727	3.0
2	269	0.5
3	81	0.1
>3	46	0.1
Missing	93	

Surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	9.9	16.2	6	3-12	11

Surgical interventions (top 10)	N	%
Gastrointestinal surgery	832	1.4
Orthopaedic surgery	474	0.8
Neurosurgery	282	0.5
ENT surgery	216	0.4
Other surgery	149	0.3
Thoracic surgery	113	0.2
Maxillo-Facial surgery	105	0.2
Peripheral vascular surgery	100	0.2
Plastic surgery	94	0.2
Nephro/Urological surgery	75	0.1
Missing	93	

Non surgical interventions	N	%
No	56746	98.4
Yes	922	1.6
Missing	106	

Non surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	12.9	17.9	8	4-15	23

Non surgical interventions	N	%
Interventional endoscopy	602	1.0
Interventional radiology	229	0.4
Interventional cardiology	150	0.3
Interventional neuroradiology	61	0.1
Missing	106	

National report for general ICUs - Year 2013

Outcome indicators - Adult patients

ICU outcome	N	%
Dead	9551	16.6
Transferred to same hospital	43172	74.9
Transferred to other hospital	4223	7.3
Discharged home	506	0.9
Disch. terminally ill	196	0.3
Missing	126	

Transferred to (N=47395)	N	%
Ward	38843	82.0
Other ICU	2919	6.2
High dependency care unit	4240	8.9
Rehabilitation	1055	2.2
Day hospital or Long-term care	337	0.7
Missing	1	

Reason for transfer to Other ICU (N=2995)	N	%
Specialist expertise	1379	46.0
Step-up care	280	9.3
Logistical/organizational reasons	1265	42.2
Step-down care	71	2.4
Missing	0	

Transferred to Same hospital (N=43172)	N	%
Ward	37544	87.0
Other ICU	1314	3.0
High dependency care unit	3992	9.2
Rehabilitation	202	0.5
Day hospital or Long-term care	119	0.3
Missing	1	

Transferred to Other hospital (N=4223)	N	%
Ward	1299	30.8
Other ICU	1605	38.0
High dependency care unit	248	5.9
Rehabilitation	853	20.2
Day hospital or Long-term care	218	5.2
Missing	0	

ICU mortality	N	%
Alive	47901	83.1
Dead	9747	16.9
Missing	126	

Timing of ICU mortality (N=9747)	N	%
Daytime (08:00AM - 07:59PM)	6488	66.6
Nighttime (08:00PM - 07:59AM)	3258	33.4
Weekdays (Monday - Friday)	7230	74.2
Weekend (Saturday - Sunday)	2517	25.8
Missing	1	

Brain death assessment (N=9747)	N	%
Yes, with organ donation	567	5.9
Yes, without organ donation	490	5.1
No	8493	88.9
Missing	197	

Organ/Tissue removal (N=567)	N	%
No removal	21	3.7
Only organ removal	278	49.0
Only tissue removal	89	15.7
Organ and tissue removal	179	31.6
Missing	0	

Hospital mortality *	N	%
Dead	11618	22.5
Transf. to other acute-care hospital	4287	8.3
Transf. to other type of hosp. stay	6896	13.3
Nursing home	859	1.7
Voluntary discharge	388	0.8
Discharged home	27636	53.5
Missing	195	

To other type of H stay* (N=6896)	N	%
Rehabilitation in the same institute	1395	20.2
Rehabilitation in other institute	3628	52.6
DH/long-term care, same inst.	725	10.5
DH/long-term care, other inst.	1144	16.6
Missing	4	

Disch. terminally ill * (N=40066)	N	%
Yes	683	1.7
No	39379	98.3
Missing	4	

Hospital mortality *	N	%
Alive	39386	76.2
Dead	12296	23.8
Missing	197	

Timing of hosp. mortality * (N=12296)	N	%
In ICU	8716	70.9
Within 24 hours after ICU	204	1.7
Within 48 hours after ICU	427	3.5
Within 72 hours after ICU	656	5.3
Within 96 hours after ICU	831	6.8
After more than 96 hours after ICU	2749	22.4
Missing	0	

Timing of hosp. mortality (days from ICU disch.) * Discharged alive from ICU (N=3580)	N	%
Mean	17.1	
SD	20.9	
Median	10	
Q1-Q3	4-23	
Missing	0	

* Statistics computed on patients admitted in months with more than 90% of patients in status 4 (readmissions excluded) (N=51879).

National report for general ICUs - Year 2013

Outcome indicators - Adult patients

Last hospital mortality *	N	%
Alive	39148	75.8
Dead	12500	24.2
Missing	231	

Readmission from ward	N	%
No	55838	96.8
Yes	1833	3.2
Missing	103	

Number of readmissions (N=1833)	N	%
1	1674	91.3
2	132	7.2
>2	27	1.5
Missing	0	

Timing of readmission (N=1833)	N	%
Within 48 hours	439	23.9
Within 72 hours	615	33.6
Within 96 hours	746	40.7
After 96 hours	1087	59.3
Missing	0	

Timing readmission (days)	N	
Mean	11.5	
SD	22.0	
Median	5.2	
Q1-Q3	2.1-12.2	

ICU stay (days)		
Mean		5.9
SD		10.2
Median		2
Q1-Q3		1-6
Missing		123

ICU stay (days) Alive (N=47901)		
Mean		5.5
SD		9.7
Median		2
Q1-Q3		1-6
Missing		4

ICU stay (days) Dead (N=9747)		
Mean		7.8
SD		12.0
Median		3
Q1-Q3		1-10
Missing		1

Stay after ICU (days) * Alive (N=43086)		
Mean		13.0
SD		16.9
Median		8
Q1-Q3		4-16
Missing		134

Hospital stay (days) *		
Mean		20.0
SD		21.8
Median		14
Q1-Q3		7-25
Missing		204

Hospital stay (days) * Alive (N=39386)		
Mean		21.0
SD		21.8
Median		15
Q1-Q3		9-26
Missing		10

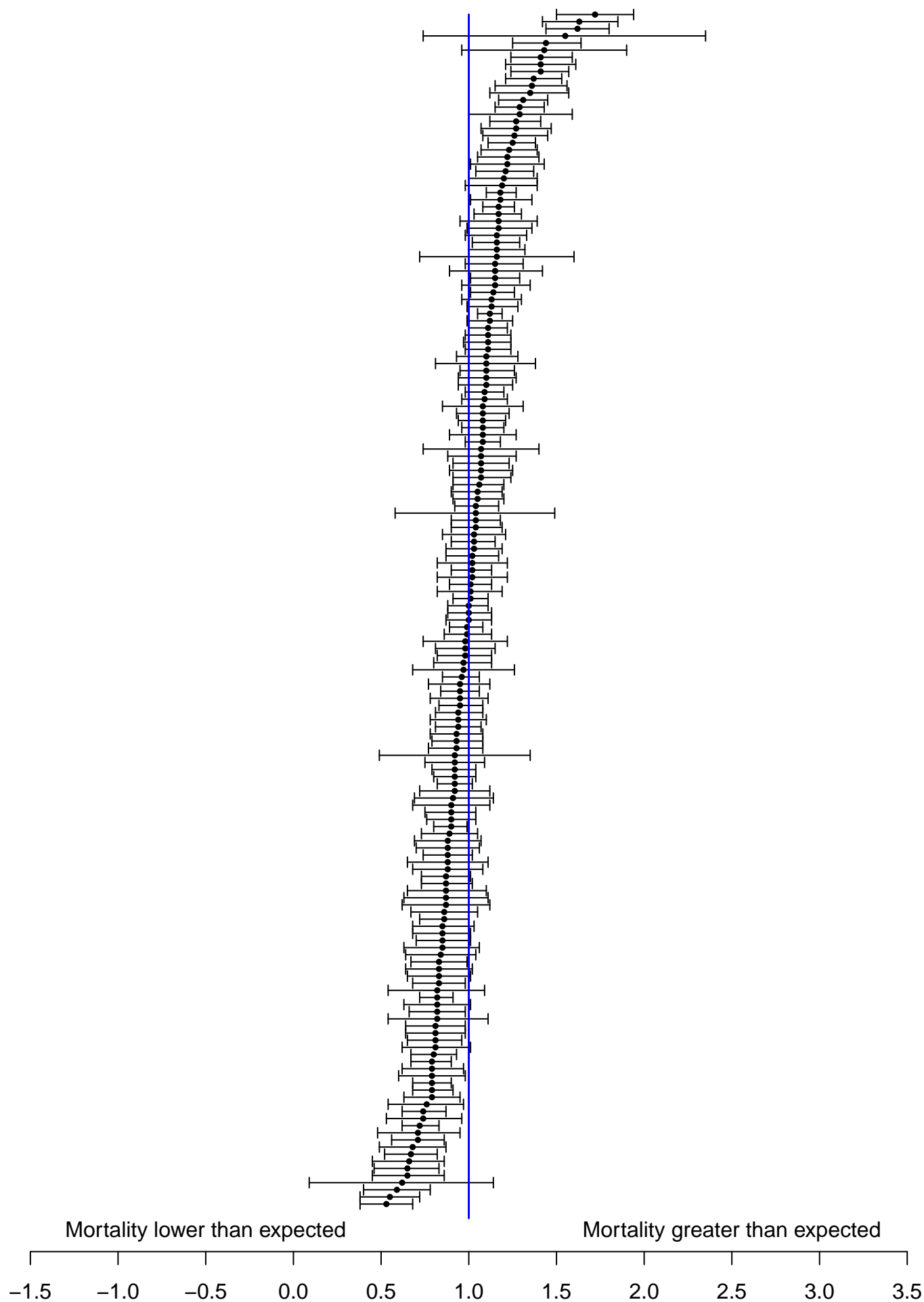
Hospital stay (days) * Dead (N=12296)		
Mean		16.8
SD		21.4
Median		10
Q1-Q3		3-23
Missing		4

* Statistics computed on patients admitted in months with more than 90% of patients in status 4 (readmissions excluded) (N=51879).

National report for general ICUs - Year 2013

Analysis of hospital mortality - Adult patients

Predictive model: **GiViTI 2013**



National report for general ICUs - Year 2013

Characteristics on admission - Adult patients with LOS \geq 24 hours evaluated in the GiViTI model

Patients (N): 35420

Sex	N	%
Male	20994	59.3
Female	14426	40.7
Missing	0	

Age (years)	N	%
17-45	4320	12.2
46-65	9032	25.5
66-75	9264	26.2
>75	12804	36.1
Missing	0	
Mean	66.8	
SD	16.3	
Median	71	
Q1-Q3	58-79	
Min-Max	17-103	

Body mass Index (BMI)	N	%
Underweight	1907	5.4
Normal	16235	45.8
Overweight	11080	31.3
Obese	6198	17.5
Missing	0	

Pregnancy status	N	%
Females (N=14426)		
Not fertile	8012	55.6
Not pregnant/Unknown	6068	42.1
Currently pregnant	50	0.3
Post partum	270	1.9
Missing	26	

Comorbidities	N	%
No	5603	15.8
Yes	29817	84.2
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	18228	51.5
Arrhythmia	6233	17.6
Moderate COPD	5873	16.6
Myocardial infarction	4667	13.2
Diabetes Type II without insulin tr.	4444	12.5
Cerebrovascular disease	4311	12.2
Any tumour without metastasis	4196	11.8
NYHA class II-III	4072	11.5
Peripheral vascular disease	3712	10.5
Moderate or severe renal disease	3474	9.8
Missing	0	

Stay before ICU (days)	Mean	SD	Median	Q1-Q3	Missing
	4.4	11.1	1	0-4	0

Source of admission	N	%
Same hospital	30738	86.8
Other hospital	4494	12.7
Long-term chronic care hospital	184	0.5
Directly from the community (e.g., ambulance, home, ...)	4	0.0
Missing	0	

Ward of admission	N	%
Hospital (N=35232)		
Medical ward	5823	16.5
Surgical ward	13475	38.2
Emergency room	12654	35.9
Other ICU	2325	6.6
High dependency care unit	955	2.7
Missing	0	

Reason for transfer from	N	%
Other ICU (N=2325)		
Specialist expertise	482	20.7
Step-up care	507	21.8
Logistical/organizational reasons	1251	53.8
Step-down care	85	3.7
Missing	0	

Ward of admission	N	%
Same hospital (N=30738)		
Medical ward	5085	16.5
Surgical ward	13072	42.5
Emergency room	11003	35.8
Other ICU	754	2.5
High dependency care unit	824	2.7
Missing	0	

Ward of admission	N	%
Other hospital (N=4494)		
Medical ward	738	16.4
Surgical ward	403	9.0
Emergency room	1651	36.7
Other ICU	1571	35.0
High dependency care unit	131	2.9
Missing	0	

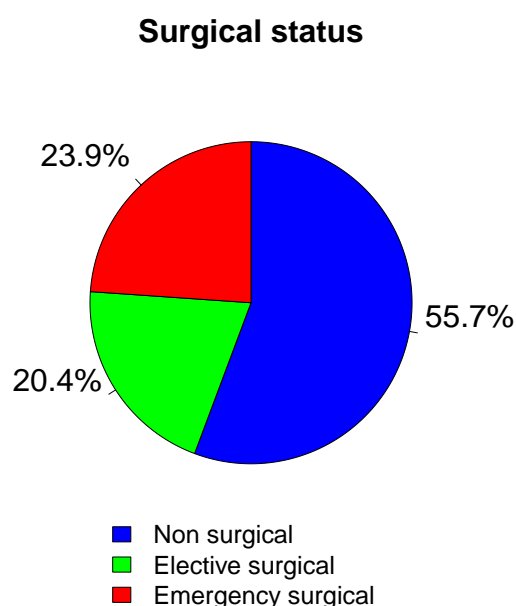
Scheduled admission	N	%
No	29628	83.6
Yes	5792	16.4
Missing	0	

National report for general ICUs - Year 2013

Characteristics on admission - Adult patients with LOS \geq 24 hours evaluated in the GiViTI model

Trauma	N	%
No	30776	86.9
Yes	4644	13.1
Multiple trauma	2036	5.7
Missing	0	

Surgical status	N	%
Non surgical	19724	55.7
Elective surgical	7219	20.4
Emergency surgical	8477	23.9
Missing	0	



Source of admission	N	%
Surgical pts. (N=15696)		
Operating theatre of surgical ward	11154	71.1
Operating theatre of emergency room	1387	8.8
Surgical ward	943	6.0
Other	2193	14.0
Missing	19	

Surgical interventions (top 10)	N	%
Elective surgical (N=7219)		
Gastrointestinal surgery	2258	31.3
Orthopaedic surgery	957	13.3
Nephro/Urological surgery	879	12.2
Thoracic surgery	468	6.5
Neurosurgery	461	6.4
Abdominal vascular surgery	436	6.0
ENT surgery	356	4.9
Peripheral vascular surgery	333	4.6
Hepatic surgery	303	4.2
Gynaecological surgery	301	4.2
Missing	0	

Timing	N	%
Elective surgical (N=7219)		
From -7 to -3 days	168	2.3
From -2 to -1 days	298	4.1
On ICU admission day	7171	99.3
The day after ICU admission	173	2.4
Missing	13	

Surgical interventions (top 10)	N	%
Emergency surgical (N=8477)		
Gastrointestinal surgery	3660	43.2
Neurosurgery	1280	15.1
Orthopaedic surgery	829	9.8
Abdominal vascular surgery	442	5.2
Biliary tract surgery	362	4.3
Nephro/Urological surgery	345	4.1
Peripheral vascular surgery	302	3.6
Splenectomy	271	3.2
Organ/s transplantation	242	2.9
Other surgery	225	2.7
Missing	0	

Timing	N	%
Emergency surgical (N=8477)		
From -7 to -3 days	220	2.6
From -2 to -1 days	970	11.4
On ICU admission day	7384	87.1
The day after ICU admission	442	5.2
Missing	28	

Non surgical interventions	N	%
None	32718	92.4
Elective	468	1.3
Emergency	2234	6.3
Missing	0	

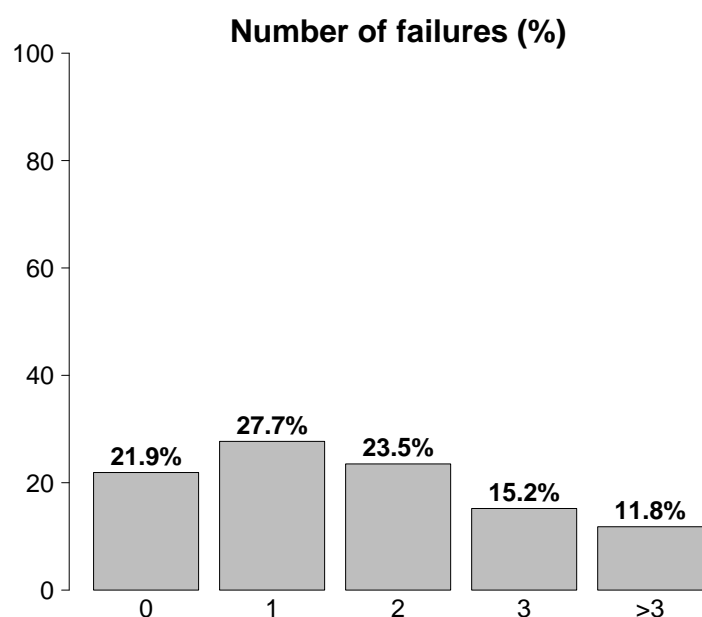
Non surgical interventions	N	%
Elective (N=468)		
Interventional endoscopy	155	33.1
Interventional cardiology	92	19.7
Interventional radiology	90	19.2
Interventional neuroradiology	67	14.3
Missing	64	

Surgical interventions	N	%
Emergency (N=2234)		
Interventional cardiology	926	41.5
Interventional endoscopy	502	22.5
Interventional radiology	478	21.4
Interventional neuroradiology	284	12.7
Missing	41	

National report for general ICUs - Year 2013

Characteristics on admission - Adult patients with LOS \geq 24 hours evaluated in the GiViTI model

Reason for admission	N	%
Monitoring/Weaning	11025	31.1
Post surgical weaning	3601	10.2
Surgical monitoring	3782	10.7
Post interventional weaning	59	0.2
Interventional monitoring	361	1.0
Non surgical monitoring	3149	8.9
Missing	73	
Admission for procedures/treatments	6	0.0
Intensive Treatment	24389	68.9
Only ventilatory support	13824	39.0
Only cardiovascular support	1684	4.8
Ventilatory and cardiovascular support	8881	25.1
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	7741	21.9
Yes	27679	78.1
A: Respiratory failure	22705	64.1
B: Cardiovascular failure	10565	29.8
C: Neurological failure	5083	14.4
D: Hepatic failure	346	1.0
E: Renal failure	12821	36.2
F: Acute skin failure	35	0.1
G: Metabolic failure	8062	22.8
H: Coagulation failure	729	2.1
Missing	0	

Failures on admission (top 10)	N	%
A	6748	19.1
ABEG	2207	6.2
AE	2185	6.2
AB	2162	6.1
AC	1999	5.6
E	1927	5.4
ABE	1561	4.4
AEG	1063	3.0
ABC	697	2.0
AG	656	1.9
Missing	0	

Respiratory failure	N	%
None	12715	35.9
Only hypoxic failure	7064	19.9
Only hypercapnic failure	1556	4.4
Hypoxic-hypercapnic failure	3542	10.0
Intubation for airway maint.	10543	29.8
Missing	0	

Cardiovascular failure	N	%
None	24855	70.2
Without shock	2383	6.7
Cardiogenic shock	2112	6.0
Septic shock	2724	7.7
Haemorrhagic/hypovolemic shock	1423	4.0
Hypovolemic shock	737	2.1
Anaphylactic shock	35	0.1
Neurogenic shock	272	0.8
Other shock	302	0.9
Mixed shock	577	1.6
Missing	0	

Neurologic failure	N	%
None	22997	81.9
Cerebral coma	2679	9.5
Metabolic coma	867	3.1
Postanoxic coma	1315	4.7
Toxic coma	222	0.8
Missing or not evaluable	7340	

Renal failure (AKIN)	N	%
None	22599	63.8
Mild	6916	19.5
Moderate	3051	8.6
Severe	2854	8.1
Missing	0	

Metabolic failure	N	%
None	27357	77.2
pH \leq 7.3, PaCO ₂ $<$ 45 mmHg	3048	8.6
Base deficit \geq 5 mmol/L, lactate $>$ 1.5x	5014	14.2
Missing	1	

National report for general ICUs - Year 2013**Characteristics on admission** - Adult patients with LOS \geq 24 hours evaluated in the GiViTI model

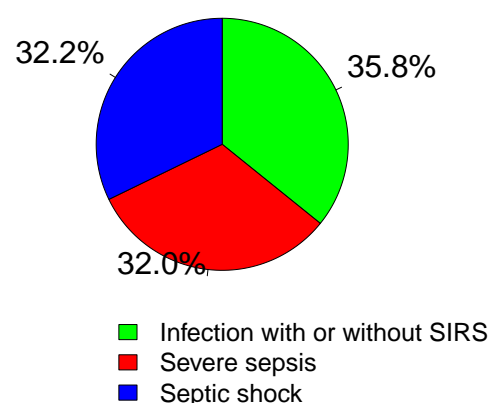
Clinical conditions on admission	N	%
Respiratory	8499	24.0
Acute exacerbation of COPD	2638	7.4
Pleural effusion	1603	4.5
Atelectasis	857	2.4
Aspiration pneumonia	765	2.2
Moderate ARDS	653	1.8
Cardiovascular	7681	21.7
Left heart failure with pulmonary edema	1781	5.0
Cardiac arrest	1694	4.8
Left heart failure without pulm. edema	1059	3.0
Acute severe arrhythmia: tachycardias	943	2.7
Acute myocardial infarction	658	1.9
Neurological	5348	15.1
Spontaneous Intraparenchymal bleeding	1222	3.5
Cerebral artery stroke	931	2.6
Seizures	886	2.5
Metabolic/postanoxic encephalopathy	727	2.1
Spontaneous Subarachnoid haemorrhage	592	1.7
Gastrointestinal and hepatic	7415	20.9
Digestive tract malignancy	1882	5.3
Gastrointestinal perforation	1240	3.5
Intestinal occlusion	1073	3.0
Acute bile-duct disease	537	1.5
Gastrointestinal bleeding: upper tract	518	1.5
Trauma (anatomical districts)	4644	13.1
Pelvis/bone/joint & muscle	2006	5.7
Head	1988	5.6
Chest	1839	5.2
Spine	1027	2.9
Abdomen	845	2.4
Major vessels injury	131	0.4
Miscellaneous	75	0.2
Other	7794	22.0
Metabolic disorder	2053	5.8
Nephro-urologic disease	1752	4.9
Other disease	1438	4.1
Acute intoxication	729	2.1
Coagulation disorder	729	2.1
Post transplantation	364	1.0
Liver transplantation	184	0.5
Renal transplantation	95	0.3
Infections	9859	27.8
Pneumonia	4106	11.6
NON-surgical secondary peritonitis	1023	2.9
NON-surgical urinary tract infection	850	2.4
L.R.T.I. other than pneumonia	727	2.1
Post-surgical peritonitis	567	1.6
NON-surgical skin/soft tissue infection	419	1.2
Cholecystitis/choolangitis	410	1.2
Clinical sepsis	353	1.0
Primary bacteraemia of unknown origin	347	1.0
NON-surgical CNS infection	300	0.8
Missing	0	

Trauma (anatomical districts)	N	%
Head	1988	5.6
Maxillofacial fracture	631	1.8
Traumatic subarachnoid haemorrhage	601	1.7
Traumatic Subdural haematoma	540	1.5
Skull fracture	448	1.3
Cerebral contusion/laceration	429	1.2
Spine	1027	2.9
Vertebral fracture, without deficit	834	2.4
Cervical injury, incomplete deficit	63	0.2
Tetraplegia	52	0.1
Chest	1839	5.2
Other injuries of the chest	800	2.3
Traum. haemothorax/pneumothorax	797	2.3
Severe lung contusion/laceration	513	1.4
Abdomen	845	2.4
Spleen: Moderate-Severe laceration	218	0.6
Minor injuries of the abdomen	200	0.6
Liver: Moderate-Severe laceration	192	0.5
Pelvis/bone/joint & muscle	2006	5.7
Long bone fracture	1542	4.4
Multiple fracture of the pelvis	558	1.6
Very severe or open fracture of the pelvis	118	0.3
Major vessels injury	131	0.4
Proximal limbs vessels: transection	53	0.1
Neck vessels: dissection/transection	28	0.1
Aorta: rupture/dissection	21	0.1
Miscellaneous	75	0.2
Burns (>30% BSA)	47	0.1
Inhalation injury	30	0.1
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	25561	72.3
Infection with or without SIRS	3512	9.9
Severe sepsis	3139	8.9
Septic shock	3154	8.9
Missing	54	

Infection severity on admission

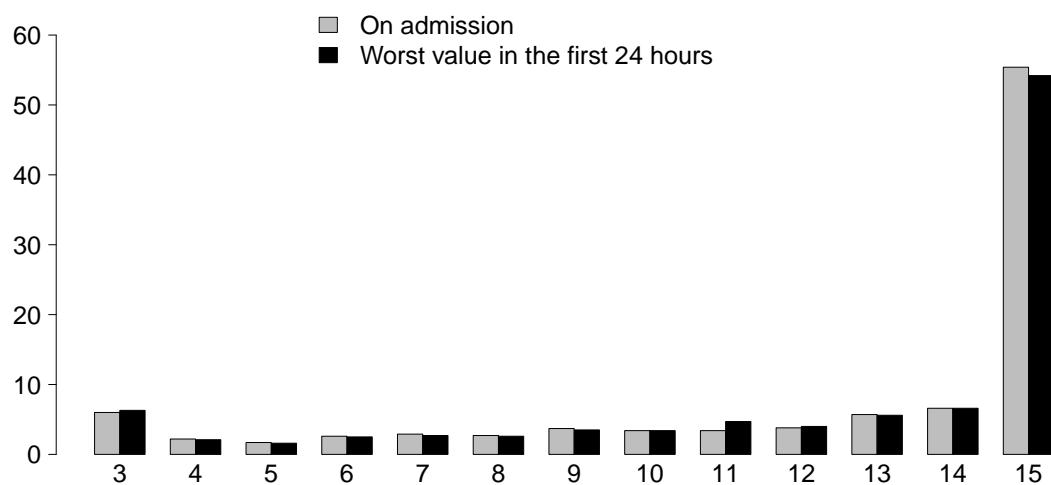
Patients infected (N=9805)



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Severity scores - Adult patients with LOS \geq 24 hours evaluated in the GiViTI model

Glasgow Coma Scale (%)



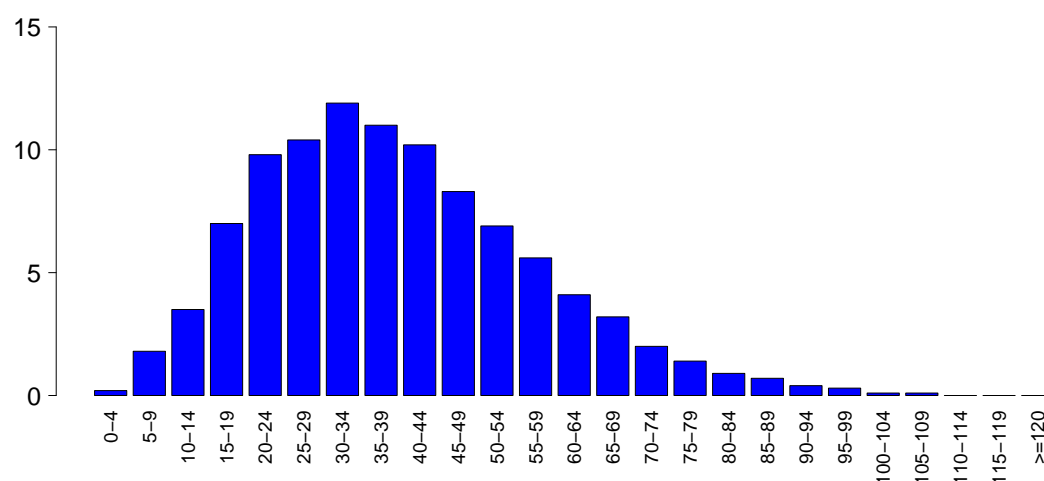
GCS (admission)

Median	15
Q1-Q3	10-15
Not evaluable	7340
Missing	0

GCS (first 24 hours)

Median	15
Q1-Q3	11-15
Not evaluable	5738
Missing	0

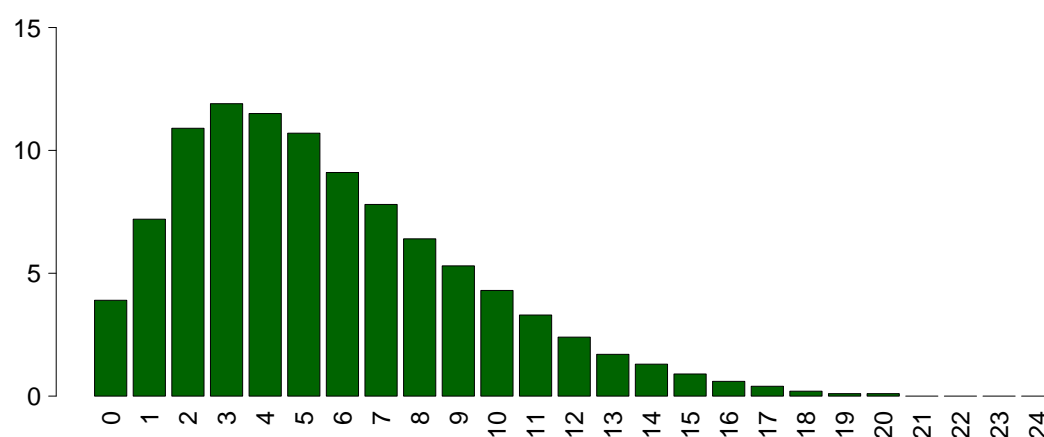
SAPS II (%)



SAPSII

Mean	39.1
SD	17.9
Median	37
Q1-Q3	26-50
Not evaluable	5738
Missing	0

SOFA (%)



SOFA

Mean	5.6
SD	3.7
Median	5
Q1-Q3	3-8
Not evaluable	5738
Missing	0

National report for general ICUs - Year 2013**Characteristics during the stay** - Adult patients with LOS \geq 24 hours evaluated in the GiViTI model

Complications during the stay	N	%
No	23417	66.1
Yes	12002	33.9
Missing	1	

Failures during the stay	N	%
No	30446	86.0
Yes	4974	14.0
A: Respiratory failure	1692	4.8
B: Cardiovascular failure	2611	7.4
C: Neurological failure	351	1.0
D: Hepatic failure	170	0.5
E: Renal failure (AKIN)	1653	4.7
F: Acute skin failure	6	0.0
G: Metabolic failure	337	1.0
H: Coagulation failure	245	0.7
Missing	0	

Failures during the stay (top 10)	N	%
B	1488	4.2
A	862	2.4
E	716	2.0
AB	332	0.9
BE	324	0.9
G	183	0.5
ABE	152	0.4
AE	118	0.3
C	118	0.3
D	64	0.2
Missing	0	

Respiratory failure occurred	N	%
None	33727	95.2
Intubation for airway maint.	418	1.2
Hypoxic failure	1177	3.3
Hypercapnic failure	395	1.1
Missing	1	

Cardiovascular failure occurred	N	%
None	32808	92.6
Cardiogenic shock	730	2.1
Hypovolemic shock	227	0.6
Haemorrhagic/hypovolemic shock	222	0.6
Septic shock	1264	3.6
Anaphylactic shock	6	0.0
Neurogenic shock	146	0.4
Other shock	164	0.5
Missing	1	

Neurological failure occurred	N	%
None	35068	99.0
Cerebral coma	213	0.6
Metabolic coma	84	0.2
Postanoxic coma	55	0.2
Missing	1	

Renal failure occurred (AKIN)	N	%
None	33765	95.3
Mild	239	0.7
Moderate	278	0.8
Severe	1137	3.2
Missing	1	

Complications during the stay	N	%
Respiratory	2504	7.1
Pleural effusion	931	2.6
Atelectasis	574	1.6
Severe ARDS	332	0.9
Pneumothorax/Pneumomediastinum	319	0.9
Mild ARDS	184	0.5
Cardiovascular	3108	8.8
Acute severe arrhythmia: tachycardias	1306	3.7
Cardiac arrest	684	1.9
Pulmonary edema	287	0.8
Left heart failure w/o pulm. edema	264	0.7
Acute severe arrhythmia: bradycardias	228	0.6
Neurological	2243	6.3
Drowsiness/agitation/delirium	1040	2.9
Seizures	461	1.3
Brain edema	311	0.9
Intracranial hypertension	241	0.7
New ischaemic stroke	164	0.5
Gastrointestinal and hepatic	1220	3.4
Gastrointestinal bleeding: upper tract	179	0.5
Bowel ischaemia	168	0.5
Paralytic Ileus	156	0.4
Gastrointestinal perforation	147	0.4
Anastomotic dehiscence	131	0.4
Other	961	2.7
Metabolic disorder	337	1.0
Nephro-urologic disease	301	0.8
Other disease	269	0.8
Other skin and/or soft tissue pathology	72	0.2
Extremity compartment syndrome (severe)	32	0.1
Iatrogenic major vessels injury	15	0.0
Graft vascular thrombosis	8	0.0
Infections	3869	10.9
Pneumonia	1501	4.2
L.R.T.I. other than pneumonia	779	2.2
NON-surgical urinary tract infection	637	1.8
Primary bacteraemia of unknown origin	419	1.2
Catheter-related bacteremia (CR-BSI)	400	1.1
Post-surgical peritonitis	182	0.5
Post-surgical skin/soft tissue infection	131	0.4
Upper respiratory tract infection	122	0.3
Clinical sepsis	114	0.3
F.U.O. fever of unknown origin	88	0.2
Missing	1	

National report for general ICUs - Year 2013

Characteristics during the stay - Adult patients with LOS \geq 24 hours evaluated in the GiViTI model

Infections	N	%
None	22898	64.6
Only on admission	8652	24.4
On admission and during ICU stay	1207	3.4
Only during ICU stay	2662	7.5
Missing	1	

Maximum severity of infection	N	%
None	22898	64.9
Infection with or without SIRS	4055	11.5
Severe sepsis	4180	11.8
Septic shock	4163	11.8
Missing	124	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock
Admission	None	22898 (89.9%)	1119 (4.4%)	992 (3.9%)	473 (1.9%)	25482
	Infection with or without SIRS	-	2930 (83.4%)	423 (12.0%)	159 (4.5%)	3512
	Severe sepsis	-	-	2764 (88.1%)	374 (11.9%)	3139
	Septic shock	-	-	-	3154 (100.0%)	3154
	TOT	22898	4050	4179	4160	35287

Ventil. Associat. Pneumonia (VAP)	N	%
No	34127	96.4
Yes	1292	3.6
Missing	1	

Incidence of VAP

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

Estimate	8.8
CI (95%)	8.3-9.3

Incidence of VAP

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

Estimate	7.0%
CI (95%)	6.6-7.4

Catheter Bacteraemia (CR-BSI)	N	%
No	35019	98.9
Yes	400	1.1
Missing	1	

Incidence of CR-BSI

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

Estimate	1.7
CI (95%)	1.5-1.9

Incidence of CR-BSI

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

Estimate	2.0%
CI (95%)	1.8-2.2

National report for general ICUs - Year 2013
Process indicators - Adult patients with LOS \geq 24 hours 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	Median	Q1-Q3
Procedures (antibiotics excluded)	34262	96.7								
Invasive ventilation	25809	72.9	17452	49.3	4403	12.4	2	1-8	0	0-0
Non invasive ventilation	6922	19.5	1295	3.7	1472	4.2	2	1-4	0	0-2
Tracheostomy	4831	13.6	1051	3	3990	11.3	11	5-20	8	5-12
iNO (inhaled nitric oxide)	77	0.2	10	0	17	0	3	1-6	1	1-4
Central Venous Catheter	26769	75.6	11910	33.6	21348	60.3	5	2-11	0	0-0
Arterial Catheter	28030	79.1	12460	35.2	7183	20.3	4	2-9	0	0-0
Vasoactive drugs	12716	35.9	4929	13.9	2248	6.3	2	1-5	0	0-1
Antiarrhythmics	3256	9.2	763	2.2	1512	4.3	3	1-7	1	0-2
IABP	254	0.7	175	0.5	48	0.1	2	2-4	0	0-0
Invasive monitoring of C.O.	1681	4.7	402	1.1	274	0.8	4	2-7	0	0-1
Continuous monitoring of ScVO2	150	0.4	45	0.1	22	0.1	3	2-6	0	0-0
Temporary pacing	159	0.4	80	0.2	58	0.2	2	1-4	0	0-2
Ventricular assistance	6	0.0	4	0	5	0	4	2-12	2	1-2
DC-shock	703	2.0							0	0-1
CPR	921	2.6							0	0-1
Massive blood transfusion	752	2.1							0	0-0
ICP monitoring without liquor-drainage	318	0.9	96	0.3	39	0.1	7	4-11	0	0-1
ICP monitoring with liquor-drainage	366	1.0	189	0.5	134	0.4	9	4-15	0	0-1
External ventricular drainage without ICP	100	0.3	64	0.2	48	0.1	7	3-12	1	0-6
Haemofiltration	1591	4.5	148	0.4	388	1.1	4	2-8	1	0-3
Haemodialysis	905	2.6	155	0.4	341	1	3	1-8	1	0-3
ECMO	93	0.3	43	0.1	23	0.1	9	3-13	2	0-6
Hepatic clearance techniques	13	0.0								
Clearance techniques during sepsis	205	0.6	16	0	29	0.1	3	1-5	1	0-4
IAP (intra-abdominal pressure)	511	1.4								
Hypothermia	770	2.2								
Enteral nutrition	13751	38.8	1896	5.4	8421	23.8	7	3-14	1	1-3
Parenteral nutrition	10728	30.3	1425	4	6279	17.7	4	2-9	1	0-2
SDD (Topical, Topical and systemic)	235	0.7								
Patient restraint	1432	4.0								
Peridural catheter	1146	3.2	948	2.7	798	2.3	2	2-3	0	0-2
Electrical cardioversion	280	0.8							1	0-3
Vacuum therapy	114	0.3								
Antibiotics	26711	75.4								
Antibiotics for surgical prophylaxis	10760	30.4	8184	23.1	6354	17.9	2	1-4	0	0-0
Antibiotics for medical prophylaxis	6699	18.9	2066	5.8	3893	11	4	2-7	0	0-0
Empirical antibiotic therapy	8403	23.7	3421	9.7	3831	10.8	4	2-7	0	0-1
Targeted antibiotic therapy	5824	16.4	930	2.6	3613	10.2	8	4-14	4	2-8

National report for general ICUs - Year 2013**Process indicators** - Adult patients with LOS \geq 24 hours evaluated in the GiViTI model

			Length (days)				
Invasive ventilation (N=25809)	N	%	Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	10130	38.4	8.5	11.6	4	2-10	1
For airway maintenance	10400	39.4	6.4	9.3	3	1-8	1
In weaning	3687	14.0	0.4	0.5	0	0-1	0
Not evaluable	2164	8.2	4.4	7.9	1	0-4	588
Reintubation within 48 hours	553	2.1	8.0	9.6	5	2.0-10.0	0

Non invasive ventilation (N=6922)	N	%
Non invasive ventilation only	3315	47.9
Non invasive ventilation failed	1133	16.4
For weaning	2159	31.2
Other	315	4.6
Missing	0	

Tracheostomy (N=4831)	N	%
Surgical	1089	22.5
Percutwist	667	13.8
Ciaglia	621	12.9
Monodil. Ciaglia	1366	28.3
Fantoni	293	6.1
Griggs	528	10.9
Other Kind	265	5.5
Missing	2	

Tracheostomy - Days after the beginning of inv. vent.

N	4567
Mean	7.6
SD	8.3
Median	6
Q1-Q3	2-11

Invasive monitoring of C.O. (N=1681)	N	%
Swan Ganz	441	26.2
PICCO	930	55.3
LIDCO	9	0.5
Vigileo-PRAM	262	15.6
Other	39	2.3
Missing	0	

SDD (N=235)	N	%
Topical	117	49.8
Topical and systemic	118	50.2
Missing	0	

Antibiotic therapy

Pts. infected in ICU only (N=2662)	N	%
Only empirical	519	23.3
Only targeted	997	44.8
Targeted after empirical	544	24.4
Other	167	7.5
Missing	435	

Surgical interventions	N	%
No	33615	94.9
Yes	1805	5.1
Missing	0	

Number of surgical interventions	N	%
0	33615	94.9
1	1468	4.1
2	234	0.7
3	65	0.2
>3	38	0.1
Missing	0	

Surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	9.5	11.0	6	3-12	6

Surgical interventions (top 10)	N	%
Gastrointestinal surgery	687	1.9
Orthopaedic surgery	429	1.2
Neurosurgery	242	0.7
ENT surgery	184	0.5
Other surgery	137	0.4
Maxillo-Facial surgery	95	0.3
Thoracic surgery	94	0.3
Plastic surgery	87	0.2
Peripheral vascular surgery	77	0.2
Nephro/Urological surgery	64	0.2
Missing	0	

Non surgical interventions	N	%
No	34643	97.8
Yes	777	2.2
Missing	0	

Non surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	12.8	14.7	8	3-15	13

Non surgical interventions	N	%
Interventional endoscopy	519	1.5
Interventional radiology	194	0.5
Interventional cardiology	118	0.3
Interventional neuroradiology	43	0.1
Missing	0	

National report for general ICUs - Year 2013**Outcome indicators** - Adult patients with LOS \geq 24 hours evaluated in the GiViTI model

ICU outcome	N	%
Dead	5974	16.9
Transferred to same hospital	25666	72.5
Transferred to other hospital	3277	9.3
Discharged home	363	1.0
Disch. terminally ill	139	0.4
Missing	1	

Transferred to (N=28943)	N	%
Ward	22997	79.5
Other ICU	1974	6.8
High dependency care unit	2769	9.6
Rehabilitation	911	3.1
Day hospital or Long-term care	292	1.0
Missing	0	

Reason for transfer to Other ICU (N=2028)	N	%
Specialist expertise	856	42.2
Step-up care	148	7.3
Logistical/organizational reasons	962	47.4
Step-down care	62	3.1
Missing	0	

Transferred to Same hospital (N=25666)	N	%
Ward	21954	85.5
Other ICU	856	3.3
High dependency care unit	2571	10.0
Rehabilitation	179	0.7
Day hospital or Long-term care	106	0.4
Missing	0	

Transferred to Other hospital (N=3277)	N	%
Ward	1043	31.8
Other ICU	1118	34.1
High dependency care unit	198	6.0
Rehabilitation	732	22.3
Day hospital or Long-term care	186	5.7
Missing	0	

ICU mortality	N	%
Alive	29306	82.7
Dead	6113	17.3
Missing	1	

Timing of ICU mortality (N=6113)	N	%
Daytime (08:00AM - 07:59PM)	4250	69.5
Nighttime (08:00PM - 07:59AM)	1863	30.5
Weekdays (Monday - Friday)	4523	74.0
Weekend (Saturday - Sunday)	1590	26.0
Missing	0	

Brain death assessment (N=6113)	N	%
Yes, with organ donation	373	6.2
Yes, without organ donation	342	5.7
No	5258	88.0
Missing	140	

Organ/Tissue removal (N=373)	N	%
No removal	14	3.8
Only organ removal	185	49.6
Only tissue removal	55	14.7
Organ and tissue removal	119	31.9
Missing	0	

Hospital mortality	N	%
Dead	8475	23.9
Transf. to other acute-care hospital	3430	9.7
Transf. to other type of hosp. stay	5524	15.6
Nursing home	679	1.9
Voluntary discharge	272	0.8
Discharged home	17040	48.1
Missing	0	

To other type of H stay (N=5524)	N	%
Rehabilitation in the same institute	1018	18.4
Rehabilitation in other institute	2919	52.9
DH/long-term care, same inst.	598	10.8
DH/long-term care, other inst.	988	17.9
Missing	1	

Disch. terminally ill (N=26945)	N	%
Yes	534	2.0
No	26411	98.0
Missing	0	

Hospital mortality	N	%
Alive	26414	74.6
Dead	9006	25.4
Missing	0	

Timing of hosp. mortality (N=9006)	N	%
In ICU	6113	67.9
Within 24 hours after ICU	146	1.6
Within 48 hours after ICU	331	3.7
Within 72 hours after ICU	517	5.7
Within 96 hours after ICU	666	7.4
After more than 96 hours after ICU	2227	24.7
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=2893)		
Mean	17.2	
SD	21.2	
Median	10	
Q1-Q3	4-23	
Missing	0	

National report for general ICUs - Year 2013**Outcome indicators** - Adult patients with LOS \geq 24 hours evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	26265	74.2
Dead	9155	25.8
Missing	0	

ICU stay (days)		
	Mean	7.8
	SD	11.0
	Median	4
	Q1-Q3	2-9
	Missing	1

ICU stay (days)		
Alive (N=29306)		
	Mean	7.3
	SD	10.6
	Median	4
	Q1-Q3	2-8
	Missing	1

ICU stay (days)		
Dead (N=6113)		
	Mean	10.3
	SD	12.8
	Median	6
	Q1-Q3	3-13
	Missing	0

Stay after ICU (days)		
Alive (N=29306)		
	Mean	13.8
	SD	17.8
	Median	9
	Q1-Q3	4-17
	Missing	5

Hospital stay (days)		
	Mean	22.8
	SD	22.9
	Median	16
	Q1-Q3	9-29
	Missing	1

Hospital stay (days)		
Alive (N=26414)		
	Mean	23.8
	SD	23.0
	Median	17
	Q1-Q3	10-30
	Missing	1

Hospital stay (days)		
Dead (N=9006)		
	Mean	19.8
	SD	22.3
	Median	13
	Q1-Q3	5-26
	Missing	0

National report for general ICUs - Year 2013

Characteristics on admission - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Patients (N): 19724

Sex	N	%
Male	11779	59.7
Female	7945	40.3
Missing	0	

Age (years)	N	%
17-45	2450	12.4
46-65	5102	25.9
66-75	5134	26.0
>75	7038	35.7
Missing	0	
Mean	66.5	
SD	16.2	
Median	71	
Q1-Q3	58-79	
Min-Max	17-103	

Body mass Index (BMI)	N	%
Underweight	1024	5.2
Normal	8909	45.2
Overweight	6173	31.3
Obese	3618	18.3
Missing	0	

Pregnancy status	N	%
Females (N=7945)		
Not fertile	4446	56.1
Not pregnant/Unknown	3414	43.0
Currently pregnant	27	0.3
Post partum	45	0.6
Missing	13	

Comorbidities	N	%
No	3098	15.7
Yes	16626	84.3
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	9808	49.7
Arrhythmia	3614	18.3
Moderate COPD	3508	17.8
Cerebrovascular disease	2689	13.6
NYHA class II-III	2617	13.3
Diabetes Type II without insulin tr.	2612	13.2
Myocardial infarction	2600	13.2
Moderate or severe renal disease	2158	10.9
Severe COPD	2109	10.7
Peripheral vascular disease	1844	9.3
Missing	0	

Stay before ICU (days)	Mean	SD	Median	Q1-Q3	Missing
	4.2	11.8	0	0-3	0

Source of admission	N	%
Same hospital	15897	80.6
Other hospital	3658	18.5
Long-term chronic care hospital	166	0.8
Directly from the community (e.g., ambulance, home, ...)	3	0.0
Missing	0	

Ward of admission	N	%
Hospital (N=19555)		
Medical ward	4996	25.5
Surgical ward	1378	7.0
Emergency room	10435	53.4
Other ICU	1967	10.1
High dependency care unit	779	4.0
Missing	0	

Reason for transfer from	N	%
Other ICU (N=1967)		
Specialist expertise	380	19.3
Step-up care	403	20.5
Logistical/organizational reasons	1115	56.7
Step-down care	69	3.5
Missing	0	

Ward of admission	N	%
Same hospital (N=15897)		
Medical ward	4331	27.2
Surgical ward	1241	7.8
Emergency room	9050	56.9
Other ICU	610	3.8
High dependency care unit	665	4.2
Missing	0	

Ward of admission	N	%
Other hospital (N=3658)		
Medical ward	665	18.2
Surgical ward	137	3.7
Emergency room	1385	37.9
Other ICU	1357	37.1
High dependency care unit	114	3.1
Missing	0	

Scheduled admission	N	%
No	19637	99.6
Yes	87	0.4
Missing	0	

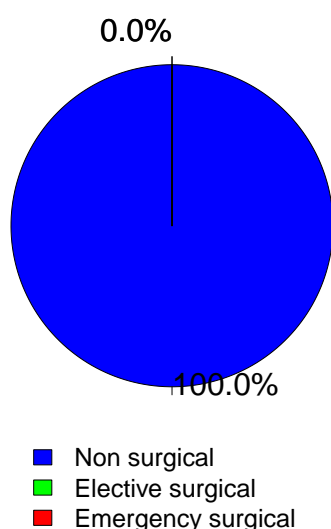
National report for general ICUs - Year 2013

Characteristics on admission - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Trauma	N	%
No	17415	88.3
Yes	2309	11.7
Multiple trauma	1096	5.6
Missing	0	

Surgical status	N	%
Non surgical	19724	100.0
Elective surgical	0	0.0
Emergency surgical	0	0.0
Missing	0	

Surgical status



Source of admission	N	%
Surgical pts. (N=0)		
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)	N	%
Elective surgical (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
Missing	0	

Timing	N	%
Elective surgical (N=0)		
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)	N	%
Emergency surgical (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
Missing	0	

Timing	N	%
Emergency surgical (N=0)		
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	17729	89.9
Elective	284	1.4
Emergency	1711	8.7
Missing	0	

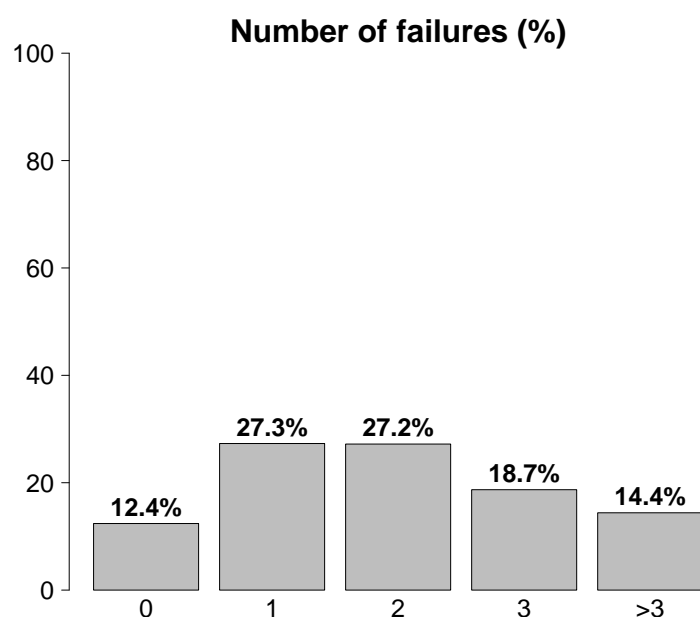
Non surgical interventions	N	%
Elective (N=284)		
Interventional endoscopy	106	37.3
Interventional cardiology	84	29.6
Interventional neuroradiology	49	17.3
Interventional radiology	47	16.5
Missing	0	

Surgical interventions	N	%
Emergency (N=1711)		
Interventional cardiology	889	52.0
Interventional endoscopy	387	22.6
Interventional radiology	276	16.1
Interventional neuroradiology	181	10.6
Missing	0	

National report for general ICUs - Year 2013

Characteristics on admission - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Reason for admission	N	%
Monitoring/Weaning	3614	18.3
Post surgical weaning	0	0.0
Surgical monitoring	0	0.0
Post interventional weaning	49	0.2
Interventional monitoring	348	1.8
Non surgical monitoring	3149	16.0
Missing	68	
Admission for procedures/treatments	6	0.0
Intensive Treatment	16104	81.6
Only ventilatory support	9719	49.3
Only cardiovascular support	1002	5.1
Ventilatory and cardiovascular support	5383	27.3
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	2447	12.4
Yes	17277	87.6
A: Respiratory failure	15102	76.6
B: Cardiovascular failure	6385	32.4
C: Neurological failure	4180	21.2
D: Hepatic failure	274	1.4
E: Renal failure	7718	39.1
F: Acute skin failure	31	0.2
G: Metabolic failure	5178	26.3
H: Coagulation failure	456	2.3
Missing	0	

Failures on admission (top 10)	N	%
A	4366	22.1
AC	1623	8.2
AE	1474	7.5
ABEG	1264	6.4
AB	1128	5.7
ABE	895	4.5
AEG	792	4.0
ABC	514	2.6
E	506	2.6
ABCEG	464	2.4
Missing	0	

Respiratory failure	N	%
None	4622	23.4
Only hypoxic failure	5017	25.4
Only hypercapnic failure	1361	6.9
Hypoxic-hypercapnic failure	3150	16.0
Intubation for airway maint.	5574	28.3
Missing	0	

Cardiovascular failure	N	%
None	13339	67.6
Without shock	1421	7.2
Cardiogenic shock	1873	9.5
Septic shock	1669	8.5
Haemorrhagic/hypovolemic shock	350	1.8
Hypovolemic shock	333	1.7
Anaphylactic shock	24	0.1
Neurogenic shock	162	0.8
Other shock	196	1.0
Mixed shock	357	1.8
Missing	0	

Neurologic failure	N	%
None	12277	74.6
Cerebral coma	2006	12.2
Metabolic coma	744	4.5
Postanoxic coma	1218	7.4
Toxic coma	212	1.3
Missing or not evaluable	3267	

Renal failure (AKIN)	N	%
None	12006	60.9
Mild	3910	19.8
Moderate	1904	9.7
Severe	1904	9.7
Missing	0	

Metabolic failure	N	%
None	14546	73.7
pH \leq 7.3, PaCO ₂ $<$ 45 mmHg	2034	10.3
Base deficit \geq 5 mmol/L, lactate $>$ 1.5x	3144	15.9
Missing	0	

National report for general ICUs - Year 2013**Characteristics on admission** - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

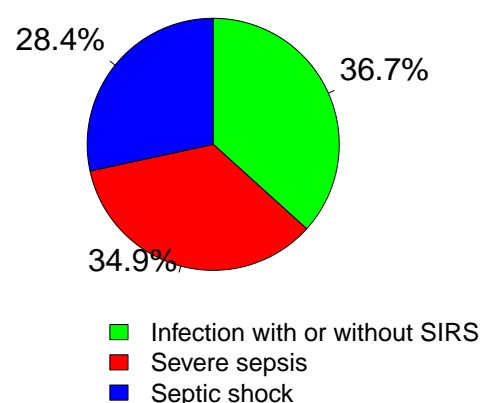
Clinical conditions on admission	N	%
Respiratory	6678	33.9
Acute exacerbation of COPD	2482	12.6
Pleural effusion	1248	6.3
Atelectasis	643	3.3
Aspiration pneumonia	631	3.2
Moderate ARDS	559	2.8
Cardiovascular	5557	28.2
Left heart failure with pulmonary edema	1659	8.4
Cardiac arrest	1560	7.9
Left heart failure without pulm. edema	901	4.6
Acute severe arrhythmia: tachycardias	703	3.6
Acute myocardial infarction	599	3.0
Neurological	3917	19.9
Spontaneous Intraparenchymal bleeding	877	4.4
Seizures	810	4.1
Cerebral artery stroke	794	4.0
Metabolic/postanoxic encephalopathy	676	3.4
Spontaneous Subarachnoid haemorrhage	359	1.8
Gastrointestinal and hepatic	1431	7.3
Gastrointestinal bleeding: upper tract	316	1.6
Acute pancreatitis	266	1.3
Liver Dysfunction Syndrome	173	0.9
Ascites	152	0.8
Acute bile-duct disease	115	0.6
Trauma (anatomical districts)	2309	11.7
Head	1192	6.0
Chest	1136	5.8
Pelvis/bone/joint & muscle	692	3.5
Spine	605	3.1
Abdomen	307	1.6
Major vessels injury	42	0.2
Miscellaneous	42	0.2
Other	3728	18.9
Metabolic disorder	1531	7.8
Acute intoxication	709	3.6
Nephro-urologic disease	676	3.4
Other disease	607	3.1
Coagulation disorder	456	2.3
Post transplantation	76	0.4
Bone marrow transplantation	21	0.1
Renal transplantation	19	0.1
Infections	6865	34.8
Pneumonia	3764	19.1
NON-surgical urinary tract infection	679	3.4
L.R.T.I. other than pneumonia	664	3.4
Primary bacteraemia of unknown origin	294	1.5
Clinical sepsis	283	1.4
NON-surgical CNS infection	271	1.4
NON-surgical skin/soft tissue infection	225	1.1
Cholecystitis/choolangitis	181	0.9
Gastroenteritis	179	0.9
Upper respiratory tract infection	152	0.8
Missing	0	

Trauma (anatomical districts)	N	%
Head	1192	6.0
Traumatic subarachnoid haemorrhage	399	2.0
Maxillofacial fracture	377	1.9
Cerebral contusion/laceration	312	1.6
Skull fracture	276	1.4
Traumatic Subdural haematoma	274	1.4
Spine	605	3.1
Vertebral fracture, without deficit	518	2.6
Tetraplegia	31	0.2
Cervical injury, incomplete deficit	28	0.1
Chest	1136	5.8
Other injuries of the chest	527	2.7
Traum. haemothorax/pneumothorax	477	2.4
Severe lung contusion/laceration	309	1.6
Abdomen	307	1.6
Minor injuries of the abdomen	93	0.5
Liver: Moderate-Severe laceration	90	0.5
Spleen: Moderate-Severe laceration	90	0.5
Pelvis/bone/joint & muscle	692	3.5
Long bone fracture	442	2.2
Multiple fracture of the pelvis	308	1.6
Very severe or open fracture of the pelvis	35	0.2
Major vessels injury	42	0.2
Neck vessels: dissection/transection	15	0.1
Aorta: rupture/dissection	11	0.1
Major abdominal vessels: transection	7	0.0
Miscellaneous	42	0.2
Inhalation injury	23	0.1
Burns (>30% BSA)	20	0.1
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	12859	65.4
Infection with or without SIRS	2503	12.7
Severe sepsis	2379	12.1
Septic shock	1934	9.8
Missing	49	

Infection severity on admission

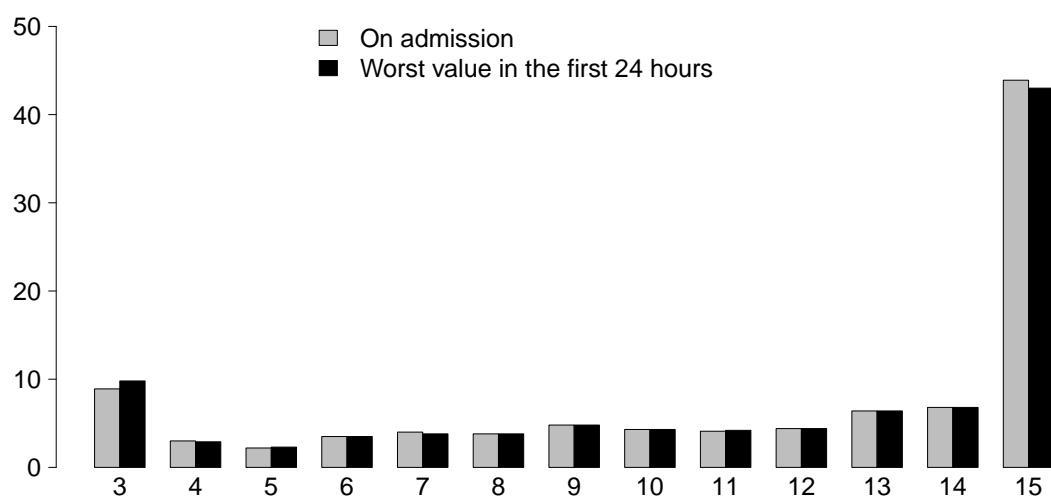
Patients infected (N=6816)



National report for general ICUs - Year 2013

Severity scores - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Glasgow Coma Scale (%)



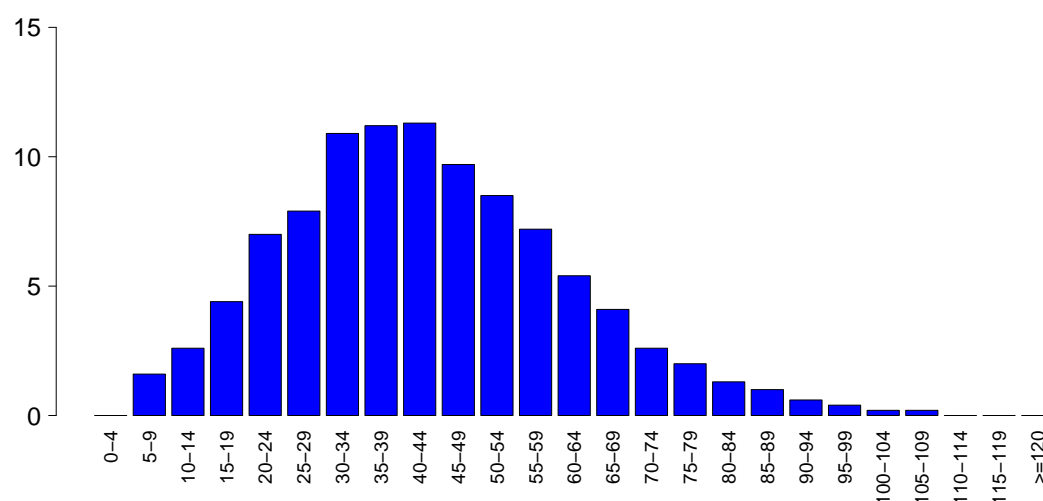
GCS (admission)

Median	14
Q1-Q3	8-15
Not evaluable	3267
Missing	0

GCS (first 24 hours)

Median	13
Q1-Q3	8-15
Not evaluable	3264
Missing	0

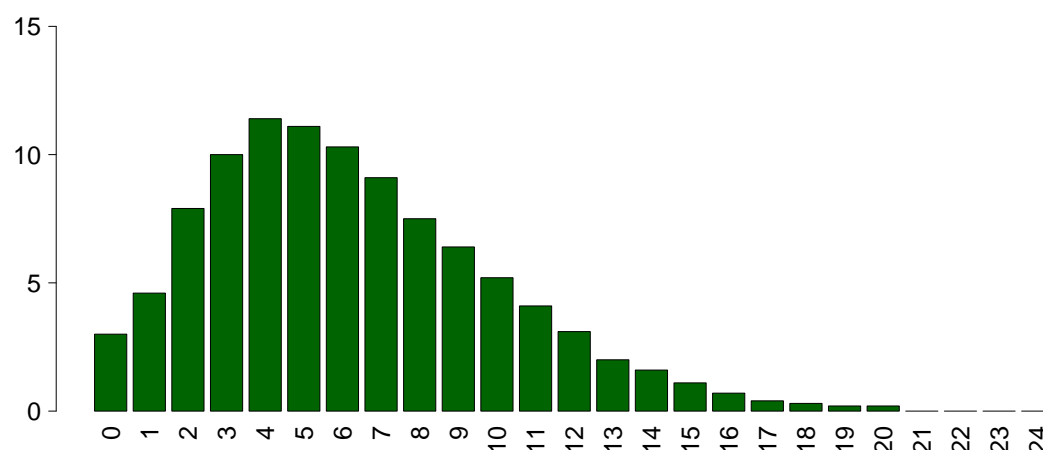
SAPS II (%)



SAPSII

Mean	43.1
SD	18.3
Median	41
Q1-Q3	30-55
Not evaluable	3264
Missing	0

SOFA (%)



SOFA

Mean	6.3
SD	3.8
Median	6
Q1-Q3	3-9
Not evaluable	3264
Missing	0

National report for general ICUs - Year 2013**Characteristics during the stay** - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Complications during the stay	N	%
No	12219	62.0
Yes	7504	38.0
Missing	1	

Failures during the stay	N	%
No	16609	84.2
Yes	3115	15.8
A: Respiratory failure	1043	5.3
B: Cardiovascular failure	1654	8.4
C: Neurological failure	252	1.3
D: Hepatic failure	95	0.5
E: Renal failure (AKIN)	964	4.9
F: Acute skin failure	2	0.0
G: Metabolic failure	205	1.0
H: Coagulation failure	141	0.7
Missing	0	

Failures during the stay (top 10)	N	%
B	983	5.0
A	548	2.8
E	412	2.1
AB	207	1.0
BE	199	1.0
G	110	0.6
C	93	0.5
ABE	81	0.4
AE	72	0.4
D	33	0.2
Missing	0	

Respiratory failure occurred	N	%
None	18680	94.7
Intubation for airway maint.	264	1.3
Hypoxic failure	707	3.6
Hypercapnic failure	270	1.4
Missing	1	

Cardiovascular failure occurred	N	%
None	18069	91.6
Cardiogenic shock	542	2.7
Hypovolemic shock	99	0.5
Haemorrhagic/hypovolemic shock	81	0.4
Septic shock	803	4.1
Anaphylactic shock	3	0.0
Neurogenic shock	112	0.6
Other shock	102	0.5
Missing	1	

Neurological failure occurred	N	%
None	19471	98.7
Cerebral coma	148	0.8
Metabolic coma	57	0.3
Postanoxic coma	48	0.2
Missing	1	

Renal failure occurred (AKIN)	N	%
None	18758	95.1
Mild	109	0.6
Moderate	165	0.8
Severe	691	3.5
Missing	1	

Complications during the stay	N	%
Respiratory	1620	8.2
Pleural effusion	570	2.9
Atelectasis	324	1.6
Severe ARDS	261	1.3
Pneumothorax/Pneumomediastinum	207	1.0
Moderate ARDS	112	0.6
Cardiovascular	2013	10.2
Acute severe arrhythmia: tachycardias	790	4.0
Cardiac arrest	530	2.7
Pulmonary edema	224	1.1
Left heart failure w/o pulm. edema	186	0.9
Acute severe arrhythmia: bradycardias	165	0.8
Neurological	1430	7.3
Drowsiness/agitation/delirium	641	3.3
Seizures	345	1.7
Brain edema	212	1.1
Intracranial hypertension	132	0.7
New ischaemic stroke	101	0.5
Gastrointestinal and hepatic	526	2.7
Gastrointestinal bleeding: upper tract	121	0.6
Paralytic Ileus	78	0.4
Liver Dysfunction Syndrome	75	0.4
Gastrointestinal bleeding: lower tract	69	0.3
Bowel ischaemia	49	0.2
Other	535	2.7
Metabolic disorder	205	1.0
Nephro-urologic disease	181	0.9
Other disease	141	0.7
Other skin and/or soft tissue pathology	36	0.2
Extremity compartment syndrome (severe)	6	0.0
Iatrogenic major vessels injury	6	0.0
Delayed spleen rupture	4	0.0
Infections	2430	12.3
Pneumonia	964	4.9
L.R.T.I. other than pneumonia	570	2.9
NON-surgical urinary tract infection	486	2.5
Primary bacteraemia of unknown origin	290	1.5
Catheter-related bacteremia (CR-BSI)	255	1.3
Upper respiratory tract infection	83	0.4
Clinical sepsis	67	0.3
NON-surgical skin/soft tissue infection	54	0.3
F.U.O. fever of unknown origin	49	0.2
Gastroenteritis	49	0.2
Missing	1	

National report for general ICUs - Year 2013

Characteristics during the stay - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Infections	N	%	Maximum severity of infection	N	%
None	11248	57.0	None	11248	57.3
Only on admission	6045	30.6	Infection with or without SIRS	2785	14.2
On admission and during ICU stay	820	4.2	Severe sepsis	3027	15.4
Only during ICU stay	1610	8.2	Septic shock	2579	13.1
Missing	1		Missing	85	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock
Admission	None	11248 (87.8%)	728 (5.7%)	582 (4.5%)	257 (2.0%)	12815
	Infection with or without SIRS	-	2051 (81.9%)	336 (13.4%)	116 (4.6%)	2503
	Severe sepsis	-	-	2108 (88.6%)	270 (11.3%)	2379
	Septic shock	-	-	-	1934 (100.0%)	1934
	TOT	11248	2780	3026	2577	19631

Ventil. Associat. Pneumonia (VAP)	N	%
No	18873	95.7
Yes	850	4.3
Missing	1	

Incidence of VAP

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

Estimate	8.2
CI (95%)	7.6-8.7

Incidence of VAP

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

Estimate	6.5%
CI (95%)	6.1-7.0

Catheter Bacteraemia (CR-BSI)	N	%
No	19468	98.7
Yes	255	1.3
Missing	1	

Incidence of CR-BSI

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

Estimate	1.6
CI (95%)	1.4-1.8

Incidence of CR-BSI

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

Estimate	2.0%
CI (95%)	1.7-2.2

National report for general ICUs - Year 2013

Process indicators - Adult non surgical patients with LOS>=24 hours evaluated in the GiViTI model

Procedures and/or treatments (Missing=0) Procedures (antibiotics excluded)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
	19058	96.6										
Invasive ventilation	13652	69.2	7493	38	3302	16.7	4	2-10	2	0	0-0	0
Non invasive ventilation	5057	25.6	1052	5.3	888	4.5	2	1-4	0	0	0-2	0
Tracheostomy	3465	17.6	770	3.9	2848	14.4	11	6-20	1	8	5-12	0
iNO (inhaled nitric oxide)	58	0.3	3	0	15	0.1	3	2-6	0	1	1-4	0
Central Venous Catheter	15334	77.7	4648	23.6	11537	58.5	6	3-13	1	0	0-0	0
Arterial Catheter	15425	78.2	3932	19.9	4533	23	5	3-11	1	0	0-0	0
Vasoactive drugs	7644	38.8	2401	12.2	1583	8	3	1-6	1	0	0-0	0
Antiarrhythmics	2104	10.7	508	2.6	983	5	3	2-8	0	1	0-2	0
IABP	244	1.2	168	0.9	48	0.2	2	2-4	0	0	0-0	0
Invasive monitoring of C.O.	895	4.5	100	0.5	177	0.9	5	3-8	0	0	0-1	0
Continuous monitoring of ScVO2	101	0.5	21	0.1	16	0.1	3	2-6	0	0	0-0	0
Temporary pacing	134	0.7	68	0.3	50	0.3	2	1-4	0	0	0-1	0
Ventricular assistance	6	0.0	4	0	5	0	4	2-12	0	2	1-2	0
DC-shock	617	3.1								0	0-1	0
CPR	745	3.8								0	0-1	0
Massive blood transfusion	220	1.1								0	0-1	0
ICP monitoring without liquor-drainage	112	0.6	14	0.1	13	0.1	7	5-11	0	0	0-1	0
ICP monitoring with liquor-drainage	73	0.4	23	0.1	22	0.1	8	4-17	0	0	0-2	0
External ventricular drainage without ICP	21	0.1	8	0	14	0.1	5	3-11	0	6	2-11	0
Haemofiltration	1097	5.6	108	0.5	276	1.4	4	2-8	0	1	0-3	0
Haemodialysis	599	3.0	113	0.6	225	1.1	3	2-8	0	1	0-3	0
ECMO	84	0.4	39	0.2	23	0.1	9	4-14	0	2	0-6	0
Hepatic clearance techniques	11	0.1										
Clearance techniques during sepsis	113	0.6	11	0.1	22	0.1	3	1-5	1	1	0-4	1
IAP (intra-abdominal pressure)	180	0.9										
Hypothermia	734	3.7										
Enteral nutrition	10043	50.9	1573	8	5963	30.2	7	3-14	1	1	1-2	0
Parenteral nutrition	5396	27.4	793	4	2564	13	5	3-10	1	1	0-2	0
SDD (Topical, Topical and systemic)	151	0.8										
Patient restraint	915	4.6										
Peridural catheter	100	0.5	21	0.1	53	0.3	4	2-8	0	1	0-2	0
Electrical cardioversion	196	1.0								1	0-3	0
Vacuum therapy	24	0.1										
Antibiotics	13356	67.7										
Antibiotics for surgical prophylaxis	603	3.1	292	1.5	325	1.6	3	2-7	0	0	0-3	0
Antibiotics for medical prophylaxis	5984	30.3	1812	9.2	3521	17.9	4	2-7	1	0	0-0	0
Empirical antibiotic therapy	5649	28.6	2091	10.6	2327	11.8	4	2-7	1	0	0-0	0
Targeted antibiotic therapy	4216	21.4	734	3.7	2579	13.1	8	4-13	0	4	2-8	0

National report for general ICUs - Year 2013**Process indicators** - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

			Length (days)				
Invasive ventilation (N=13652)	N	%	Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	7549	53.9	9.1	11.9	5	2-11	1
For airway maintenance	5479	39.1	7.3	9.8	4	2-9	1
In weaning	131	0.9	0.4	0.5	0	0-1	0
Not evaluable	850	6.1	7.5	9.7	4	1-10	361
Reintubation within 48 hours	308	2.2	9.1	10.3	5	3.0-12.0	0

Non invasive ventilation (N=5057)	N	%
Non invasive ventilation only	2739	54.2
Non invasive ventilation failed	1001	19.8
For weaning	1127	22.3
Other	190	3.8
Missing	0	

Tracheostomy (N=3465)	N	%
Surgical	668	19.3
Percutwist	454	13.1
Ciaglia	459	13.2
Monodil. Ciaglia	1030	29.7
Fantoni	230	6.6
Griggs	413	11.9
Other Kind	209	6.0
Missing	2	

Tracheostomy - Days after the beginning of inv. vent.		
N	3256	
Mean	7.5	
SD	8.4	
Median	6	
Q1-Q3	2-11	

Invasive monitoring of C.O. (N=895)	N	%
Swan Ganz	195	21.8
PICCO	544	60.8
LIDCO	4	0.4
Vigileo-PRAM	126	14.1
Other	26	2.9
Missing	0	

SDD (N=151)	N	%
Topical	71	47.0
Topical and systemic	80	53.0
Missing	0	

Antibiotic therapy		
Pts. infected in ICU only (N=1610)	N	%
Only empirical	288	21.2
Only targeted	640	47.1
Targeted after empirical	331	24.4
Other	100	7.4
Missing	251	

Surgical interventions	N	%
No	18824	95.4
Yes	900	4.6
Missing	0	

Number of surgical interventions			N	%	
			0	18824	95.4
			1	781	4.0
			2	90	0.5
			3	19	0.1
			>3	10	0.1
			Missing	0	

Surgical interventions		
Days from admission		
	Mean	9.8
	SD	11.5
	Median	6
	Q1-Q3	3-12
	Missing	3

Surgical interventions (top 10)			N	%
		Orthopaedic surgery	248	1.3
		Gastrointestinal surgery	192	1.0
		ENT surgery	140	0.7
		Neurosurgery	110	0.6
		Thoracic surgery	64	0.3
		Maxillo-Facial surgery	54	0.3
		Other surgery	53	0.3
		Plastic surgery	43	0.2
		Nephro/Urological surgery	35	0.2
		Peripheral vascular surgery	35	0.2
		Missing	0	

Non surgical interventions			N	%
	No		19174	97.2
	Yes		550	2.8
	Missing		0	

Non surgical interventions		
Days from admission		
	Mean	11.7
	SD	12.3
	Median	8
	Q1-Q3	3-15
	Missing	7

Non surgical interventions			N	%
		Interventional endoscopy	404	2.0
		Interventional cardiology	103	0.5
		Interventional radiology	99	0.5
		Interventional neuroradiology	11	0.1
		Missing	0	

National report for general ICUs - Year 2013**Outcome indicators** - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

ICU outcome	N	%
Dead	4430	22.5
Transferred to same hospital	12352	62.6
Transferred to other hospital	2516	12.8
Discharged home	323	1.6
Disch. terminally ill	103	0.5
Missing	0	

Transferred to (N=14868)	N	%
Ward	10739	72.2
Other ICU	1488	10.0
High dependency care unit	1688	11.4
Rehabilitation	696	4.7
Day hospital or Long-term care	257	1.7
Missing	0	

Reason for transfer to Other ICU (N=1522)	N	%
Specialist expertise	723	47.5
Step-up care	122	8.0
Logistical/organizational reasons	639	42.0
Step-down care	38	2.5
Missing	0	

Transferred to Same hospital (N=12352)	N	%
Ward	9907	80.2
Other ICU	701	5.7
High dependency care unit	1523	12.3
Rehabilitation	128	1.0
Day hospital or Long-term care	93	0.8
Missing	0	

Transferred to Other hospital (N=2516)	N	%
Ward	832	33.1
Other ICU	787	31.3
High dependency care unit	165	6.6
Rehabilitation	568	22.6
Day hospital or Long-term care	164	6.5
Missing	0	

ICU mortality	N	%
Alive	15191	77.0
Dead	4533	23.0
Missing	0	

Timing of ICU mortality (N=4533)	N	%
Daytime (08:00AM - 07:59PM)	3172	70.0
Nighttime (08:00PM - 07:59AM)	1361	30.0
Weekdays (Monday - Friday)	3369	74.3
Weekend (Saturday - Sunday)	1164	25.7
Missing	0	

Brain death assessment (N=4533)	N	%
Yes, with organ donation	276	6.2
Yes, without organ donation	270	6.1
No	3883	87.7
Missing	104	

Organ/Tissue removal (N=276)	N	%
No removal	11	4.0
Only organ removal	136	49.3
Only tissue removal	35	12.7
Organ and tissue removal	94	34.1
Missing	0	

Hospital mortality	N	%
Dead	5902	29.9
Transf. to other acute-care hospital	2424	12.3
Transf. to other type of hosp. stay	3394	17.2
Nursing home	412	2.1
Voluntary discharge	199	1.0
Discharged home	7393	37.5
Missing	0	

To other type of H stay (N=3394)	N	%
Rehabilitation in the same institute	556	16.4
Rehabilitation in other institute	1828	53.9
DH/long-term care, same inst.	389	11.5
DH/long-term care, other inst.	621	18.3
Missing	0	

Disch. terminally ill (N=13822)	N	%
Yes	289	2.1
No	13533	97.9
Missing	0	

Hospital mortality	N	%
Alive	13533	68.6
Dead	6191	31.4
Missing	0	

Timing of hosp. mortality (N=6191)	N	%
In ICU	4533	73.2
Within 24 hours after ICU	96	1.6
Within 48 hours after ICU	213	3.4
Within 72 hours after ICU	327	5.3
Within 96 hours after ICU	414	6.7
After more than 96 hours after ICU	1244	20.1
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=1658)		
Mean		16.2
SD		20.3
Median		9
Q1-Q3		4-21
Missing		0

National report for general ICUs - Year 2013**Outcome indicators** - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	13421	68.0
Dead	6303	32.0
Missing	0	

ICU stay (days)		
	Mean	9.4
	SD	11.8
	Median	5
	Q1-Q3	3-11
	Missing	1

ICU stay (days)		
Alive (N=15191)		
	Mean	9.1
	SD	11.5
	Median	5
	Q1-Q3	3-11
	Missing	1

ICU stay (days)		
Dead (N=4533)		
	Mean	10.1
	SD	12.7
	Median	6
	Q1-Q3	3-13
	Missing	0

Stay after ICU (days)		
Alive (N=15191)		
	Mean	13.1
	SD	17.7
	Median	9
	Q1-Q3	2-17
	Missing	2

Hospital stay (days)		
	Mean	22.2
	SD	22.7
	Median	16
	Q1-Q3	8-29
	Missing	1

Hospital stay (days)		
Alive (N=13533)		
	Mean	23.9
	SD	23.1
	Median	17
	Q1-Q3	10-30
	Missing	1

Hospital stay (days)		
Dead (N=6191)		
	Mean	18.4
	SD	21.3
	Median	11
	Q1-Q3	5-24
	Missing	0

National report for general ICUs - Year 2013

Characteristics on admission - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Patients (N): 7219

Sex	N	%
Male	4317	59.8
Female	2902	40.2
Missing	0	

Age (years)	N	%
17-45	495	6.9
46-65	1841	25.5
66-75	2269	31.4
>75	2614	36.2
Missing	0	
Mean	69.1	
SD	13.6	
Median	72	
Q1-Q3	62-79	
Min-Max	17-101	

Body mass Index (BMI)	N	%
Underweight	384	5.3
Normal	3306	45.8
Overweight	2200	30.5
Obese	1329	18.4
Missing	0	

Pregnancy status	N	%
Females (N=2902)		
Not fertile	1578	54.5
Not pregnant/Unknown	1291	44.5
Currently pregnant	4	0.1
Post partum	25	0.9
Missing	4	

Comorbidities	N	%
No	621	8.6
Yes	6598	91.4
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	4280	59.3
Any tumour without metastasis	1864	25.8
Moderate COPD	1264	17.5
Myocardial infarction	1219	16.9
Arrhythmia	1208	16.7
Peripheral vascular disease	1004	13.9
Diabetes Type II without insulin tr.	989	13.7
Metastatic cancer	789	10.9
NYHA class II-III	746	10.3
Cerebrovascular disease	744	10.3
Missing	0	

Stay before ICU (days)	Mean	SD	Median	Q1-Q3	Missing
	5.5	10.6	2	1-6	0

Source of admission	N	%
Same hospital	7057	97.8
Other hospital	154	2.1
Long-term chronic care hospital	8	0.1
Directly from the community (e.g., ambulance, home, ...)	0	0.0
Missing	0	

Ward of admission	N	%
Hospital (N=7211)		
Medical ward	148	2.1
Surgical ward	6887	95.5
Emergency room	59	0.8
Other ICU	86	1.2
High dependency care unit	31	0.4
Missing	0	

Reason for transfer from	N	%
Other ICU (N=86)		
Specialist expertise	27	31.4
Step-up care	21	24.4
Logistical/organizational reasons	35	40.7
Step-down care	3	3.5
Missing	0	

Ward of admission	N	%
Same hospital (N=7057)		
Medical ward	142	2.0
Surgical ward	6803	96.4
Emergency room	51	0.7
Other ICU	35	0.5
High dependency care unit	26	0.4
Missing	0	

Ward of admission	N	%
Other hospital (N=154)		
Medical ward	6	3.9
Surgical ward	84	54.5
Emergency room	8	5.2
Other ICU	51	33.1
High dependency care unit	5	3.2
Missing	0	

Scheduled admission	N	%
No	1539	21.3
Yes	5680	78.7
Missing	0	

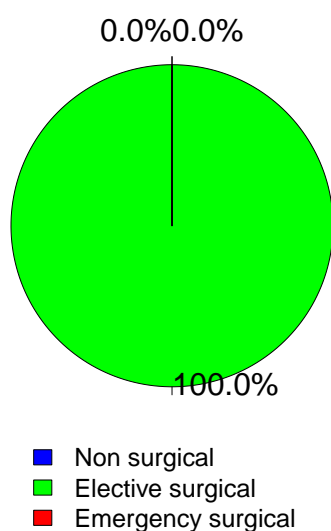
National report for general ICUs - Year 2013

Characteristics on admission - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Trauma	N	%
No	6738	93.3
Yes	481	6.7
Multiple trauma	55	0.8
Missing	0	

Surgical status	N	%
Non surgical	0	0.0
Elective surgical	7219	100.0
Emergency surgical	0	0.0
Missing	0	

Surgical status



Timing	N	%
Elective surgical (N=7219)		
From -7 to -3 days	168	2.3
From -2 to -1 days	298	4.1
On ICU admission day	7171	99.3
The day after ICU admission	173	2.4
Missing	13	

Surgical interventions (top 10)	N	%
Emergency surgical (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
Missing	0	

Timing	N	%
Emergency surgical (N=0)		
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	

Source of admission	N	%
Surgical pts. (N=7219)		
Operating theatre of surgical ward	6425	89.1
Operating theatre of emergency room	9	0.1
Surgical ward	462	6.4
Other	315	4.4
Missing	8	

Non surgical interventions	N	%
None	7066	97.9
Elective	93	1.3
Emergency	60	0.8
Missing	0	

Surgical interventions (top 10)	N	%
Elective surgical (N=7219)		
Gastrointestinal surgery	2258	31.3
Orthopaedic surgery	957	13.3
Nephro/Urological surgery	879	12.2
Thoracic surgery	468	6.5
Neurosurgery	461	6.4
Abdominal vascular surgery	436	6.0
ENT surgery	356	4.9
Peripheral vascular surgery	333	4.6
Hepatic surgery	303	4.2
Gynaecological surgery	301	4.2
Missing	0	

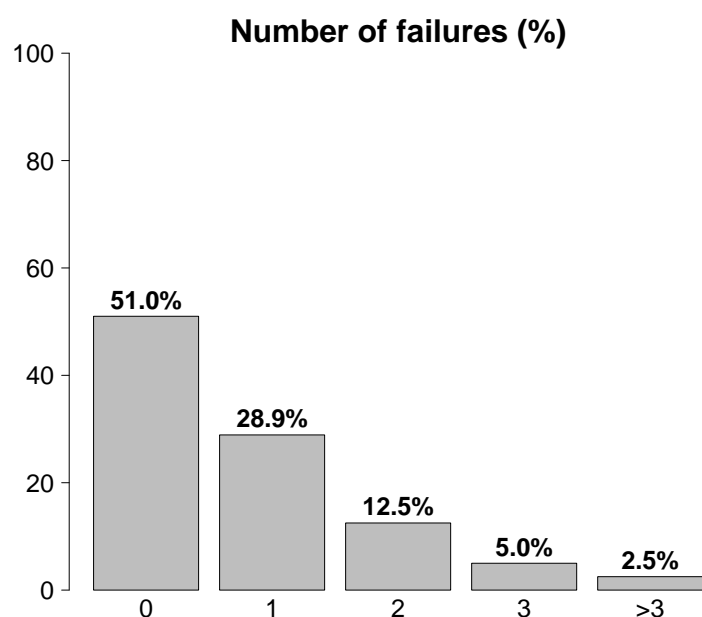
Non surgical interventions	N	%
Elective (N=93)		
Interventional radiology	22	23.7
Interventional endoscopy	21	22.6
Interventional cardiology	6	6.5
Interventional neuroradiology	5	5.4
Missing	39	

Surgical interventions	N	%
Emergency (N=60)		
Interventional radiology	15	25.0
Interventional cardiology	12	20.0
Interventional endoscopy	9	15.0
Interventional neuroradiology	5	8.3
Missing	19	

National report for general ICUs - Year 2013

Characteristics on admission - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Reason for admission	N	%
Monitoring/Weaning	4967	68.8
Post surgical weaning	2431	33.7
Surgical monitoring	2525	35.0
Post interventional weaning	3	0.0
Interventional monitoring	5	0.1
Non surgical monitoring	0	0.0
Missing	3	
Admission for procedures/treatments	0	0.0
Intensive Treatment	2252	31.2
Only ventilatory support	1373	19.0
Only cardiovascular support	260	3.6
Ventilatory and cardiovascular support	619	8.6
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	3685	51.0
Yes	3534	49.0
A: Respiratory failure	1992	27.6
B: Cardiovascular failure	879	12.2
C: Neurological failure	126	1.7
D: Hepatic failure	33	0.5
E: Renal failure	1884	26.1
F: Acute skin failure	1	0.0
G: Metabolic failure	768	10.6
H: Coagulation failure	59	0.8
Missing	0	

Failures on admission (top 10)	N	%
E	905	12.5
A	883	12.2
AE	272	3.8
AB	236	3.3
EG	185	2.6
G	142	2.0
ABE	126	1.7
B	126	1.7
ABEG	124	1.7
AEG	79	1.1
Missing	0	

Respiratory failure	N	%
None	5227	72.4
Only hypoxic failure	531	7.4
Only hypercapnic failure	77	1.1
Hypoxic-hypercapnic failure	120	1.7
Intubation for airway maint.	1264	17.5
Missing	0	

Cardiovascular failure	N	%
None	6340	87.8
Without shock	305	4.2
Cardiogenic shock	108	1.5
Septic shock	88	1.2
Haemorrhagic/hypovolemic shock	220	3.0
Hypovolemic shock	91	1.3
Anaphylactic shock	9	0.1
Neurogenic shock	8	0.1
Other shock	28	0.4
Mixed shock	22	0.3
Missing	0	

Neurologic failure	N	%
None	5361	97.7
Cerebral coma	66	1.2
Metabolic coma	23	0.4
Postanoxic coma	37	0.7
Toxic coma	0	0.0
Missing or not evaluable	1732	

Renal failure (AKIN)	N	%
None	5335	73.9
Mild	1264	17.5
Moderate	365	5.1
Severe	255	3.5
Missing	0	

Metabolic failure	N	%
None	6450	89.4
pH \leq 7.3, PaCO ₂ $<$ 45 mmHg	307	4.3
Base deficit \geq 5 mmol/L, lactate $>$ 1.5x	461	6.4
Missing	1	

National report for general ICUs - Year 2013**Characteristics on admission** - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

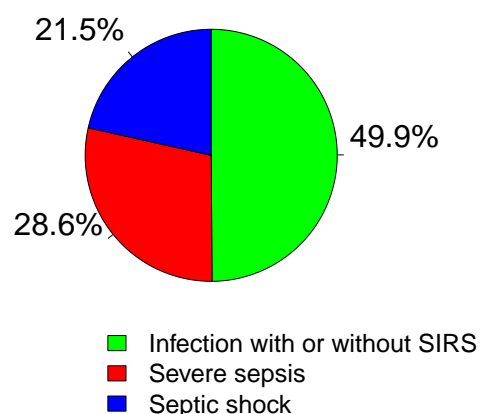
Clinical conditions on admission	N	%
Respiratory	932	12.9
Lung cancer	301	4.2
Upper respiratory tract disease	156	2.2
Pleural effusion	122	1.7
Atelectasis	93	1.3
Acute exacerbation of COPD	71	1.0
Cardiovascular	1107	15.3
Non-ruptured aneurysm	349	4.8
Peripheral vascular disease	296	4.1
Acute severe arrhythmia: tachycardias	97	1.3
Left heart failure without pulm. edema	79	1.1
Cardiac arrest	65	0.9
Neurological	507	7.0
Brain tumour	305	4.2
Cerebral artery stroke	47	0.7
Cerebral Aneurysm	44	0.6
Seizures	31	0.4
CNS degenerative disease	20	0.3
Gastrointestinal and hepatic	2471	34.2
Digestive tract malignancy	1515	21.0
Pancreatic malignancy	252	3.5
Hepatic malignancy	239	3.3
Acute bile-duct disease	154	2.1
Intestinal occlusion	106	1.5
Trauma (anatomical districts)	481	6.7
Pelvis/bone/joint & muscle	418	5.8
Head	47	0.7
Chest	43	0.6
Spine	39	0.5
Abdomen	3	0.0
Miscellaneous	2	0.0
Major vessels injury	1	0.0
Other	2646	36.7
Nephro-urologic disease	783	10.8
Other disease	586	8.1
Orthopaedic disease	439	6.1
ENT/maxillofacial disease	363	5.0
Gynaecological disease	253	3.5
Post transplantation	27	0.4
Renal transplantation	9	0.1
Liver transplantation	8	0.1
Infections	457	6.3
Pneumonia	92	1.3
Post-surgical peritonitis	44	0.6
Cholecystitis/cholangitis	38	0.5
NON-surgical secondary peritonitis	38	0.5
NON-surgical urinary tract infection	38	0.5
NON-surgical skin/soft tissue infection	33	0.5
Pleurisy/Pleural empyema	20	0.3
Post-surgical skin/soft tissue infection	20	0.3
Primary bacteraemia of unknown origin	19	0.3
Clinical sepsis	18	0.2
Missing	0	

Trauma (anatomical districts)	N	%
Head	47	0.7
Maxillofacial fracture	25	0.3
Traumatic Subdural haematoma	10	0.1
Traumatic subarachnoid haemorrhage	8	0.1
Skull fracture	8	0.1
Cerebral contusion/laceration	6	0.1
Spine	39	0.5
Vertebral fracture, without deficit	25	0.3
Cervical injury, incomplete deficit	7	0.1
Paraplegia	4	0.1
Chest	43	0.6
Other injuries of the chest	22	0.3
Traum. haemothorax/pneumothorax	14	0.2
Severe lung contusion/laceration	11	0.2
Abdomen	3	0.0
Stomach: Rupture or perforation	1	0.0
Spleen: Moderate-Severe laceration	1	0.0
Kidney: Rupture/laceration	1	0.0
Pelvis/bone/joint & muscle	418	5.8
Long bone fracture	404	5.6
Multiple fracture of the pelvis	25	0.3
Very severe or open fracture of the pelvis	3	0.0
Major vessels injury	1	0.0
Proximal limbs vessels: transection	1	0.0
-	0	0.0
-	0	0.0
Miscellaneous	2	0.0
Burns (>30% BSA)	2	0.0
-	0	0.0
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	6762	93.7
Infection with or without SIRS	227	3.1
Severe sepsis	130	1.8
Septic shock	98	1.4
Missing	2	

Infection severity on admission

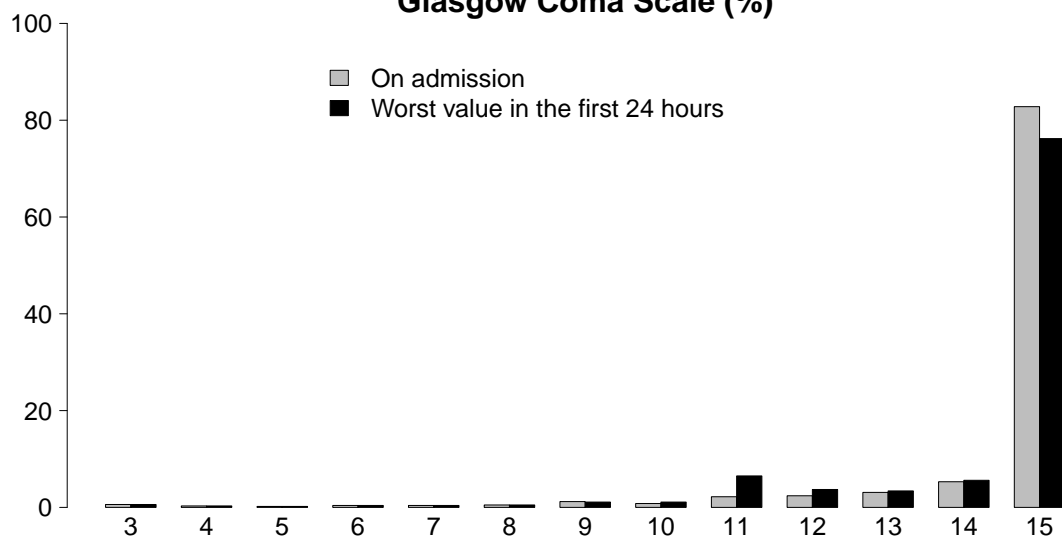
Patients infected (N=455)



National report for general ICUs - Year 2013

Severity scores - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Glasgow Coma Scale (%)



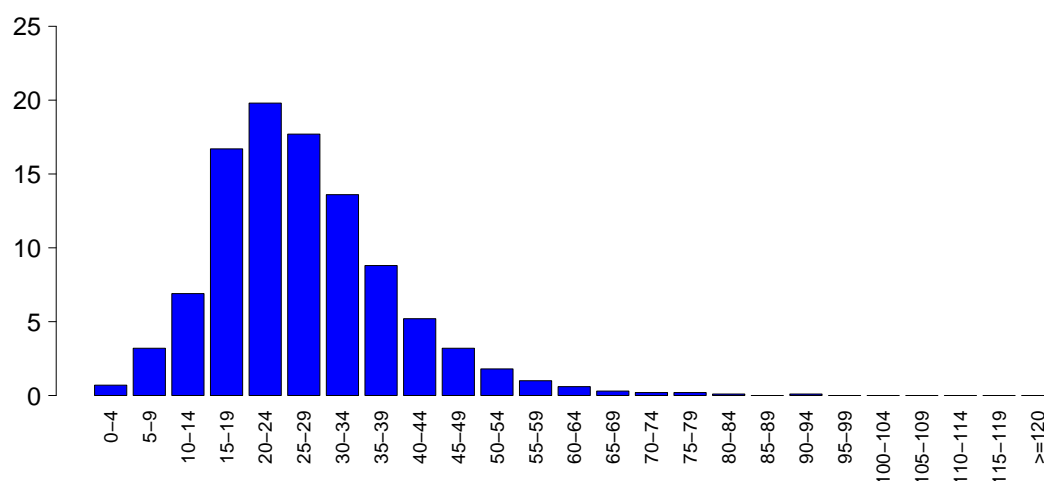
GCS (admission)

Median	15
Q1-Q3	15-15
Not evaluable	1732
Missing	0

GCS (first 24 hours)

Median	15
Q1-Q3	15-15
Not evaluable	728
Missing	0

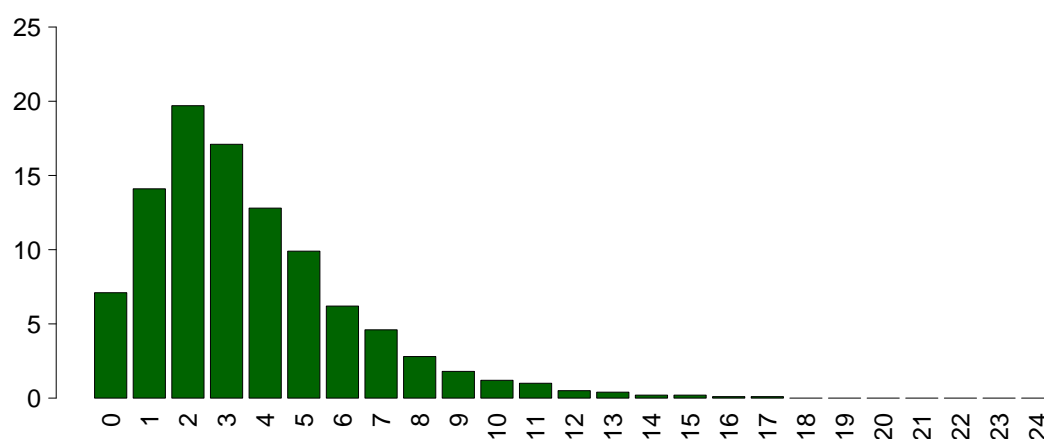
SAPS II (%)



SAPSII

Mean	26.8
SD	11.8
Median	25
Q1-Q3	18-33
Not evaluable	728
Missing	0

SOFA (%)



SOFA

Mean	3.6
SD	2.7
Median	3
Q1-Q3	2-5
Not evaluable	728
Missing	0

National report for general ICUs - Year 2013**Characteristics during the stay** - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Complications during the stay	N	%
No	5865	81.2
Yes	1354	18.8
Missing	0	

Failures during the stay	N	%
No	6672	92.4
Yes	547	7.6
A: Respiratory failure	243	3.4
B: Cardiovascular failure	266	3.7
C: Neurological failure	26	0.4
D: Hepatic failure	20	0.3
E: Renal failure (AKIN)	198	2.7
F: Acute skin failure	1	0.0
G: Metabolic failure	28	0.4
H: Coagulation failure	25	0.3
Missing	0	

Failures during the stay (top 10)	N	%
B	133	1.8
A	122	1.7
E	89	1.2
AB	48	0.7
BE	27	0.4
ABE	23	0.3
AE	19	0.3
G	14	0.2
D	7	0.1
ABEH	6	0.1
Missing	0	

Respiratory failure occurred	N	%
None	6976	96.6
Intubation for airway maint.	70	1.0
Hypoxic failure	168	2.3
Hypercapnic failure	43	0.6
Missing	0	

Cardiovascular failure occurred	N	%
None	6953	96.3
Cardiogenic shock	62	0.9
Hypovolemic shock	43	0.6
Haemorrhagic/hypovolemic shock	49	0.7
Septic shock	104	1.4
Anaphylactic shock	0	0.0
Neurogenic shock	6	0.1
Other shock	21	0.3
Missing	0	

Neurological failure occurred	N	%
None	7193	99.6
Cerebral coma	16	0.2
Metabolic coma	6	0.1
Postanoxic coma	4	0.1
Missing	0	

Renal failure occurred (AKIN)	N	%
None	7021	97.3
Mild	48	0.7
Moderate	35	0.5
Severe	115	1.6
Missing	0	

Complications during the stay	N	%
Respiratory	256	3.5
Pleural effusion	97	1.3
Atelectasis	67	0.9
Pneumothorax/Pneumomediastinum	37	0.5
Mild ARDS	25	0.3
Upper resp. tract disease	25	0.3
Cardiovascular	388	5.4
Acute severe arrhythmia: tachycardias	183	2.5
Acute ischaemia	46	0.6
Cardiac arrest	40	0.6
Acute severe arrhythmia: bradycardias	30	0.4
Hypertensive crisis	27	0.4
Neurological	210	2.9
Drowsiness/agitation/delirium	143	2.0
Seizures	25	0.3
New ischaemic stroke	14	0.2
Brain edema	13	0.2
Post-surgical intracranial bleeding	13	0.2
Gastrointestinal and hepatic	197	2.7
Intrabdominal bleeding	43	0.6
Anastomotic dehiscence	38	0.5
Bowel ischaemia	23	0.3
Paralytic Ileus	22	0.3
Gastrointestinal bleeding: lower tract	19	0.3
Other	135	1.9
Other disease	56	0.8
Nephro-urologic disease	39	0.5
Metabolic disorder	28	0.4
Other skin and/or soft tissue pathology	9	0.1
Iatrogenic major vessels injury	6	0.1
Graft vascular thrombosis	2	0.0
Severe graft dysfunction	2	0.0
Infections	308	4.3
Pneumonia	114	1.6
Post-surgical peritonitis	44	0.6
L.R.T.I. other than pneumonia	40	0.6
NON-surgical urinary tract infection	33	0.5
Catheter-related bacteremia (CR-BSI)	26	0.4
Post-surgical skin/soft tissue infection	24	0.3
Primary bacteraemia of unknown origin	22	0.3
Clinical sepsis	15	0.2
F.U.O. fever of unknown origin	11	0.2
Upper respiratory tract infection	9	0.1
Missing	0	

National report for general ICUs - Year 2013**Characteristics during the stay** - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Infections	N	%
None	6502	90.1
Only on admission	409	5.7
On admission and during ICU stay	48	0.7
Only during ICU stay	260	3.6
Missing	0	

Maximum severity of infection	N	%
None	6502	90.2
Infection with or without SIRS	273	3.8
Severe sepsis	233	3.2
Septic shock	198	2.7
Missing	13	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock
Admission	None	6502 (96.3%)	77 (1.1%)	98 (1.5%)	74 (1.1%)	6751
	Infection with or without SIRS	-	196 (86.3%)	24 (10.6%)	7 (3.1%)	227
	Severe sepsis	-	-	111 (85.4%)	19 (14.6%)	130
	Septic shock	-	-	-	98 (100.0%)	98
	TOT	6502	273	233	198	7206

Ventil. Associat. Pneumonia (VAP)	N	%
No	7148	99.0
Yes	71	1.0
Missing	0	

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

Estimate	9.6
CI (95%)	7.5-12.1

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

Estimate	7.7%
CI (95%)	6.0-9.7

Catheter Bacteraemia (CR-BSI)	N	%
No	7193	99.6
Yes	26	0.4
Missing	0	

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

Estimate	1.3
CI (95%)	0.8-1.9

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

Estimate	1.6%
CI (95%)	1.0-2.3

National report for general ICUs - Year 2013
Process indicators - Adult elective surgical patients with LOS \geq 24 hours 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)	6872	95.2										
Invasive ventilation	4825	66.8	4154	57.5	191	2.6	1	0-1	0	0	0-0	0
Non invasive ventilation	896	12.4	160	2.2	341	4.7	2	1-3	0	0	0-1	0
Tracheostomy	333	4.6	152	2.1	300	4.2	5	2-13	0	7	4-14	0
iNO (inhaled nitric oxide)	5	0.1	2	0	0	0	1	0-1	0	3	2-8	0
Central Venous Catheter	4500	62.3	3437	47.6	4092	56.7	2	2-4	1	0	0-0	0
Arterial Catheter	5638	78.1	4379	60.7	859	11.9	2	2-4	1	0	0-0	0
Vasoactive drugs	1264	17.5	621	8.6	145	2	2	1-3	1	0	0-1	0
Antiarrhythmics	413	5.7	112	1.6	197	2.7	2	1-4	0	1	0-2	0
IABP	6	0.1	5	0.1	0	0	2	1-2	0	8	8-8	0
Invasive monitoring of C.O.	177	2.5	76	1.1	19	0.3	2	2-5	0	0	0-1	0
Continuous monitoring of ScVO ₂	13	0.2	7	0.1	2	0	2	2-4	0	0	0-1	0
Temporary pacing	10	0.1	8	0.1	1	0	2	1-3	0	1	0-2	0
Ventricular assistance	0	0.0										
DC-shock	28	0.4								0	0-1	0
CPR	55	0.8								0	0-1	0
Massive blood transfusion	111	1.5								0	0-0	0
ICP monitoring without liquor-drainage	14	0.2	6	0.1	1	0	6	3-8	0	0	0-2	0
ICP monitoring with liquor-drainage	43	0.6	34	0.5	20	0.3	4	2-13	0	1	0-1	0
External ventricular drainage without ICP	10	0.1	7	0.1	8	0.1	2	2-4	0	10	5-10	0
Haemofiltration	112	1.6	9	0.1	38	0.5	4	2-7	0	1	1-3	0
Haemodialysis	91	1.3	12	0.2	36	0.5	2	0-3	0	1	1-2	0
ECMO	1	0.0	0	0	0	0	8	8-8	0	1	1-1	0
Hepatic clearance techniques	1	0.0										
Clearance techniques during sepsis	10	0.1	0	0	2	0	2	1-3	0	2	1-5	0
IAP (intra-abdominal pressure)	76	1.1										
Hypothermia	15	0.2										
Enteral nutrition	882	12.2	104	1.4	606	8.4	4	2-9	0	2	1-3	0
Parenteral nutrition	1818	25.2	231	3.2	1444	20	2	1-5	1	1	0-2	1
SDD (Topical, Topical and systemic)	12	0.2										
Patient restraint	144	2.0										
Peridural catheter	898	12.4	830	11.5	649	9	2	1-3	1	0	0-0	0
Electrical cardioversion	19	0.3								1	0-4	0
Vacuum therapy	15	0.2										
Antibiotics	5935	82.2										
Antibiotics for surgical prophylaxis	5399	74.8	4552	63.1	3237	44.8	2	1-3	1	0	0-0	0
Antibiotics for medical prophylaxis	169	2.3	72	1	100	1.4	3	1-6	0	0	0-2	0
Empirical antibiotic therapy	430	6.0	152	2.1	242	3.4	4	2-6	1	1	0-3	1
Targeted antibiotic therapy	305	4.2	65	0.9	211	2.9	7	3-13	1	6	3-9	1

National report for general ICUs - Year 2013**Process indicators** - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTi model

Invasive ventilation (N=4825)	N	%	Length (days)				
			Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	681	13.7	4.7	11.1	2	1-4	0
For airway maintenance	1258	25.3	3.0	6.2	1	1-2	0
In weaning	2407	48.4	0.3	0.5	0	0-1	0
Not evaluable	623	12.5	2.2	5.1	1	0-1	149
Reintubation within 48 hours	64	1.3	7.2	8.5	4	1.0-8.5	0

Non invasive ventilation (N=896)	N	%
Non invasive ventilation only	337	37.6
Non invasive ventilation failed	53	5.9
For weaning	459	51.2
Other	47	5.2
Missing	0	

Tracheostomy (N=333)	N	%
Surgical	181	54.4
Percutwist	35	10.5
Ciaglia	26	7.8
Monodil. Ciaglia	53	15.9
Fantoni	11	3.3
Griggs	17	5.1
Other Kind	10	3.0
Missing	0	

Tracheostomy - Days after the beginning of inv. vent.

N	294
Mean	5.8
SD	7.9
Median	3
Q1-Q3	0-8

Invasive monitoring of C.O. (N=177)	N	%
Swan Ganz	23	13.0
PICCO	88	49.7
LIDCO	3	1.7
Vigileo-PRAM	60	33.9
Other	3	1.7
Missing	0	

SDD (N=12)	N	%
Topical	5	41.7
Topical and systemic	7	58.3
Missing	0	

Antibiotic therapy

Pts. infected in ICU only (N=260)	N	%
Only empirical	67	32.4
Only targeted	72	34.8
Targeted after empirical	57	27.5
Other	11	5.3
Missing	53	

Surgical interventions	N	%
No	7069	97.9
Yes	150	2.1
Missing	0	

Number of surgical interventions	N	%
0	7069	97.9
1	123	1.7
2	20	0.3
3	5	0.1
>3	2	0.0
Missing	0	

Surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	9.0	9.0	5.5	3-12.8	1

Surgical interventions (top 10)	N	%
Gastrointestinal surgery	79	1.1
Other surgery	17	0.2
ENT surgery	12	0.2
Biliary tract surgery	12	0.2
Orthopaedic surgery	11	0.2
Neurosurgery	11	0.2
Thoracic surgery	8	0.1
Peripheral vascular surgery	7	0.1
Hepatic surgery	6	0.1
Abdominal vascular surgery	6	0.1
Missing	0	

Non surgical interventions	N	%
No	7166	99.3
Yes	53	0.7
Missing	0	

Non surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	14.7	16.7	9	3-20.5	2

Non surgical interventions	N	%
Interventional radiology	25	0.3
Interventional endoscopy	24	0.3
Interventional cardiology	5	0.1
Interventional neuroradiology	3	0.0
Missing	0	

National report for general ICUs - Year 2013**Outcome indicators** - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

ICU outcome	N	%
Dead	269	3.7
Transferred to same hospital	6754	93.6
Transferred to other hospital	160	2.2
Discharged home	30	0.4
Disch. terminally ill	6	0.1
Missing	0	
Transferred to (N=6914)		
Ward	6480	93.7
Other ICU	90	1.3
High dependency care unit	294	4.3
Rehabilitation	45	0.7
Day hospital or Long-term care	5	0.1
Missing	0	
Reason for transfer to Other ICU (N=91)		
Specialist expertise	45	49.5
Step-up care	5	5.5
Logistical/organizational reasons	41	45.1
Step-down care	0	0.0
Missing	0	
Transferred to Same hospital (N=6754)		
Ward	6405	94.8
Other ICU	51	0.8
High dependency care unit	286	4.2
Rehabilitation	9	0.1
Day hospital or Long-term care	3	0.0
Missing	0	
Transferred to Other hospital (N=160)		
Ward	75	46.9
Other ICU	39	24.4
High dependency care unit	8	5.0
Rehabilitation	36	22.5
Day hospital or Long-term care	2	1.2
Missing	0	
ICU mortality		
Alive	6944	96.2
Dead	275	3.8
Missing	0	
Timing of ICU mortality (N=275)		
Daytime (08:00AM - 07:59PM)	189	68.7
Nighttime (08:00PM - 07:59AM)	86	31.3
Weekdays (Monday - Friday)	198	72.0
Weekend (Saturday - Sunday)	77	28.0
Missing	0	

Brain death assessment (N=275)	N	%
Yes, with organ donation	10	3.7
Yes, without organ donation	8	3.0
No	251	93.3
Missing	6	
Organ/Tissue removal (N=10)		
No removal	0	0.0
Only organ removal	2	20.0
Only tissue removal	5	50.0
Organ and tissue removal	3	30.0
Missing	0	
Hospital mortality		
Dead	613	8.5
Transf. to other acute-care hospital	259	3.6
Transf. to other type of hosp. stay	784	10.9
Nursing home	121	1.7
Voluntary discharge	29	0.4
Discharged home	5413	75.0
Missing	0	
To other type of H stay (N=784)		
Rehabilitation in the same institute	195	24.9
Rehabilitation in other institute	382	48.7
DH/long-term care, same inst.	82	10.5
DH/long-term care, other inst.	125	15.9
Missing	0	
Disch. terminally ill (N=6606)		
Yes	133	2.0
No	6473	98.0
Missing	0	
Hospital mortality		
Alive	6474	89.7
Dead	745	10.3
Missing	0	
Timing of hosp. mortality (N=745)		
In ICU	275	36.9
Within 24 hours after ICU	23	3.1
Within 48 hours after ICU	45	6.0
Within 72 hours after ICU	69	9.3
Within 96 hours after ICU	93	12.5
After more than 96 hours after ICU	377	50.6
Missing	0	
Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=470)		
Mean		19.2
SD		23.8
Median		11.5
Q1-Q3		5-25
Missing		0

National report for general ICUs - Year 2013**Outcome indicators** - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	6471	89.6
Dead	748	10.4
Missing	0	

ICU stay (days)		
	Mean	3.4
	SD	6.7
	Median	2
	Q1-Q3	1-3
	Missing	0

ICU stay (days)		
Alive (N=6944)		
	Mean	3.1
	SD	6.0
	Median	2
	Q1-Q3	1-3
	Missing	0

ICU stay (days)		
Dead (N=275)		
	Mean	11.7
	SD	13.7
	Median	6
	Q1-Q3	3-15
	Missing	0

Stay after ICU (days)		
Alive (N=6944)		
	Mean	13.3
	SD	16.4
	Median	9
	Q1-Q3	5-15
	Missing	0

Hospital stay (days)		
	Mean	21.8
	SD	21.9
	Median	15
	Q1-Q3	10-27
	Missing	0

Hospital stay (days)		
Alive (N=6474)		
	Mean	21.1
	SD	21.1
	Median	15
	Q1-Q3	10-25
	Missing	0

Hospital stay (days)		
Dead (N=745)		
	Mean	28.1
	SD	27.5
	Median	21
	Q1-Q3	11-37
	Missing	0

National report for general ICUs - Year 2013

Characteristics on admission - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Patients (N): 8477

Sex	N	%
Male	4898	57.8
Female	3579	42.2
Missing	0	

Age (years)	N	%
17-45	1375	16.2
46-65	2089	24.6
66-75	1861	22.0
>75	3152	37.2
Missing	0	
Mean	65.6	
SD	18.2	
Median	70	
Q1-Q3	55-80	
Min-Max	17-102	

Body mass Index (BMI)	N	%
Underweight	499	5.9
Normal	4020	47.4
Overweight	2707	31.9
Obese	1251	14.8
Missing	0	

Pregnancy status	N	%
Females (N=3579)		
Not fertile	1988	55.7
Not pregnant/Unknown	1363	38.2
Currently pregnant	19	0.5
Post partum	200	5.6
Missing	9	

Comorbidities	N	%
No	1884	22.2
Yes	6593	77.8
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	4140	48.8
Arrhythmia	1411	16.6
Moderate COPD	1101	13.0
Any tumour without metastasis	934	11.0
Cerebrovascular disease	878	10.4
Peripheral vascular disease	864	10.2
Myocardial infarction	848	10.0
Diabetes Type II without insulin tr.	843	9.9
Moderate or severe renal disease	730	8.6
NYHA class II-III	709	8.4
Missing	0	

Stay before ICU (days)		
Mean	3.8	
SD	9.5	
Median	1	
Q1-Q3	0-3	
Missing	0	

Source of admission	N	%
Same hospital	7784	91.8
Other hospital	682	8.0
Long-term chronic care hospital	10	0.1
Directly from the community (e.g., ambulance, home, ...)	1	0.0
Missing	0	

Ward of admission	N	%
Hospital (N=8466)		
Medical ward	679	8.0
Surgical ward	5210	61.5
Emergency room	2160	25.5
Other ICU	272	3.2
High dependency care unit	145	1.7
Missing	0	

Reason for transfer from	N	%
Other ICU (N=272)		
Specialist expertise	75	27.6
Step-up care	83	30.5
Logistical/organizational reasons	101	37.1
Step-down care	13	4.8
Missing	0	

Ward of admission	N	%
Same hospital (N=7784)		
Medical ward	612	7.9
Surgical ward	5028	64.6
Emergency room	1902	24.4
Other ICU	109	1.4
High dependency care unit	133	1.7
Missing	0	

Ward of admission	N	%
Other hospital (N=682)		
Medical ward	67	9.8
Surgical ward	182	26.7
Emergency room	258	37.8
Other ICU	163	23.9
High dependency care unit	12	1.8
Missing	0	

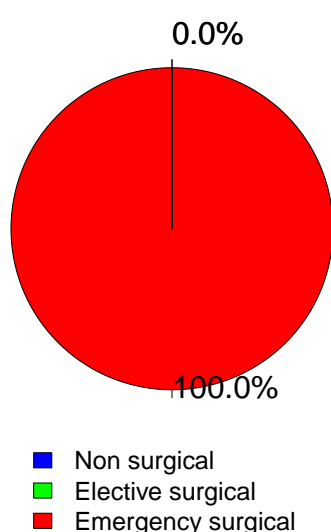
Scheduled admission	N	%
No	8452	99.7
Yes	25	0.3
Missing	0	

National report for general ICUs - Year 2013

Characteristics on admission - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Trauma	N	%
No	6623	78.1
Yes	1854	21.9
Multiple trauma	885	10.4
Missing	0	

Surgical status	N	%
Non surgical	0	0.0
Elective surgical	0	0.0
Emergency surgical	8477	100.0
Missing	0	

Surgical status

Source of admission	N	%
Surgical pts. (N=8477)		
Operating theatre of surgical ward	4729	55.9
Operating theatre of emergency room	1378	16.3
Surgical ward	481	5.7
Other	1878	22.2
Missing	11	

Surgical interventions (top 10)	N	%
Elective surgical (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
Missing	0	

Timing	N	%
Elective surgical (N=0)		
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)	N	%
Emergency surgical (N=8477)		
Gastrointestinal surgery	3660	43.2
Neurosurgery	1280	15.1
Orthopaedic surgery	829	9.8
Abdominal vascular surgery	442	5.2
Biliary tract surgery	362	4.3
Nephro/Urological surgery	345	4.1
Peripheral vascular surgery	302	3.6
Splenectomy	271	3.2
Organ/s transplantation	242	2.9
Other surgery	225	2.7
Missing	0	

Timing	N	%
Emergency surgical (N=8477)		
From -7 to -3 days	220	2.6
From -2 to -1 days	970	11.4
On ICU admission day	7384	87.1
The day after ICU admission	442	5.2
Missing	28	

Non surgical interventions	N	%
None	7923	93.5
Elective	91	1.1
Emergency	463	5.5
Missing	0	

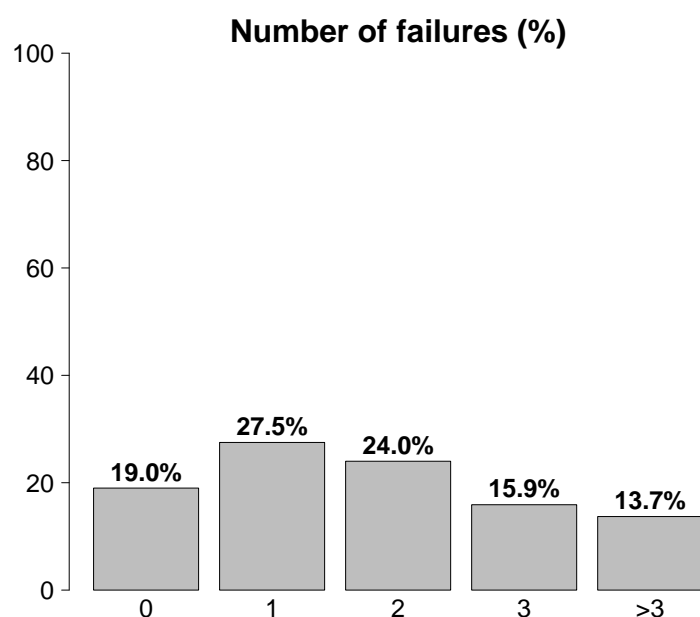
Non surgical interventions	N	%
Elective (N=91)		
Interventional endoscopy	28	30.8
Interventional radiology	21	23.1
Interventional neuroradiology	13	14.3
Interventional cardiology	2	2.2
Missing	27	

Surgical interventions	N	%
Emergency (N=463)		
Interventional radiology	187	40.4
Interventional endoscopy	106	22.9
Interventional neuroradiology	98	21.2
Interventional cardiology	25	5.4
Missing	45	

National report for general ICUs - Year 2013

Characteristics on admission - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Reason for admission	N	%
Monitoring/Weaning	2444	28.8
Post surgical weaning	1170	13.8
Surgical monitoring	1257	14.8
Post interventional weaning	7	0.1
Interventional monitoring	8	0.1
Non surgical monitoring	0	0.0
Missing	2	
Admission for procedures/treatments	0	0.0
Intensive Treatment	6033	71.2
Only ventilatory support	2732	32.2
Only cardiovascular support	422	5.0
Ventilatory and cardiovascular support	2879	34.0
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	1609	19.0
Yes	6868	81.0
A: Respiratory failure	5611	66.2
B: Cardiovascular failure	3301	38.9
C: Neurological failure	777	9.2
D: Hepatic failure	39	0.5
E: Renal failure	3219	38.0
F: Acute skin failure	3	0.0
G: Metabolic failure	2116	25.0
H: Coagulation failure	214	2.5
Missing	0	

Failures on admission (top 10)	N	%
A	1499	17.7
ABEG	819	9.7
AB	798	9.4
ABE	540	6.4
E	516	6.1
AE	439	5.2
AC	322	3.8
ABG	239	2.8
AEG	192	2.3
B	172	2.0
Missing	0	

Respiratory failure	N	%
None	2866	33.8
Only hypoxic failure	1516	17.9
Only hypercapnic failure	118	1.4
Hypoxic-hypercapnic failure	272	3.2
Intubation for airway maint.	3705	43.7
Missing	0	

Cardiovascular failure	N	%
None	5176	61.1
Without shock	657	7.8
Cardiogenic shock	131	1.5
Septic shock	967	11.4
Haemorrhagic/hypovolemic shock	853	10.1
Hypovolemic shock	313	3.7
Anaphylactic shock	2	0.0
Neurogenic shock	102	1.2
Other shock	78	0.9
Mixed shock	198	2.3
Missing	0	

Neurologic failure	N	%
None	5359	87.3
Cerebral coma	607	9.9
Metabolic coma	100	1.6
Postanoxic coma	60	1.0
Toxic coma	10	0.2
Missing or not evaluable	2341	

Renal failure (AKIN)	N	%
None	5258	62.0
Mild	1742	20.5
Moderate	782	9.2
Severe	695	8.2
Missing	0	

Metabolic failure	N	%
None	6361	75.0
pH \leq 7.3, PaCO ₂ $<$ 45 mmHg	707	8.3
Base deficit \geq 5 mmol/L, lactate $>$ 1.5x	1409	16.6
Missing	0	

National report for general ICUs - Year 2013**Characteristics on admission** - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

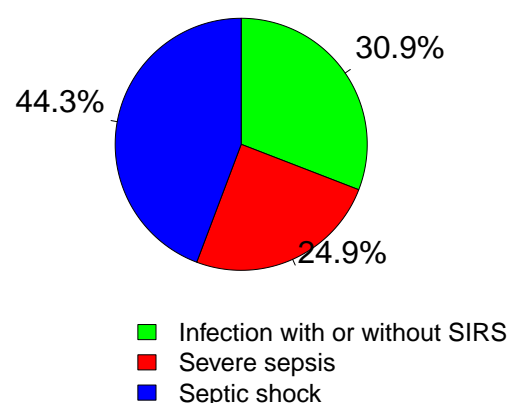
Clinical conditions on admission	N	%
Respiratory	889	10.5
Pleural effusion	233	2.7
Atelectasis	121	1.4
Upper respiratory tract disease	118	1.4
Aspiration pneumonia	101	1.2
Acute exacerbation of COPD	85	1.0
Cardiovascular	1017	12.0
Ruptured or fissured aneurysm	332	3.9
Peripheral vascular disease	180	2.1
Acute severe arrhythmia: tachycardias	143	1.7
Left heart failure without pulm. edema	79	0.9
Cardiac arrest	69	0.8
Neurological	924	10.9
Spontaneous Intraparenchymal bleeding	333	3.9
Spontaneous Subarachnoid haemorrhage	215	2.5
Cerebral Aneurysm	170	2.0
Cerebral artery stroke	90	1.1
Chronic Subdural haematoma	90	1.1
Gastrointestinal and hepatic	3513	41.4
Gastrointestinal perforation	1145	13.5
Intestinal occlusion	900	10.6
Bowel ischaemia	435	5.1
Digestive tract malignancy	306	3.6
Intrabdominal bleeding (non traumatic)	287	3.4
Trauma (anatomical districts)	1854	21.9
Pelvis/bone/joint & muscle	896	10.6
Head	749	8.8
Chest	660	7.8
Abdomen	535	6.3
Spine	383	4.5
Major vessels injury	88	1.0
Miscellaneous	31	0.4
Other	1420	16.8
Metabolic disorder	348	4.1
Nephro-urologic disease	293	3.5
Other disease	245	2.9
Coagulation disorder	214	2.5
ENT/maxillofacial disease	107	1.3
Post transplantation	261	3.1
Liver transplantation	159	1.9
Renal transplantation	67	0.8
Infections	2537	29.9
NON-surgical secondary peritonitis	921	10.9
Post-surgical peritonitis	454	5.4
Pneumonia	250	2.9
Primary peritonitis	214	2.5
Cholecystitis/choolangitis	191	2.3
NON-surgical skin/soft tissue infection	161	1.9
NON-surgical urinary tract infection	133	1.6
Clinical sepsis	52	0.6
L.R.T.I. other than pneumonia	47	0.6
Post-surgical skin/soft tissue infection	46	0.5
Missing	0	

Trauma (anatomical districts)	N	%
Head	749	8.8
Traumatic Subdural haematoma	256	3.0
Maxillofacial fracture	229	2.7
Traumatic subarachnoid haemorrhage	194	2.3
Skull fracture	164	1.9
Cerebral contusion/laceration	111	1.3
Spine	383	4.5
Vertebral fracture, without deficit	291	3.4
Cervical injury, incomplete deficit	28	0.3
Paraplegia	21	0.2
Chest	660	7.8
Traum. haemothorax/pneumothorax	306	3.6
Other injuries of the chest	251	3.0
Severe lung contusion/laceration	193	2.3
Abdomen	535	6.3
Spleen: Massive rupture	148	1.7
Spleen: Moderate-Severe laceration	127	1.5
Minor injuries of the abdomen	107	1.3
Pelvis/bone/joint & muscle	896	10.6
Long bone fracture	696	8.2
Multiple fracture of the pelvis	225	2.7
Very severe or open fracture of the pelvis	80	0.9
Major vessels injury	88	1.0
Proximal limbs vessels: transection	46	0.5
Neck vessels: dissection/transection	13	0.2
Major abdominal vessels: transection	13	0.2
Miscellaneous	31	0.4
Burns (>30% BSA)	25	0.3
Inhalation injury	7	0.1
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	5940	70.1
Infection with or without SIRS	782	9.2
Severe sepsis	630	7.4
Septic shock	1122	13.2
Missing	3	

Infection severity on admission

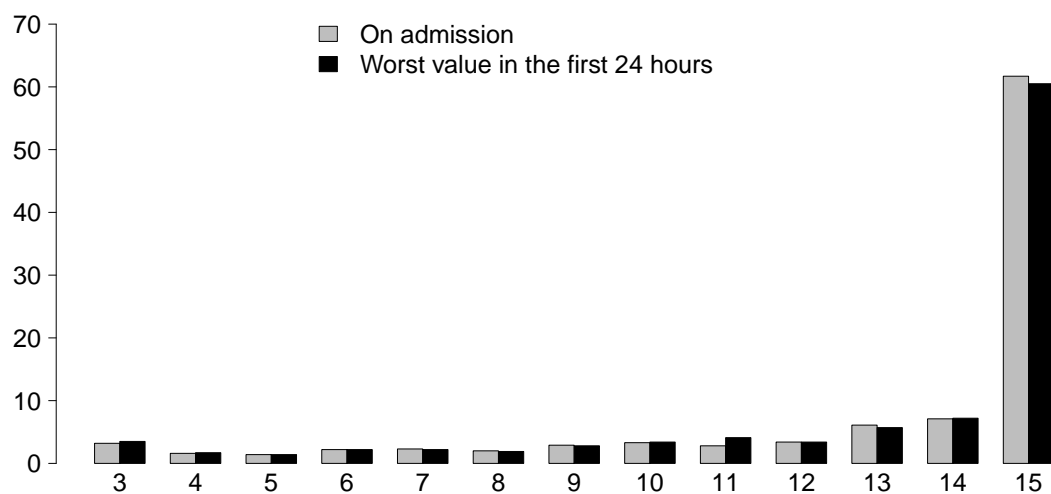
Patients infected (N=2534)



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Severity scores - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Glasgow Coma Scale (%)



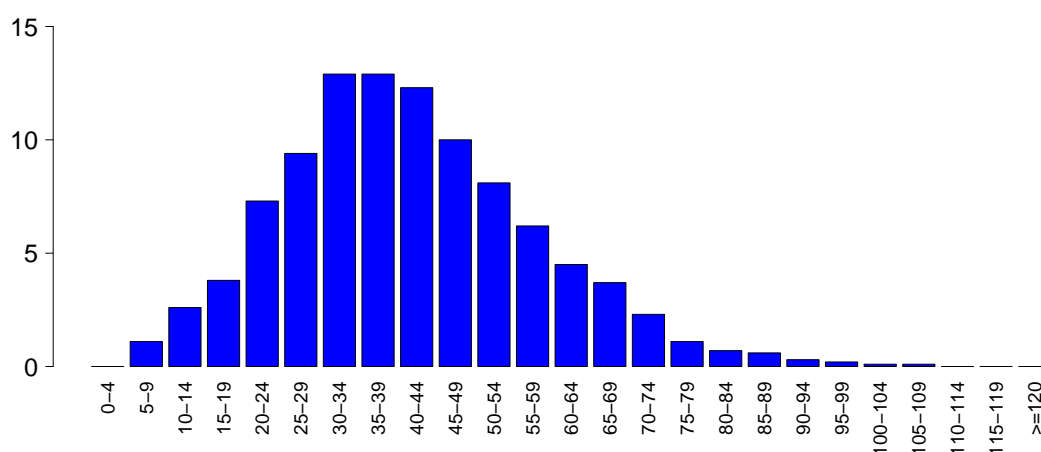
GCS (admission)

Median	15
Q1-Q3	12-15
Not evaluable	2341
Missing	0

GCS (first 24 hours)

Median	15
Q1-Q3	12-15
Not evaluable	1746
Missing	0

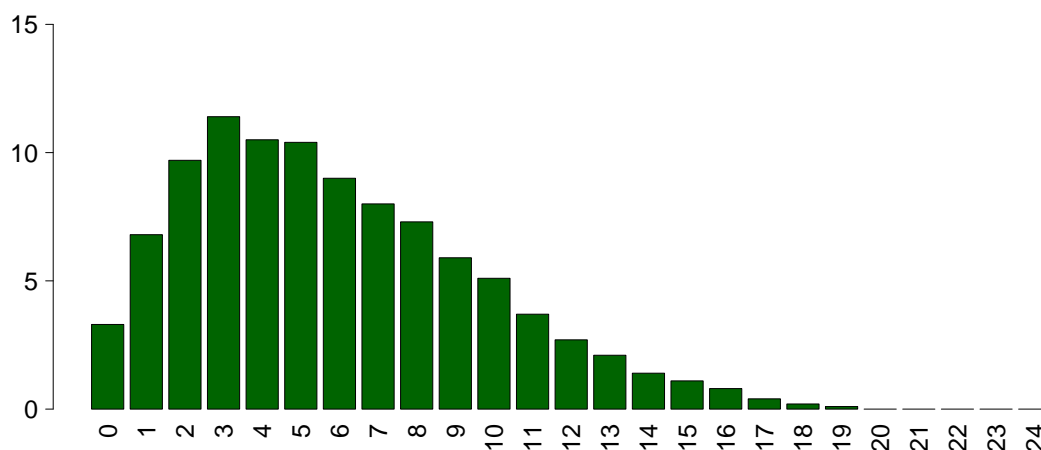
SAPS II (%)



SAPSII

Mean	41.2
SD	16.4
Median	40
Q1-Q3	30-51
Not evaluable	1746
Missing	0

SOFA (%)



SOFA

Mean	5.9
SD	3.8
Median	5
Q1-Q3	3-8
Not evaluable	1746
Missing	0

National report for general ICUs - Year 2013

Characteristics during the stay - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Complications during the stay	N	%
No	5333	62.9
Yes	3144	37.1
Missing	0	

Failures during the stay	N	%
No	7165	84.5
Yes	1312	15.5
A: Respiratory failure	406	4.8
B: Cardiovascular failure	691	8.2
C: Neurological failure	73	0.9
D: Hepatic failure	55	0.6
E: Renal failure (AKIN)	491	5.8
F: Acute skin failure	3	0.0
G: Metabolic failure	104	1.2
H: Coagulation failure	79	0.9
Missing	0	

Failures during the stay (top 10)	N	%
B	372	4.4
E	215	2.5
A	192	2.3
BE	98	1.2
AB	77	0.9
G	59	0.7
ABE	48	0.6
AE	27	0.3
D	24	0.3
C	22	0.3
Missing	0	

Respiratory failure occurred	N	%
None	8071	95.2
Intubation for airway maint.	84	1.0
Hypoxic failure	302	3.6
Hypercapnic failure	82	1.0
Missing	0	

Cardiovascular failure occurred	N	%
None	7786	91.8
Cardiogenic shock	126	1.5
Hypovolemic shock	85	1.0
Haemorrhagic/hypovolemic shock	92	1.1
Septic shock	357	4.2
Anaphylactic shock	3	0.0
Neurogenic shock	28	0.3
Other shock	41	0.5
Missing	0	

Neurological failure occurred	N	%
None	8404	99.1
Cerebral coma	49	0.6
Metabolic coma	21	0.2
Postanoxic coma	3	0.0
Missing	0	

Renal failure occurred (AKIN)	N	%
None	7986	94.2
Mild	82	1.0
Moderate	78	0.9
Severe	331	3.9
Missing	0	

Complications during the stay	N	%
Respiratory	628	7.4
Pleural effusion	264	3.1
Atelectasis	183	2.2
Pneumothorax/Pneumomediastinum	75	0.9
Mild ARDS	60	0.7
Severe ARDS	55	0.6
Cardiovascular	707	8.3
Acute severe arrhythmia: tachycardias	333	3.9
Cardiac arrest	114	1.3
Deep venous thrombosis	56	0.7
Left heart failure w/o pulm. edema	54	0.6
Peripheral vascular disease	52	0.6
Neurological	603	7.1
Drowsiness/agitation/delirium	256	3.0
Intracranial hypertension	100	1.2
Seizures	91	1.1
Brain edema	86	1.0
New ischaemic stroke	49	0.6
Gastrointestinal and hepatic	497	5.9
Bowel ischaemia	96	1.1
Gastrointestinal perforation	86	1.0
Anastomotic dehiscence	79	0.9
Paralytic Ileus	56	0.7
Intrabdominal bleeding	46	0.5
Other	291	3.4
Metabolic disorder	104	1.2
Nephro-urologic disease	81	1.0
Other disease	72	0.8
Other skin and/or soft tissue pathology	27	0.3
Extremity compartment syndrome (severe)	24	0.3
Fat embolism	5	0.1
Graft vascular thrombosis	5	0.1
Infections	1131	13.3
Pneumonia	423	5.0
L.R.T.I. other than pneumonia	169	2.0
Post-surgical peritonitis	121	1.4
Catheter-related bacteremia (CR-BSI)	119	1.4
NON-surgical urinary tract infection	118	1.4
Primary bacteraemia of unknown origin	107	1.3
Post-surgical skin/soft tissue infection	76	0.9
NON-surgical secondary peritonitis	34	0.4
Clinical sepsis	32	0.4
Upper respiratory tract infection	30	0.4
Missing	0	

National report for general ICUs - Year 2013

Characteristics during the stay - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Infections		N	%	Maximum severity of infection		N	%
	None	5148	60.7		None	5148	60.9
	Only on admission	2198	25.9		Infection with or without SIRS	997	11.8
	On admission and during ICU stay	339	4.0		Severe sepsis	920	10.9
	Only during ICU stay	792	9.3		Septic shock	1386	16.4
	Missing	0			Missing	26	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock
Admission	None	5148 (87.0%)	314 (5.3%)	312 (5.3%)	142 (2.4%)	5916
	Infection with or without SIRS	-	683 (87.3%)	63 (8.1%)	36 (4.6%)	782
	Severe sepsis	-	-	545 (86.5%)	85 (13.5%)	630
	Septic shock	-	-	-	1122 (100.0%)	1122
	TOT	5148	997	920	1385	8450

Ventil. Associat. Pneumonia (VAP)	N	%
No	8106	95.6
Yes	371	4.4
Missing	0	

Incidence of VAP

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

Estimate	10.4
CI (95%)	9.4-11.6

Incidence of VAP

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

Estimate	8.3%
CI (95%)	7.5-9.2

Catheter Bacteraemia (CR-BSI)	N	%
No	8358	98.6
Yes	119	1.4
Missing	0	

Incidence of CR-BSI

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

Estimate	2.0
CI (95%)	1.7-2.4

Incidence of CR-BSI

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

Estimate	2.4%
CI (95%)	2.0-2.9

National report for general ICUs - Year 2013
Process indicators - Adult emergency surgical patients with LOS \geq 24 hours 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)	8332	98.3										
Invasive ventilation	7332	86.5	5805	68.5	910	10.7	2	1-6	0	0	0-0	0
Non invasive ventilation	969	11.4	83	1	243	2.9	2	1-4	0	1	0-4	0
Tracheostomy	1033	12.2	129	1.5	842	9.9	12	6-20	1	8	4-13	0
iNO (inhaled nitric oxide)	14	0.2	5	0.1	2	0	2	1-3	0	3	1-6	0
Central Venous Catheter	6935	81.8	3825	45.1	5719	67.5	5	2-11	0	0	0-0	0
Arterial Catheter	6967	82.2	4149	48.9	1791	21.1	4	2-9	0	0	0-0	0
Vasoactive drugs	3808	44.9	1907	22.5	520	6.1	2	1-5	0	0	0-0	0
Antiarrhythmics	739	8.7	143	1.7	332	3.9	3	1-6	0	1	0-3	0
IABP	4	0.0	2	0	0	0	1	1-1	0	1	0-2	0
Invasive monitoring of C.O.	609	7.2	226	2.7	78	0.9	4	2-7	0	0	0-1	0
Continuous monitoring of ScVO ₂	36	0.4	17	0.2	4	0	2	1-6	0	0	0-2	0
Temporary pacing	15	0.2	4	0	7	0.1	4	1-7	0	1	0-8	0
Ventricular assistance	0	0.0										
DC-shock	58	0.7								1	0-2	0
CPR	121	1.4								1	0-4	0
Massive blood transfusion	421	5.0								0	0-0	0
ICP monitoring without liquor-drainage	192	2.3	76	0.9	25	0.3	7	4-11	0	0	0-1	0
ICP monitoring with liquor-drainage	250	2.9	132	1.6	92	1.1	10	4-16	0	0	0-1	0
External ventricular drainage without ICP	69	0.8	49	0.6	26	0.3	9	3-12	0	0	0-1	0
Haemofiltration	382	4.5	31	0.4	74	0.9	4	2-8	0	1	0-3	0
Haemodialysis	215	2.5	30	0.4	80	0.9	4	1-10	0	2	1-5	0
ECMO	8	0.1	4	0	0	0	4	2-8	0	2	1-2	0
Hepatic clearance techniques	1	0.0										
Clearance techniques during sepsis	82	1.0	5	0.1	5	0.1	2	1-5	0	1	0-2	0
IAP (intra-abdominal pressure)	255	3.0										
Hypothermia	21	0.2										
Enteral nutrition	2826	33.3	219	2.6	1852	21.8	7	3-15	0	2	1-4	0
Parenteral nutrition	3514	41.5	401	4.7	2271	26.8	4	2-9	0	1	0-2	0
SDD (Topical, Topical and systemic)	72	0.8										
Patient restraint	373	4.4										
Peridural catheter	148	1.7	97	1.1	96	1.1	3	2-5	0	2	0-4	0
Electrical cardioversion	65	0.8								2	1-3	0
Vacuum therapy	75	0.9										
Antibiotics	7420	87.5										
Antibiotics for surgical prophylaxis	4758	56.1	3340	39.4	2792	32.9	2	1-5	0	0	0-0	0
Antibiotics for medical prophylaxis	546	6.4	182	2.1	272	3.2	5	2-8	0	0	0-1	0
Empirical antibiotic therapy	2324	27.4	1178	13.9	1262	14.9	4	2-7	0	0	0-2	0
Targeted antibiotic therapy	1303	15.4	131	1.5	823	9.7	8	4-14	0	5	3-9	0

National report for general ICUs - Year 2013**Process indicators** - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Invasive ventilation (N=7332)	N	%	Length (days)				
			Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	1900	25.7	7.4	10.1	4	1-9	0
For airway maintenance	3663	49.5	6.3	9.0	3	1-8	0
In weaning	1149	15.5	0.5	0.5	1	0-1	0
Not evaluable	691	9.3	3.6	7.3	1	0-3	78
Reintubation within 48 hours	181	2.4	6.3	8.2	3	1.0-8.0	0

Non invasive ventilation (N=969)	N	%
Non invasive ventilation only	239	24.7
Non invasive ventilation failed	79	8.2
For weaning	573	59.1
Other	78	8.0
Missing	0	

Tracheostomy (N=1033)	N	%
Surgical	240	23.2
Percutwist	178	17.2
Ciaglia	136	13.2
Monodil. Ciaglia	283	27.4
Fantoni	52	5.0
Griggs	98	9.5
Other Kind	46	4.5
Missing	0	

Tracheostomy - Days after the beginning of inv. vent.

N	1017
Mean	8.5
SD	7.9
Median	7
Q1-Q3	3-12

Invasive monitoring of C.O. (N=609)	N	%
Swan Ganz	223	36.6
PICCO	298	48.9
LIDCO	2	0.3
Vigileo-PRAM	76	12.5
Other	10	1.6
Missing	0	

SDD (N=72)	N	%
Topical	41	56.9
Topical and systemic	31	43.1
Missing	0	

Antibiotic therapy

Pts. infected in ICU only (N=792)	N	%
Only empirical	164	24.8
Only targeted	285	43.1
Targeted after empirical	156	23.6
Other	56	8.5
Missing	131	

Surgical interventions	N	%
No	7722	91.1
Yes	755	8.9
Missing	0	

Number of surgical interventions	N	%
0	7722	91.1
1	564	6.7
2	124	1.5
3	41	0.5
>3	26	0.3
Missing	0	

Surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	9.3	10.7	6	3-11	2

Surgical interventions (top 10)	N	%
Gastrointestinal surgery	416	4.9
Orthopaedic surgery	170	2.0
Neurosurgery	121	1.4
Other surgery	67	0.8
Plastic surgery	43	0.5
Maxillo-Facial surgery	36	0.4
Peripheral vascular surgery	35	0.4
ENT surgery	32	0.4
Pancreatic surgery	24	0.3
Nephro/Urological surgery	24	0.3
Missing	0	

Non surgical interventions	N	%
No	8303	97.9
Yes	174	2.1
Missing	0	

Non surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	15.6	19.6	11	5-18	4

Non surgical interventions	N	%
Interventional endoscopy	91	1.1
Interventional radiology	70	0.8
Interventional neuroradiology	29	0.3
Interventional cardiology	10	0.1
Missing	0	

National report for general ICUs - Year 2013**Outcome indicators** - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

ICU outcome	N	%
Dead	1275	15.0
Transferred to same hospital	6560	77.4
Transferred to other hospital	601	7.1
Discharged home	10	0.1
Disch. terminally ill	30	0.4
Missing	1	

Transferred to (N=7161)	N	%
Ward	5778	80.7
Other ICU	396	5.5
High dependency care unit	787	11.0
Rehabilitation	170	2.4
Day hospital or Long-term care	30	0.4
Missing	0	

Reason for transfer to Other ICU (N=415)	N	%
Specialist expertise	88	21.2
Step-up care	21	5.1
Logistical/organizational reasons	282	68.0
Step-down care	24	5.8
Missing	0	

Transferred to Same hospital (N=6560)	N	%
Ward	5642	86.0
Other ICU	104	1.6
High dependency care unit	762	11.6
Rehabilitation	42	0.6
Day hospital or Long-term care	10	0.2
Missing	0	

Transferred to Other hospital (N=601)	N	%
Ward	136	22.6
Other ICU	292	48.6
High dependency care unit	25	4.2
Rehabilitation	128	21.3
Day hospital or Long-term care	20	3.3
Missing	0	

ICU mortality	N	%
Alive	7171	84.6
Dead	1305	15.4
Missing	1	

Timing of ICU mortality (N=1305)	N	%
Daytime (08:00AM - 07:59PM)	889	68.1
Nighttime (08:00PM - 07:59AM)	416	31.9
Weekdays (Monday - Friday)	956	73.3
Weekend (Saturday - Sunday)	349	26.7
Missing	0	

Brain death assessment (N=1305)	N	%
Yes, with organ donation	87	6.8
Yes, without organ donation	64	5.0
No	1124	88.2
Missing	30	

Organ/Tissue removal (N=87)	N	%
No removal	3	3.4
Only organ removal	47	54.0
Only tissue removal	15	17.2
Organ and tissue removal	22	25.3
Missing	0	

Hospital mortality	N	%
Dead	1960	23.1
Transf. to other acute-care hospital	747	8.8
Transf. to other type of hosp. stay	1346	15.9
Nursing home	146	1.7
Voluntary discharge	44	0.5
Discharged home	4234	49.9
Missing	0	

To other type of H stay (N=1346)	N	%
Rehabilitation in the same institute	267	19.9
Rehabilitation in other institute	709	52.7
DH/long-term care, same inst.	127	9.4
DH/long-term care, other inst.	242	18.0
Missing	1	

Disch. terminally ill (N=6517)	N	%
Yes	112	1.7
No	6405	98.3
Missing	0	

Hospital mortality	N	%
Alive	6407	75.6
Dead	2070	24.4
Missing	0	

Timing of hosp. mortality (N=2070)	N	%
In ICU	1305	63.0
Within 24 hours after ICU	27	1.3
Within 48 hours after ICU	73	3.5
Within 72 hours after ICU	121	5.8
Within 96 hours after ICU	159	7.7
After more than 96 hours after ICU	606	29.3
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=765)		
Mean		18.1
SD		21.4
Median		10
Q1-Q3		4-24
Missing		0

National report for general ICUs - Year 2013**Outcome indicators** - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	6373	75.2
Dead	2104	24.8
Missing	0	

ICU stay (days)		
	Mean	7.9
	SD	11.1
	Median	4
	Q1-Q3	2-9
	Missing	0

ICU stay (days)		
Alive (N=7171)		
	Mean	7.4
	SD	10.7
	Median	4
	Q1-Q3	2-8
	Missing	0

ICU stay (days)		
Dead (N=1305)		
	Mean	10.8
	SD	12.9
	Median	6
	Q1-Q3	2-14
	Missing	0

Stay after ICU (days)		
Alive (N=7171)		
	Mean	15.8
	SD	19.1
	Median	10
	Q1-Q3	6-20
	Missing	3

Hospital stay (days)		
	Mean	24.9
	SD	23.9
	Median	18
	Q1-Q3	10-32
	Missing	0

Hospital stay (days)		
Alive (N=6407)		
	Mean	26.2
	SD	24.2
	Median	19
	Q1-Q3	11-33
	Missing	0

Hospital stay (days)		
Dead (N=2070)		
	Mean	21.2
	SD	22.3
	Median	14
	Q1-Q3	6-28
	Missing	0

National report for general ICUs - Year 2013

Characteristics on admission - Adult patients with LOS<24 hours evaluated in the GiViTI model

Patients (N): 14433

Sex		N	%
	Male	8308	57.6
	Female	6125	42.4
	Missing	0	

Age (years)		N	%
	17-45	1757	12.2
	46-65	3683	25.5
	66-75	3932	27.2
	>75	5061	35.1
	Missing	0	
	Mean	66.9	
	SD	16.3	
	Median	71	
	Q1-Q3	58-79	
	Min-Max	17-105	

Body mass Index (BMI)		N	%
	Underweight	883	6.1
	Normal	6879	47.7
	Overweight	4376	30.3
	Obese	2295	15.9
	Missing	0	

Pregnancy status		N	%
Females (N=6125)			
	Not fertile	3198	52.3
	Not pregnant/Unknown	2718	44.4
	Currently pregnant	22	0.4
	Post partum	180	2.9
	Missing	7	

Comorbidities		N	%
	No	2244	15.5
	Yes	12189	84.5
	Missing	0	

Comorbidities (top 10)		N	%
	Hypertension	7557	52.4
	Any tumour without metastasis	2443	16.9
	Moderate COPD	2250	15.6
	Arrhythmia	2241	15.5
	Myocardial infarction	1946	13.5
	Diabetes Type II without insulin tr.	1705	11.8
	Peripheral vascular disease	1666	11.5
	Cerebrovascular disease	1424	9.9
	NYHA class II-III	1377	9.5
	Moderate or severe renal disease	1060	7.3
	Missing	0	

Stay before ICU (days)			
	Mean	3.6	
	SD	9.1	
	Median	1	
	Q1-Q3	0-3	
	Missing	0	

Source of admission		N	%
	Same hospital	13914	96.4
	Other hospital	497	3.4
	Long-term chronic care hospital	22	0.2
	Directly from the community (e.g., ambulance, home, ...)	0	0.0
	Missing	0	

Ward of admission		N	%
Hospital (N=14411)			
	Medical ward	1188	8.2
	Surgical ward	10019	69.5
	Emergency room	2849	19.8
	Other ICU	217	1.5
	High dependency care unit	138	1.0
	Missing	0	

Reason for transfer from		N	%
Other ICU (N=217)			
	Specialist expertise	63	29.0
	Step-up care	71	32.7
	Logistical/organizational reasons	76	35.0
	Step-down care	7	3.2
	Missing	0	

Ward of admission		N	%
Same hospital (N=13914)			
	Medical ward	1104	7.9
	Surgical ward	9961	71.6
	Emergency room	2584	18.6
	Other ICU	137	1.0
	High dependency care unit	128	0.9
	Missing	0	

Ward of admission		N	%
Other hospital (N=497)			
	Medical ward	84	16.9
	Surgical ward	58	11.7
	Emergency room	265	53.3
	Other ICU	80	16.1
	High dependency care unit	10	2.0
	Missing	0	

Scheduled admission		N	%
	No	7935	55.0
	Yes	6498	45.0
	Missing	0	

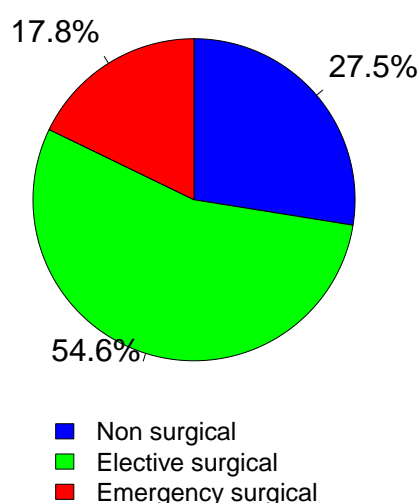
National report for general ICUs - Year 2013

Characteristics on admission - Adult patients with LOS<24 hours evaluated in the GiViTI model

Trauma	N	%
No	13161	91.2
Yes	1272	8.8
Multiple trauma	294	2.0
Missing	0	

Surgical status	N	%
Non surgical	3975	27.5
Elective surgical	7884	54.6
Emergency surgical	2574	17.8
Missing	0	

Surgical status



Source of admission	N	%
Surgical pts. (N=10458)		
Operating theatre of surgical ward	9437	90.3
Operating theatre of emergency room	343	3.3
Surgical ward	238	2.3
Other	437	4.2
Missing	3	

Surgical interventions (top 10)	N	%
Elective surgical (N=7884)		
Gastrointestinal surgery	1921	24.4
Nephro/Urological surgery	1092	13.9
Orthopaedic surgery	982	12.5
Neurosurgery	603	7.6
Thoracic surgery	542	6.9
Abdominal vascular surgery	516	6.5
ENT surgery	476	6.0
Gynaecological surgery	430	5.5
Peripheral vascular surgery	364	4.6
Hepatic surgery	316	4.0
Missing	0	

Timing	N	%
Elective surgical (N=7884)		
From -7 to -3 days	23	0.3
From -2 to -1 days	84	1.1
On ICU admission day	8137	103.2
The day after ICU admission	2	0.0
Missing	22	

Surgical interventions (top 10)	N	%
Emergency surgical (N=2574)		
Gastrointestinal surgery	1119	43.5
Orthopaedic surgery	346	13.4
Peripheral vascular surgery	148	5.7
Neurosurgery	135	5.2
Abdominal vascular surgery	133	5.2
Obstetric surgery	128	5.0
Biliary tract surgery	112	4.4
Nephro/Urological surgery	104	4.0
Gynaecological surgery	78	3.0
Other surgery	62	2.4
Missing	0	

Timing	N	%
Emergency surgical (N=2574)		
From -7 to -3 days	22	0.9
From -2 to -1 days	240	9.3
On ICU admission day	2386	92.7
The day after ICU admission	19	0.7
Missing	9	

Non surgical interventions	N	%
None	13596	94.2
Elective	282	2.0
Emergency	555	3.8
Missing	0	

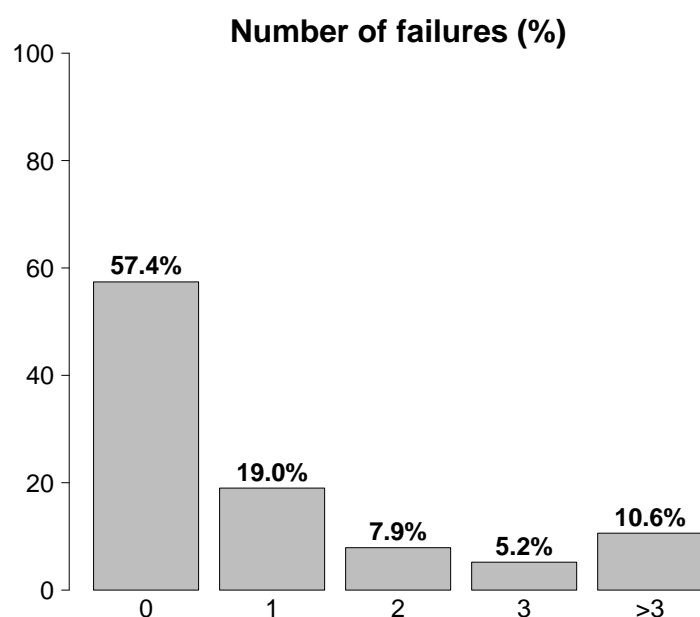
Non surgical interventions	N	%
Elective (N=282)		
Interventional endoscopy	56	19.9
Interventional cardiology	55	19.5
Interventional neuroradiology	51	18.1
Interventional radiology	49	17.4
Missing	71	

Surgical interventions	N	%
Emergency (N=555)		
Interventional cardiology	225	40.5
Interventional endoscopy	147	26.5
Interventional radiology	104	18.7
Interventional neuroradiology	56	10.1
Missing	23	

National report for general ICUs - Year 2013

Characteristics on admission - Adult patients with LOS<24 hours evaluated in the GiViTI model

Reason for admission	N	%
Monitoring/Weaning	10204	70.7
Post surgical weaning	4095	28.5
Surgical monitoring	4768	33.1
Post interventional weaning	67	0.5
Interventional monitoring	239	1.7
Non surgical monitoring	987	6.9
Missing	48	
Admission for procedures/treatments	1	0.0
Intensive Treatment	4228	29.3
Only ventilatory support	1885	13.1
Only cardiovascular support	355	2.5
Ventilatory and cardiovascular support	1988	13.8
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	8284	57.4
Yes	6149	42.6
A: Respiratory failure	3873	26.8
B: Cardiovascular failure	2343	16.2
C: Neurological failure	1270	8.8
D: Hepatic failure	104	0.7
E: Renal failure	3725	25.8
F: Acute skin failure	7	0.0
G: Metabolic failure	2539	17.6
H: Coagulation failure	201	1.4
Missing	0	

Failures on admission (top 10)	N	%
E	1265	8.8
A	995	6.9
ABEG	649	4.5
ABCEG	495	3.4
G	268	1.9
EG	249	1.7
AC	240	1.7
AB	208	1.4
AE	206	1.4
AEG	168	1.2
Missing	0	

Respiratory failure	N	%
None	10560	73.2
Only hypoxic failure	1144	7.9
Only hypercapnic failure	189	1.3
Hypoxic-hypercapnic failure	427	3.0
Intubation for airway maint.	2113	14.6
Missing	0	

Cardiovascular failure	N	%
None	12090	83.8
Without shock	272	1.9
Cardiogenic shock	779	5.4
Septic shock	389	2.7
Haemorrhagic/hypovolemic shock	381	2.6
Hypovolemic shock	153	1.1
Anaphylactic shock	12	0.1
Neurogenic shock	79	0.5
Other shock	111	0.8
Mixed shock	167	1.2
Missing	0	

Neurologic failure	N	%
None	10686	89.4
Cerebral coma	516	4.3
Metabolic coma	268	2.2
Postanoxic coma	444	3.7
Toxic coma	42	0.4
Missing or not evaluable	2477	

Renal failure (AKIN)	N	%
None	10708	74.2
Mild	1751	12.1
Moderate	738	5.1
Severe	1236	8.6
Missing	0	

Metabolic failure	N	%
None	11894	82.4
pH ≤ 7.3, PaCO ₂ < 45 mmHg	873	6.0
Base deficit ≥ 5 mmol/L, lactate > 1.5x	1666	11.5
Missing	0	

National report for general ICUs - Year 2013**Characteristics on admission - Adult patients with LOS<24 hours evaluated in the GiViTI model**

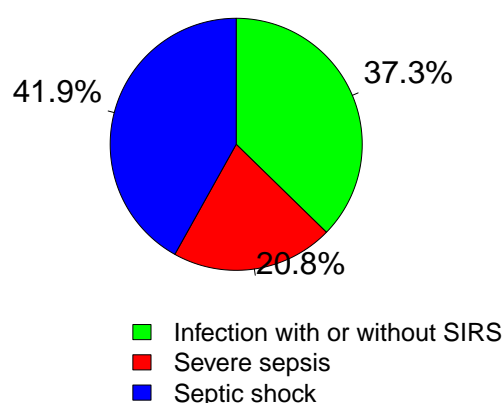
Clinical conditions on admission	N	%
Respiratory	1861	12.9
Lung cancer	480	3.3
Acute exacerbation of COPD	317	2.2
Upper respiratory tract disease	273	1.9
Pleural effusion	205	1.4
Acute asthma/bronchospasm	132	0.9
Cardiovascular	2848	19.7
Cardiac arrest	574	4.0
Non-ruptured aneurysm	487	3.4
Peripheral vascular disease	476	3.3
Left heart failure with pulmonary edema	343	2.4
Left heart failure without pulm. edema	259	1.8
Neurological	1565	10.8
Brain tumour	457	3.2
Spontaneous Intraparenchymal bleeding	239	1.7
Cerebral artery stroke	196	1.4
Seizures	193	1.3
Spontaneous Subarachnoid haemorrhage	140	1.0
Gastrointestinal and hepatic	3683	25.5
Digestive tract malignancy	1451	10.1
Intestinal occlusion	428	3.0
Hepatic malignancy	311	2.2
Gastrointestinal perforation	299	2.1
Acute bile-duct disease	289	2.0
Trauma (anatomical districts)	1272	8.8
Pelvis/bone/joint & muscle	768	5.3
Head	324	2.2
Chest	280	1.9
Spine	150	1.0
Abdomen	148	1.0
Major vessels injury	40	0.3
Miscellaneous	19	0.1
Other	4852	33.6
Nephro-urologic disease	1217	8.4
Other disease	1062	7.4
Orthopaedic disease	659	4.6
Metabolic disorder	569	3.9
ENT/maxillofacial disease	521	3.6
Post transplantation	98	0.7
Renal transplantation	60	0.4
Liver transplantation	21	0.1
Infections	1194	8.3
Pneumonia	326	2.3
NON-surgical secondary peritonitis	172	1.2
Clinical sepsis	93	0.6
NON-surgical urinary tract infection	89	0.6
Cholecystitis/choolangitis	78	0.5
Post-surgical peritonitis	65	0.5
NON-surgical skin/soft tissue infection	64	0.4
Primary bacteraemia of unknown origin	53	0.4
L.R.T.I. other than pneumonia	45	0.3
Primary peritonitis	45	0.3
Missing	0	

Trauma (anatomical districts)	N	%
Head	324	2.2
Traumatic subarachnoid haemorrhage	103	0.7
Traumatic Subdural haematoma	93	0.6
Maxillofacial fracture	86	0.6
Skull fracture	72	0.5
Cerebral contusion/laceration	57	0.4
Spine	150	1.0
Vertebral fracture, without deficit	128	0.9
Paraplegia	7	0.0
Tetraplegia	6	0.0
Chest	280	1.9
Other injuries of the chest	127	0.9
Traum. haemothorax/pneumothorax	102	0.7
Severe lung contusion/laceration	62	0.4
Abdomen	148	1.0
Spleen: Moderate-Severe laceration	39	0.3
Spleen: Massive rupture	38	0.3
Minor injuries of the abdomen	31	0.2
Pelvis/bone/joint & muscle	768	5.3
Long bone fracture	682	4.7
Multiple fracture of the pelvis	97	0.7
Very severe or open fracture of the pelvis	24	0.2
Major vessels injury	40	0.3
Proximal limbs vessels: transection	21	0.1
Aorta: rupture/dissection	7	0.0
Neck vessels: dissection/transection	6	0.0
Miscellaneous	19	0.1
Burns (>30% BSA)	12	0.1
Inhalation injury	8	0.1
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	13239	91.8
Infection with or without SIRS	440	3.1
Severe sepsis	246	1.7
Septic shock	495	3.4
Missing	13	

Infection severity on admission

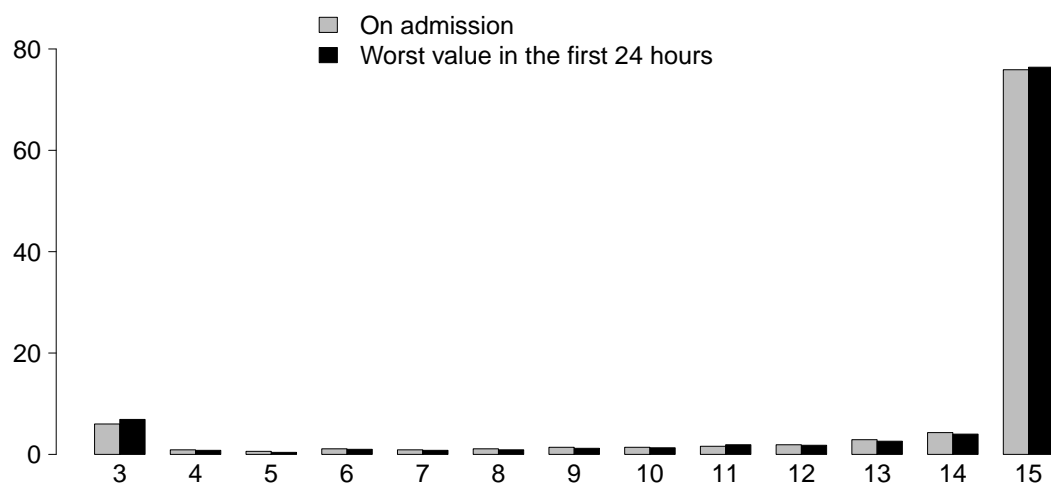
Patients infected (N=1181)



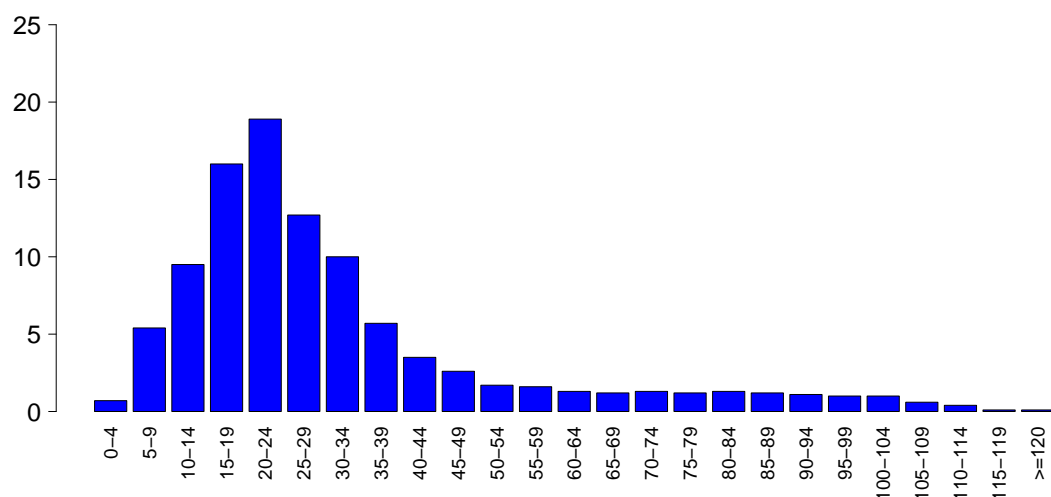
National report for general ICUs - Year 2013

Severity scores - Adult patients with LOS<24 hours evaluated in the GiViTI model

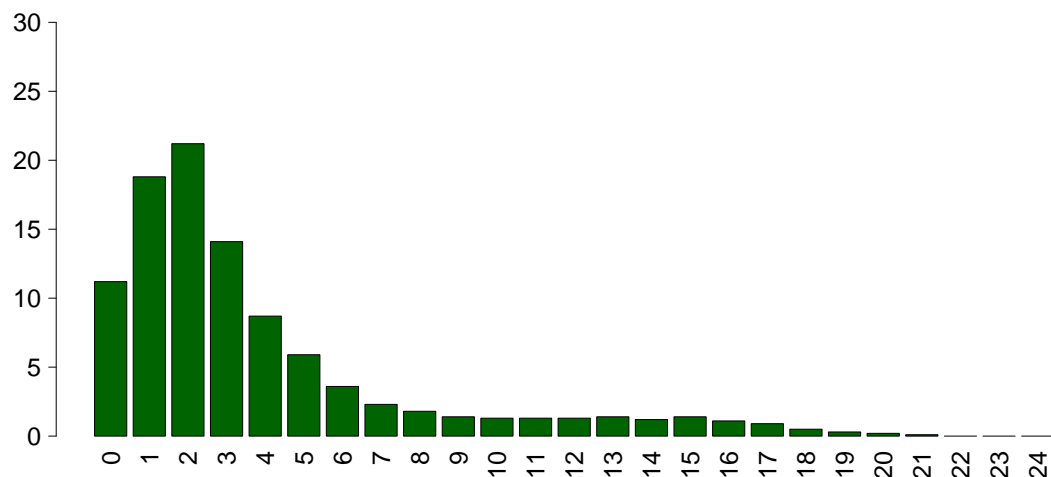
Glasgow Coma Scale (%)



SAPS II (%)



SOFA (%)



National report for general ICUs - Year 2013**Characteristics during the stay** - Adult patients with LOS<24 hours evaluated in the GiViTI model

Complications during the stay	N	%
No	12819	88.8
Yes	1614	11.2
Missing	0	

Failures during the stay	N	%
No	13883	96.2
Yes	550	3.8
A: Respiratory failure	112	0.8
B: Cardiovascular failure	285	2.0
C: Neurological failure	74	0.5
D: Hepatic failure	14	0.1
E: Renal failure (AKIN)	147	1.0
F: Acute skin failure	0	0.0
G: Metabolic failure	102	0.7
H: Coagulation failure	28	0.2
Missing	0	

Failures during the stay (top 10)	N	%
B	180	1.2
G	77	0.5
E	61	0.4
A	46	0.3
C	31	0.2
AB	23	0.2
BE	23	0.2
BC	9	0.1
ABCE	7	0.0
ABE	7	0.0
Missing	0	

Respiratory failure occurred	N	%
None	14321	99.2
Intubation for airway maint.	36	0.2
Hypoxic failure	69	0.5
Hypercapnic failure	23	0.2
Missing	0	

Cardiovascular failure occurred	N	%
None	14148	98.0
Cardiogenic shock	151	1.0
Hypovolemic shock	27	0.2
Haemorrhagic/hypovolemic shock	48	0.3
Septic shock	38	0.3
Anaphylactic shock	0	0.0
Neurogenic shock	24	0.2
Other shock	11	0.1
Missing	0	

Neurological failure occurred	N	%
None	14359	99.5
Cerebral coma	38	0.3
Metabolic coma	17	0.1
Postanoxic coma	19	0.1
Missing	0	

Renal failure occurred (AKIN)	N	%
None	14286	99.0
Mild	15	0.1
Moderate	12	0.1
Severe	120	0.8
Missing	0	

Complications during the stay	N	%
Respiratory	150	1.0
Severe ARDS	33	0.2
Pleural effusion	26	0.2
Pulmonary embolism	18	0.1
Pneumothorax/Pneumomediastinum	14	0.1
Moderate ARDS	13	0.1
Cardiovascular	916	6.3
Cardiac arrest	687	4.8
Acute severe arrhythmia: tachycardias	99	0.7
Acute severe arrhythmia: bradycardias	83	0.6
Left heart failure w/o pulm. edema	56	0.4
Pulmonary edema	40	0.3
Neurological	183	1.3
Drowsiness/agitation/delirium	80	0.6
Brain edema	45	0.3
Intracranial hypertension	31	0.2
Seizures	19	0.1
Non-surgical intracranial bleeding	15	0.1
Gastrointestinal and hepatic	94	0.7
Bowel ischaemia	26	0.2
Gastrointestinal bleeding: upper tract	19	0.1
Intrabdominal bleeding	18	0.1
Abdominal compartment syndrome	13	0.1
Liver Dysfunction Syndrome	11	0.1
Other	153	1.1
Metabolic disorder	102	0.7
Other disease	42	0.3
Nephro-urologic disease	26	0.2
Other skin and/or soft tissue pathology	3	0.0
Iatrogenic major vessels injury	2	0.0
Extremity compartment syndrome (severe)	1	0.0
HELLP syndrome	1	0.0
Infections	27	0.2
L.R.T.I. other than pneumonia	5	0.0
Clinical sepsis	4	0.0
Primary peritonitis	3	0.0
Primary bacteraemia of unknown origin	2	0.0
F.U.O. fever of unknown origin	2	0.0
NON-surgical secondary peritonitis	2	0.0
NON-surgical urinary tract infection	2	0.0
Cholecystitis/cholangitis	1	0.0
NON-surgical CNS infection	1	0.0
Myocarditis	1	0.0
Missing	0	

National report for general ICUs - Year 2013

Characteristics during the stay - Adult patients with LOS<24 hours evaluated in the GiViTI model

Infections	N	%	Maximum severity of infection	N	%
None	13227	91.6	None	13227	91.7
Only on admission	1179	8.2	Infection with or without SIRS	424	2.9
On admission and during ICU stay	15	0.1	Severe sepsis	258	1.8
Only during ICU stay	12	0.1	Septic shock	509	3.5
Missing	0		Missing	15	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock
Admission	None	13227 (99.9%)	4 (0.0%)	4 (0.0%)	2 (0.0%)	13237
	Infection with or without SIRS	-	420 (95.5%)	20 (4.5%)	0 (0.0%)	440
	Severe sepsis	-	-	234 (95.1%)	12 (4.9%)	246
	Septic shock	-	-	-	495 (100.0%)	495
	TOT	13227	424	258	509	14418

National report for general ICUs - Year 2013
Process indicators - Adult patients with LOS<24 hours 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	Median	Missing
Procedures (antibiotics excluded)	12799	88.7								
Invasive ventilation	8333	57.7	6590	45.7	1478	10.2				
Non invasive ventilation	1173	8.1	324	2.2	554	3.8				
Tracheostomy	240	1.7	210	1.5	230	1.6				
iNO (inhaled nitric oxide)	4	0.0	1	0	1	0				
Central Venous Catheter	6517	45.2	4450	30.8	5533	38.3				
Arterial Catheter	9250	64.1	6399	44.3	2268	15.7				
Vasoactive drugs	2544	17.6	1291	8.9	1125	7.8				
Antiarrhythmics	405	2.8	184	1.3	227	1.6				
IABP	48	0.3	36	0.2	30	0.2				
Invasive monitoring of C.O.	125	0.9	49	0.3	55	0.4				
Continuous monitoring of ScVO2	13	0.1	2	0	5	0				
Temporary pacing	61	0.4	42	0.3	32	0.2				
Ventricular assistance	0	0.0								
DC-shock	281	1.9								
CPR	608	4.2								
Massive blood transfusion	185	1.3								
ICP monitoring without liquor-drainage	12	0.1	3	0	7	0				
ICP monitoring with liquor-drainage	36	0.2	23	0.2	32	0.2				
External ventricular drainage without ICP	6	0.0	5	0	5	0				
Haemofiltration	71	0.5	12	0.1	30	0.2				
Haemodialysis	81	0.6	24	0.2	35	0.2				
ECMO	9	0.1	1	0	9	0.1				
Hepatic clearance techniques	0	0.0								
Clearance techniques during sepsis	7	0.0	1	0	4	0				
IAP (intra-abdominal pressure)	67	0.5								
Hypothermia	57	0.4								
Enteral nutrition	241	1.7	63	0.4	192	1.3				
Parenteral nutrition	819	5.7	229	1.6	709	4.9				
SDD (Topical, Topical and systemic)	10	0.1								
Patient restraint	270	1.9								
Peridural catheter	1024	7.1	983	6.8	960	6.7				
Electrical cardioversion	25	0.2								
Vacuum therapy	8	0.1								
Antibiotics	9102	63.1								
Antibiotics for surgical prophylaxis	7335	50.8	6213	43	5253	36.4				
Antibiotics for medical prophylaxis	830	5.8	330	2.3	617	4.3				
Empirical antibiotic therapy	836	5.8	452	3.1	606	4.2				
Targeted antibiotic therapy	132	0.9	96	0.7	104	0.7				

National report for general ICUs - Year 2013**Process indicators** - Adult patients with LOS<24 hours evaluated in the GiViTI model

Invasive ventilation (N=8333)	N	%
Due to pulmonary failure	1413	16.3
For airway maintenance	2090	24.1
In weaning	4210	48.5
Not evaluable	966	11.1
Reintubation within 48 hours	5	0.1

Non invasive ventilation (N=1173)	N	%
Non invasive ventilation only	717	61.1
Non invasive ventilation failed	105	9.0
For weaning	347	29.6
Other	4	0.3
Missing	0	

Tracheostomy (N=240)	N	%
Surgical	198	82.5
Percutwist	6	2.5
Ciaglia	8	3.3
Monodil. Ciaglia	14	5.8
Fantoni	3	1.2
Griggs	4	1.7
Other Kind	7	2.9
Missing	0	

Invasive monitoring of C.O. (N=125)	N	%
Swan Ganz	31	24.8
PICCO	58	46.4
LIDCO	3	2.4
Vigileo-PRAM	32	25.6
Other	1	0.8
Missing	0	

SDD (N=10)	N	%
Topical	3	30.0
Topical and systemic	7	70.0
Missing	0	

Antibiotic therapy

Pts. infected in ICU only (N=12)	N	%
Only empirical	8	88.9
Only targeted	0	0.0
Targeted after empirical	0	0.0
Other	1	11.1
Missing	3	

National report for general ICUs - Year 2013**Outcome indicators** - Adult patients with LOS<24 hours evaluated in the GiViTI model

ICU outcome	N	%
Dead	2266	15.7
Transferred to same hospital	11534	79.9
Transferred to other hospital	520	3.6
Discharged home	79	0.5
Disch. terminally ill	34	0.2
Missing	0	

Transferred to (N=12054)	N	%
Ward	10885	90.3
Other ICU	573	4.8
High dependency care unit	575	4.8
Rehabilitation	17	0.1
Day hospital or Long-term care	4	0.0
Missing	0	

Reason for transfer to Other ICU (N=590)	N	%
Specialist expertise	350	59.3
Step-up care	101	17.1
Logistical/organizational reasons	133	22.5
Step-down care	6	1.0
Missing	0	

Transferred to Same hospital (N=11534)	N	%
Ward	10732	93.0
Other ICU	241	2.1
High dependency care unit	549	4.8
Rehabilitation	8	0.1
Day hospital or Long-term care	4	0.0
Missing	0	

Transferred to Other hospital (N=520)	N	%
Ward	153	29.4
Other ICU	332	63.8
High dependency care unit	26	5.0
Rehabilitation	9	1.7
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	12133	84.1
Dead	2300	15.9
Missing	0	

Timing of ICU mortality (N=2300)	N	%
Daytime (08:00AM - 07:59PM)	1372	59.7
Nighttime (08:00PM - 07:59AM)	928	40.3
Weekdays (Monday - Friday)	1716	74.6
Weekend (Saturday - Sunday)	584	25.4
Missing	0	

Brain death assessment (N=2300)	N	%
Yes, with organ donation	112	4.9
Yes, without organ donation	85	3.8
No	2069	91.3
Missing	34	

Organ/Tissue removal (N=112)	N	%
No removal	6	5.4
Only organ removal	49	43.8
Only tissue removal	25	22.3
Organ and tissue removal	32	28.6
Missing	0	

Hospital mortality	N	%
Dead	2787	19.3
Transf. to other acute-care hospital	763	5.3
Transf. to other type of hosp. stay	1006	7.0
Nursing home	157	1.1
Voluntary discharge	104	0.7
Discharged home	9616	66.6
Missing	0	

To other type of H stay (N=1006)	N	%
Rehabilitation in the same institute	227	22.6
Rehabilitation in other institute	516	51.3
DH/long-term care, same inst.	118	11.7
DH/long-term care, other inst.	145	14.4
Missing	0	

Disch. terminally ill (N=11646)	N	%
Yes	134	1.2
No	11512	98.8
Missing	0	

Hospital mortality	N	%
Alive	11514	79.8
Dead	2919	20.2
Missing	0	

Timing of hosp. mortality (N=2919)	N	%
In ICU	2300	78.8
Within 24 hours after ICU	53	1.8
Within 48 hours after ICU	87	3.0
Within 72 hours after ICU	127	4.4
Within 96 hours after ICU	152	5.2
After more than 96 hours after ICU	467	16.0
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=619)		
Mean		16.9
SD		20.1
Median		10
Q1-Q3		4-23.5
Missing		0

National report for general ICUs - Year 2013**Outcome indicators** - Adult patients with LOS<24 hours evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	11461	79.4
Dead	2972	20.6
Missing	0	

Stay after ICU (days)		
Alive (N=12133)		
	Mean	11.5
	SD	15.0
	Median	8
	Q1-Q3	5-14
	Missing	7

Hospital stay (days)		
	Mean	14.0
	SD	17.6
	Median	10
	Q1-Q3	5-17
	Missing	3

Hospital stay (days)		
Alive (N=11514)		
	Mean	15.5
	SD	17.6
	Median	11
	Q1-Q3	7-18
	Missing	3

Hospital stay (days)		
Dead (N=2919)		
	Mean	8.0
	SD	16.2
	Median	1
	Q1-Q3	0-8
	Missing	0

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Characteristics on admission - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

Patients (N): 7884

Sex		N	%
	Male	4675	59.3
	Female	3209	40.7
	Missing	0	

Age (years)		N	%
	17-45	744	9.4
	46-65	2161	27.4
	66-75	2466	31.3
	>75	2513	31.9
	Missing	0	
	Mean	67.4	
	SD	14.5	
	Median	70	
	Q1-Q3	60-78	
	Min-Max	17-102	

Body mass Index (BMI)		N	%
	Underweight	429	5.4
	Normal	3582	45.4
	Overweight	2446	31.0
	Obese	1427	18.1
	Missing	0	

Pregnancy status		N	%
	Females (N=3209)		
	Not fertile	1566	48.9
	Not pregnant/Unknown	1612	50.3
	Currently pregnant	3	0.1
	Post partum	24	0.7
	Missing	4	

Comorbidities		N	%
	No	981	12.4
	Yes	6903	87.6
	Missing	0	

Comorbidities (top 10)		N	%
	Hypertension	4425	56.1
	Any tumour without metastasis	1911	24.2
	Moderate COPD	1385	17.6
	Myocardial infarction	1110	14.1
	Arrhythmia	1054	13.4
	Diabetes Type II without insulin tr.	993	12.6
	Peripheral vascular disease	980	12.4
	Metastatic cancer	677	8.6
	Cerebrovascular disease	661	8.4
	NYHA class II-III	651	8.3
	Missing	0	

Stay before ICU (days)			
	Mean	4.1	
	SD	8.8	
	Median	1	
	Q1-Q3	1-4	
	Missing	0	

Source of admission		N	%
	Same hospital	7849	99.6
	Other hospital	33	0.4
	Long-term chronic care hospital	2	0.0
	Directly from the community (e.g., ambulance, home, ...)	0	0.0
	Missing	0	

Ward of admission		N	%
	Hospital (N=7882)		
	Medical ward	95	1.2
	Surgical ward	7751	98.3
	Emergency room	5	0.1
	Other ICU	23	0.3
	High dependency care unit	8	0.1
	Missing	0	

Reason for transfer from		N	%
	Other ICU (N=23)		
	Specialist expertise	8	34.8
	Step-up care	2	8.7
	Logistical/organizational reasons	13	56.5
	Step-down care	0	0.0
	Missing	0	

Ward of admission		N	%
	Same hospital (N=7849)		
	Medical ward	95	1.2
	Surgical ward	7721	98.4
	Emergency room	5	0.1
	Other ICU	20	0.3
	High dependency care unit	8	0.1
	Missing	0	

Ward of admission		N	%
	Other hospital (N=33)		
	Medical ward	0	0.0
	Surgical ward	30	90.9
	Emergency room	0	0.0
	Other ICU	3	9.1
	High dependency care unit	0	0.0
	Missing	0	

Scheduled admission		N	%
	No	1451	18.4
	Yes	6433	81.6
	Missing	0	

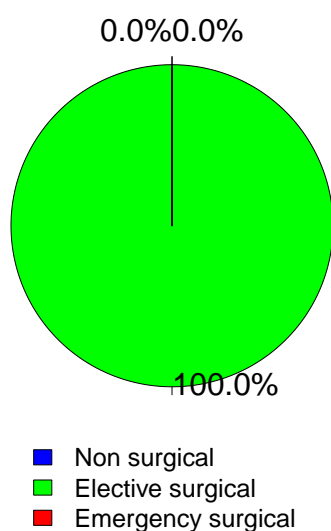
National report for general ICUs - Year 2013

Characteristics on admission - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

Trauma	N	%
No	7515	95.3
Yes	369	4.7
Multiple trauma	27	0.3
Missing	0	

Surgical status	N	%
Non surgical	0	0.0
Elective surgical	7884	100.0
Emergency surgical	0	0.0
Missing	0	

Surgical status



Timing	N	%
Elective surgical (N=7884)		
From -7 to -3 days	23	0.3
From -2 to -1 days	84	1.1
On ICU admission day	8137	103.2
The day after ICU admission	2	0.0
Missing	22	

Surgical interventions (top 10)	N	%
Emergency surgical (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
Missing	0	

Timing	N	%
Emergency surgical (N=0)		
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	

Source of admission	N	%
Surgical pts. (N=7884)		
Operating theatre of surgical ward	7603	96.5
Operating theatre of emergency room	1	0.0
Surgical ward	148	1.9
Other	130	1.6
Missing	2	

Non surgical interventions	N	%
None	7724	98.0
Elective	128	1.6
Emergency	32	0.4
Missing	0	

Surgical interventions (top 10)	N	%
Elective surgical (N=7884)		
Gastrointestinal surgery	1921	24.4
Nephro/Urological surgery	1092	13.9
Orthopaedic surgery	982	12.5
Neurosurgery	603	7.6
Thoracic surgery	542	6.9
Abdominal vascular surgery	516	6.5
ENT surgery	476	6.0
Gynaecological surgery	430	5.5
Peripheral vascular surgery	364	4.6
Hepatic surgery	316	4.0
Missing	0	

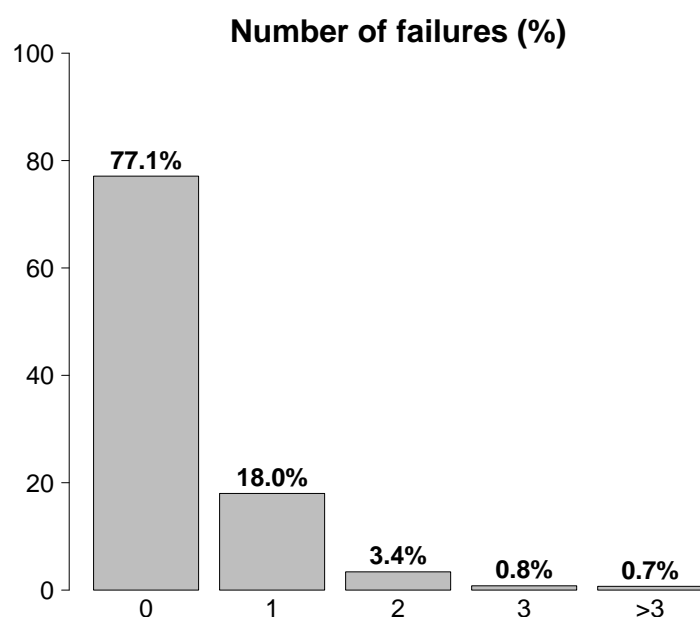
Non surgical interventions	N	%
Elective (N=128)		
Interventional cardiology	21	16.4
Interventional radiology	20	15.6
Interventional endoscopy	18	14.1
Interventional neuroradiology	10	7.8
Missing	59	

Surgical interventions	N	%
Emergency (N=32)		
Interventional radiology	6	18.8
Interventional cardiology	2	6.2
Interventional endoscopy	2	6.2
Interventional neuroradiology	0	0.0
Missing	22	

National report for general ICUs - Year 2013

Characteristics on admission - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

Reason for admission	N	%
Monitoring/Weaning	7201	91.3
Post surgical weaning	3396	43.1
Surgical monitoring	3786	48.0
Post interventional weaning	8	0.1
Interventional monitoring	11	0.1
Non surgical monitoring	0	0.0
Missing	0	
Admission for procedures/treatments	0	0.0
Intensive Treatment	683	8.7
Only ventilatory support	462	5.9
Only cardiovascular support	89	1.1
Ventilatory and cardiovascular support	132	1.7
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	6078	77.1
Yes	1806	22.9
A: Respiratory failure	594	7.5
B: Cardiovascular failure	221	2.8
C: Neurological failure	46	0.6
D: Hepatic failure	20	0.3
E: Renal failure	1108	14.1
F: Acute skin failure	2	0.0
G: Metabolic failure	376	4.8
H: Coagulation failure	28	0.4
Missing	0	

Failures on admission (top 10)	N	%
E	820	10.4
A	365	4.6
G	149	1.9
EG	114	1.4
B	58	0.7
AE	56	0.7
AB	43	0.5
ABEG	23	0.3
ABE	22	0.3
ABCEG	19	0.2
Missing	0	

Respiratory failure	N	%
None	7290	92.5
Only hypoxic failure	106	1.3
Only hypercapnic failure	37	0.5
Hypoxic-hypercapnic failure	20	0.3
Intubation for airway maint.	431	5.5
Missing	0	

Cardiovascular failure	N	%
None	7663	97.2
Without shock	73	0.9
Cardiogenic shock	38	0.5
Septic shock	10	0.1
Haemorrhagic/hypovolemic shock	59	0.7
Hypovolemic shock	22	0.3
Anaphylactic shock	5	0.1
Neurogenic shock	2	0.0
Other shock	9	0.1
Mixed shock	3	0.0
Missing	0	

Neurologic failure	N	%
None	6494	99.3
Cerebral coma	10	0.2
Metabolic coma	9	0.1
Postanoxic coma	26	0.4
Toxic coma	1	0.0
Missing or not evaluable	1344	

Renal failure (AKIN)	N	%
None	6776	85.9
Mild	810	10.3
Moderate	167	2.1
Severe	131	1.7
Missing	0	

Metabolic failure	N	%
None	7508	95.2
pH ≤ 7.3, PaCO ₂ < 45 mmHg	161	2.0
Base deficit ≥ 5 mmol/L, lactate > 1.5x	215	2.7
Missing	0	

National report for general ICUs - Year 2013**Characteristics on admission** - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

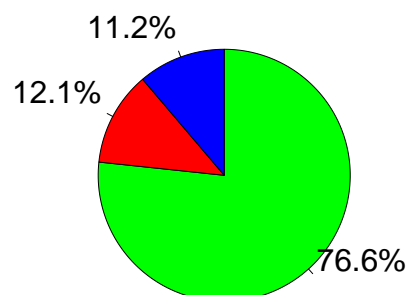
Clinical conditions on admission	N	%
Respiratory	823	10.4
Lung cancer	435	5.5
Upper respiratory tract disease	168	2.1
Acute asthma/bronchospasm	59	0.7
Pleural effusion	49	0.6
Acute exacerbation of COPD	43	0.5
Cardiovascular	1094	13.9
Non-ruptured aneurysm	445	5.6
Peripheral vascular disease	349	4.4
Acute severe arrhythmia: tachycardias	64	0.8
Systemic hypertensive crisis	48	0.6
Left heart failure without pulm. edema	40	0.5
Neurological	635	8.1
Brain tumour	427	5.4
Cerebral Aneurysm	50	0.6
Seizures	42	0.5
Polyneuropathy/myopathy	34	0.4
Cerebral artery stroke	28	0.4
Gastrointestinal and hepatic	2162	27.4
Digestive tract malignancy	1326	16.8
Hepatic malignancy	279	3.5
Pancreatic malignancy	267	3.4
Acute bile-duct disease	159	2.0
Intestinal occlusion	49	0.6
Trauma (anatomical districts)	369	4.7
Pelvis/bone/joint & muscle	347	4.4
Spine	22	0.3
Head	20	0.3
Chest	16	0.2
Abdomen	2	0.0
-	0	0.0
-	0	0.0
Other	3377	42.8
Nephro-urologic disease	1007	12.8
Other disease	795	10.1
Orthopaedic disease	566	7.2
ENT/maxillofacial disease	467	5.9
Gynaecological disease	390	4.9
Post transplantation	30	0.4
Renal transplantation	21	0.3
Heart transplantation	5	0.1
Infections	108	1.4
Pneumonia	13	0.2
Orthopaedic prosthesis infection	12	0.2
NON-surgical urinary tract infection	11	0.1
NON-surgical skin/soft tissue infection	10	0.1
Cholecystitis/choolangitis	9	0.1
Post-surgical peritonitis	7	0.1
Post-surgical bone and joint infection	6	0.1
Extra/retroperitoneal abscess	6	0.1
NON-surgical secondary peritonitis	5	0.1
Clinical sepsis	4	0.1
Missing	0	

Trauma (anatomical districts)	N	%
Head	20	0.3
Maxillofacial fracture	7	0.1
Traumatic subarachnoid haemorrhage	5	0.1
Cerebral contusion/laceration	3	0.0
Traumatic Subdural haematoma	3	0.0
Extradural/epidural haematoma	2	0.0
Spine	22	0.3
Vertebral fracture, without deficit	22	0.3
-	0	0.0
-	0	0.0
Chest	16	0.2
Other injuries of the chest	10	0.1
Traum. haemothorax/pneumothorax	5	0.1
Tension pneumothorax	2	0.0
Abdomen	2	0.0
Spleen: Moderate-Severe laceration	1	0.0
Kidney: Rupture/laceration	1	0.0
-	0	0.0
Pelvis/bone/joint & muscle	347	4.4
Long bone fracture	328	4.2
Multiple fracture of the pelvis	21	0.3
Very severe or open fracture of the pelvis	4	0.1
Major vessels injury	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Miscellaneous	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	7776	98.6
Infection with or without SIRS	82	1.0
Severe sepsis	13	0.2
Septic shock	12	0.2
Missing	1	

Infection severity on admission

Patients infected (N=107)

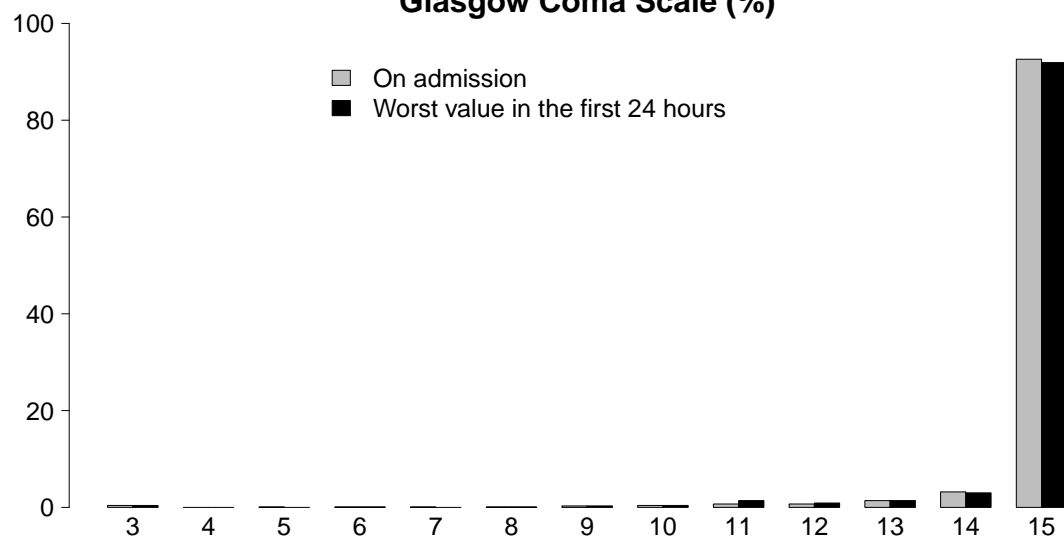


■ Infection with or without SIRS
■ Severe sepsis
■ Septic shock

National report for general ICUs - Year 2013

Severity scores - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

Glasgow Coma Scale (%)



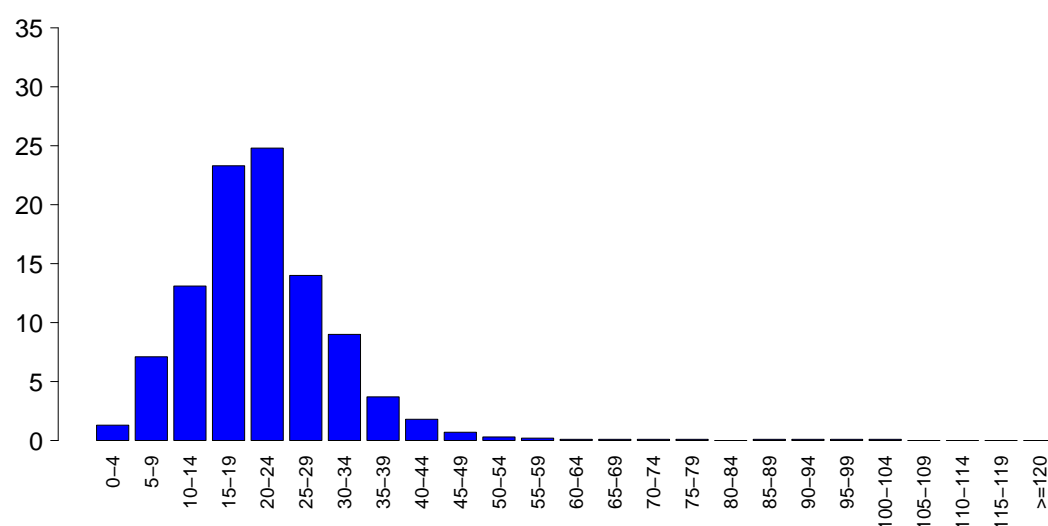
GCS (admission)

Median	15
Q1-Q3	15-15
Not evaluable	1344
Missing	0

GCS (first 24 hours)

Median	15
Q1-Q3	15-15
Not evaluable	600
Missing	0

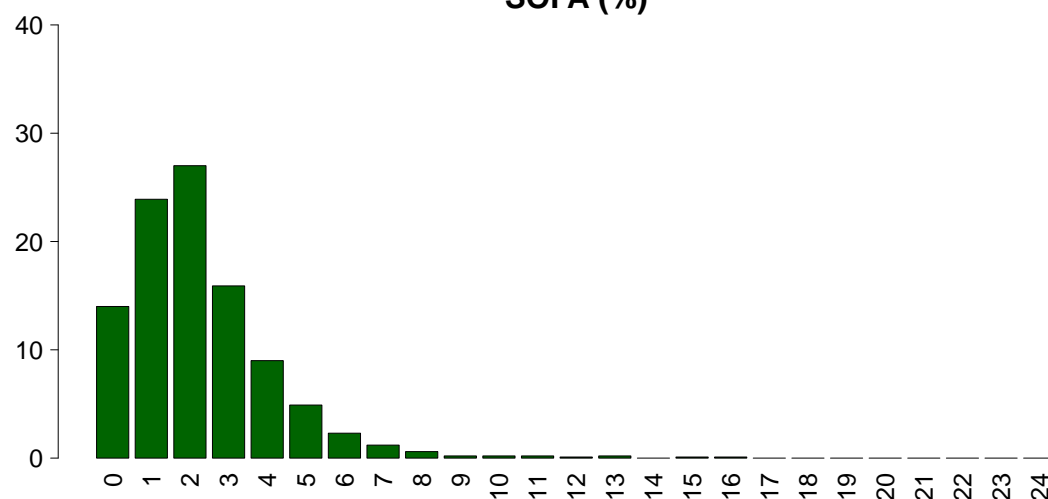
SAPS II (%)



SAPSII

Mean	21.5
SD	10.2
Median	21
Q1-Q3	15-26
Not evaluable	600
Missing	0

SOFA (%)



SOFA

Mean	2.3
SD	1.9
Median	2
Q1-Q3	1-3
Not evaluable	600
Missing	1

National report for general ICUs - Year 2013**Characteristics during the stay** - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

Complications during the stay	N	%
No	7697	97.6
Yes	187	2.4
Missing	0	

Failures during the stay	N	%
No	7842	99.5
Yes	42	0.5
A: Respiratory failure	13	0.2
B: Cardiovascular failure	19	0.2
C: Neurological failure	0	0.0
D: Hepatic failure	2	0.0
E: Renal failure (AKIN)	8	0.1
F: Acute skin failure	0	0.0
G: Metabolic failure	8	0.1
H: Coagulation failure	0	0.0
Missing	0	

Failures during the stay (top 10)	N	%
B	14	0.2
A	8	0.1
G	7	0.1
E	6	0.1
AB	3	0.0
ABE	2	0.0
D	1	0.0
DG	1	0.0
-	0	0.0
-	0	0.0
Missing	0	

Respiratory failure occurred	N	%
None	7871	99.8
Intubation for airway maint.	4	0.1
Hypoxic failure	8	0.1
Hypercapnic failure	1	0.0
Missing	0	

Cardiovascular failure occurred	N	%
None	7865	99.8
Cardiogenic shock	6	0.1
Hypovolemic shock	4	0.1
Haemorrhagic/hypovolemic shock	6	0.1
Septic shock	2	0.0
Anaphylactic shock	0	0.0
Neurogenic shock	1	0.0
Other shock	0	0.0
Missing	0	

Neurological failure occurred	N	%
None	7884	100.0
Cerebral coma	0	0.0
Metabolic coma	0	0.0
Postanoxic coma	0	0.0
Missing	0	

Renal failure occurred (AKIN)	N	%
None	7876	99.9
Mild	4	0.1
Moderate	3	0.0
Severe	1	0.0
Missing	0	

Complications during the stay	N	%
Respiratory	30	0.4
Pleural effusion	7	0.1
Atelectasis	5	0.1
Pneumothorax/Pneumomediastinum	5	0.1
Upper resp. tract disease	5	0.1
Pulmonary embolism	3	0.0
Cardiovascular	78	1.0
Cardiac arrest	32	0.4
Acute severe arrhythmia: tachycardias	20	0.3
Acute severe arrhythmia: bradycardias	7	0.1
Hypertensive crisis	7	0.1
Peripheral vascular disease	6	0.1
Neurological	31	0.4
Drowsiness/agitation/delirium	23	0.3
Seizures	4	0.1
Brain edema	2	0.0
Post-surgical intracranial bleeding	2	0.0
New ischaemic stroke	1	0.0
Gastrointestinal and hepatic	10	0.1
Bowel ischaemia	2	0.0
Gastrointestinal bleeding: lower tract	2	0.0
Liver Dysfunction Syndrome	2	0.0
Acute inflammatory bowel disease	1	0.0
Anastomotic dehiscence	1	0.0
Other	30	0.4
Other disease	10	0.1
Nephro-urologic disease	9	0.1
Metabolic disorder	8	0.1
Other skin and/or soft tissue pathology	2	0.0
Iatrogenic major vessels injury	1	0.0
-	0	0.0
-	0	0.0
Infections	7	0.1
L.R.T.I. other than pneumonia	3	0.0
Clinical sepsis	1	0.0
F.U.O. fever of unknown origin	1	0.0
Post-surgical skin/soft tissue infection	1	0.0
Post-surgical urinary tract infection	1	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

National report for general ICUs - Year 2013**Characteristics during the stay** - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

Infections		N	%	Maximum severity of infection		N	%
None		7770	98.6	None		7770	98.6
Only on admission		107	1.4	Infection with or without SIRS		83	1.1
On admission and during ICU stay		1	0.0	Severe sepsis		16	0.2
Only during ICU stay		6	0.1	Septic shock		13	0.2
Missing		0		Missing		2	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock
Admission	None	7770 (99.9%)	3 (0.0%)	1 (0.0%)	1 (0.0%)	7775
	Infection with or without SIRS	-	80 (97.6%)	2 (2.4%)	0 (0.0%)	82
	Severe sepsis	-	-	13 (100.0%)	0 (0.0%)	13
	Septic shock	-	-	-	12 (100.0%)	12
	TOT	7770	83	16	13	7882

National report for general ICUs - Year 2013
Process indicators - Adult elective surgical patients with LOS<24 hours 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	Median	Missing
Procedures (antibiotics excluded)	7028	89.1								
Invasive ventilation	4355	55.2	3913	49.6	97	1.2				
Non invasive ventilation	569	7.2	139	1.8	374	4.7				
Tracheostomy	171	2.2	156	2	168	2.1				
iNO (inhaled nitric oxide)	0	0.0								
Central Venous Catheter	3475	44.1	3042	38.6	3297	41.8				
Arterial Catheter	5440	69.0	4688	59.5	771	9.8				
Vasoactive drugs	346	4.4	225	2.9	58	0.7				
Antiarrhythmics	108	1.4	64	0.8	75	1				
IABP	0	0.0								
Invasive monitoring of C.O.	27	0.3	23	0.3	7	0.1				
Continuous monitoring of ScVO2	2	0.0	1	0	0	0				
Temporary pacing	6	0.1	6	0.1	4	0.1				
Ventricular assistance	0	0.0								
DC-shock	14	0.2								
CPR	34	0.4								
Massive blood transfusion	32	0.4								
ICP monitoring without liquor-drainage	0	0.0								
ICP monitoring with liquor-drainage	18	0.2	17	0.2	17	0.2				
External ventricular drainage without ICP	2	0.0	2	0	1	0				
Haemofiltration	2	0.0	0	0	0	0				
Haemodialysis	9	0.1	3	0	4	0.1				
ECMO	1	0.0	0	0	1	0				
Hepatic clearance techniques	0	0.0								
Clearance techniques during sepsis	0	0.0								
IAP (intra-abdominal pressure)	36	0.5								
Hypothermia	2	0.0								
Enteral nutrition	87	1.1	17	0.2	80	1				
Parenteral nutrition	472	6.0	124	1.6	430	5.5				
SDD (Topical, Topical and systemic)	2	0.0								
Patient restraint	157	2.0								
Peridural catheter	967	12.3	930	11.8	908	11.5				
Electrical cardioversion	2	0.0								
Vacuum therapy	2	0.0								
Antibiotics	5845	74.1								
Antibiotics for surgical prophylaxis	5683	72.1	4954	62.8	4000	50.7				
Antibiotics for medical prophylaxis	77	1.0	52	0.7	58	0.7				
Empirical antibiotic therapy	58	0.7	43	0.5	52	0.7				
Targeted antibiotic therapy	37	0.5	35	0.4	36	0.5				

National report for general ICUs - Year 2013**Process indicators** - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTi model

Invasive ventilation (N=4355)	N	%
Due to pulmonary failure	139	3.0
For airway maintenance	423	9.3
In weaning	3403	74.5
Not evaluable	602	13.2
Reintubation within 48 hours	2	0.0

Non invasive ventilation (N=569)	N	%
Non invasive ventilation only	239	42.0
Non invasive ventilation failed	11	1.9
For weaning	319	56.1
Other	0	0.0
Missing	0	

Tracheostomy (N=171)	N	%
Surgical	158	92.4
Percutwist	4	2.3
Ciaglia	4	2.3
Monodil. Ciaglia	2	1.2
Fantoni	0	0.0
Griggs	0	0.0
Other Kind	3	1.8
Missing	0	

Invasive monitoring of C.O. (N=27)	N	%
Swan Ganz	4	14.8
PICCO	3	11.1
LIDCO	3	11.1
Vigileo-PRAM	16	59.3
Other	1	3.7
Missing	0	

SDD (N=2)	N	%
Topical	0	0.0
Topical and systemic	2	100.0
Missing	0	

Antibiotic therapy

Pts. infected in ICU only (N=6)	N	%
Only empirical	4	100.0
Only targeted	0	0.0
Targeted after empirical	0	0.0
Other	0	0.0
Missing	2	

National report for general ICUs - Year 2013**Outcome indicators** - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

ICU outcome	N	%
Dead	87	1.1
Transferred to same hospital	7730	98.0
Transferred to other hospital	56	0.7
Discharged home	11	0.1
Disch. terminally ill	0	0.0
Missing	0	

Transferred to (N=7786)	N	%
Ward	7536	96.8
Other ICU	31	0.4
High dependency care unit	210	2.7
Rehabilitation	7	0.1
Day hospital or Long-term care	2	0.0
Missing	0	

Reason for transfer to Other ICU (N=31)	N	%
Specialist expertise	15	48.4
Step-up care	2	6.5
Logistical/organizational reasons	14	45.2
Step-down care	0	0.0
Missing	0	

Transferred to Same hospital (N=7730)	N	%
Ward	7492	96.9
Other ICU	24	0.3
High dependency care unit	209	2.7
Rehabilitation	3	0.0
Day hospital or Long-term care	2	0.0
Missing	0	

Transferred to Other hospital (N=56)	N	%
Ward	44	78.6
Other ICU	7	12.5
High dependency care unit	1	1.8
Rehabilitation	4	7.1
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	7797	98.9
Dead	87	1.1
Missing	0	

Timing of ICU mortality (N=87)	N	%
Daytime (08:00AM - 07:59PM)	56	64.4
Nighttime (08:00PM - 07:59AM)	31	35.6
Weekdays (Monday - Friday)	71	81.6
Weekend (Saturday - Sunday)	16	18.4
Missing	0	

Brain death assessment (N=87)	N	%
Yes, with organ donation	2	2.3
Yes, without organ donation	2	2.3
No	83	95.4
Missing	0	

Organ/Tissue removal (N=2)	N	%
No removal	0	0.0
Only organ removal	0	0.0
Only tissue removal	1	50.0
Organ and tissue removal	1	50.0
Missing	0	

Hospital mortality	N	%
Dead	286	3.6
Transf. to other acute-care hospital	153	1.9
Transf. to other type of hosp. stay	611	7.7
Nursing home	89	1.1
Voluntary discharge	19	0.2
Discharged home	6726	85.3
Missing	0	

To other type of H stay (N=611)	N	%
Rehabilitation in the same institute	161	26.4
Rehabilitation in other institute	318	52.0
DH/long-term care, same inst.	65	10.6
DH/long-term care, other inst.	67	11.0
Missing	0	

Disch. terminally ill (N=7598)	N	%
Yes	65	0.9
No	7533	99.1
Missing	0	

Hospital mortality	N	%
Alive	7534	95.6
Dead	350	4.4
Missing	0	

Timing of hosp. mortality (N=350)	N	%
In ICU	87	24.9
Within 24 hours after ICU	25	7.1
Within 48 hours after ICU	29	8.3
Within 72 hours after ICU	36	10.3
Within 96 hours after ICU	45	12.9
After more than 96 hours after ICU	218	62.3
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=263)		
Mean		21.3
SD		24.2
Median		14
Q1-Q3		6-29
Missing		0

National report for general ICUs - Year 2013**Outcome indicators** - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	7532	95.5
Dead	352	4.5
Missing	0	

Stay after ICU (days)		
Alive (N=7797)		
	Mean	11.7
	SD	15.4
	Median	8
	Q1-Q3	5-13
	Missing	3

Hospital stay (days)		
	Mean	16.6
	SD	18.5
	Median	12
	Q1-Q3	8-19
	Missing	1

Hospital stay (days)		
Alive (N=7534)		
	Mean	16.3
	SD	17.9
	Median	12
	Q1-Q3	8-19
	Missing	1

Hospital stay (days)		
Dead (N=350)		
	Mean	24.3
	SD	27.2
	Median	15.5
	Q1-Q3	7-34
	Missing	0

National report for general ICUs - Year 2013

Characteristics on admission - Pediatric patients evaluated with PIM 2

Patients (N): 585

Sex	N	%
Male	361	61.7
Female	224	38.3
Missing	0	

Age	N	%
Newborn (0-4 weeks)	0	0.0
1-6 months	13	2.2
6-12 months	22	3.8
12-24 months	30	5.1
2-4 years	86	14.7
5-8 years	88	15.1
9-16 years	345	59.1
Missing	1	
Mean	9.4	
SD	5.5	
Median	11	
Q1-Q3	4-15	
Min-Max	0-16	

Weight (kg) Newborns (N=0)	N	%
Mean		
SD		
Median		
Q1-Q3		
Missing	0	

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

Comorbidities	N	%
No	373	63.8
Yes	212	36.2
Missing	0	

Comorbidities (top 10)	N	%
Encephalopathy	54	9.2
Skeletal malformations/disorders	32	5.5
Hemiplegia or paraplegia or quadriplegia	29	5.0
Genetic diseases	24	4.1
Asthma	23	3.9
Brain and skull malformations	22	3.8
Neurodegenerative/Neuromuscular disease	16	2.7
Congenital heart disease	13	2.2
Restrictive lung disease	12	2.1
Hydrocephalus	11	1.9
Missing	0	

Previous ICU admissions	N	%
None	396	67.7
<=2	73	12.5
>2	22	3.8
Unknown	94	16.1
Missing	0	

Previous ICU admissions (N=95)	N	%
Paediatric	33	34.7
Neonatal	24	25.3
General - adult	42	44.2
Other/Unknown	6	6.3
Missing	0	

Stay before ICU (days)	N	%
Mean	2.5	
SD	10.6	
Median	0	
Q1-Q3	0-1	
Missing	0	

Source of admission	N	%
Same hospital	511	87.4
Other hospital	56	9.6
Long-term chronic care hospital	0	0.0
Directly from the community (e.g., ambulance, home, ...)	18	3.1
Missing	0	

Ward of admission Hospital (N=567)	N	%
Medical ward	89	15.7
Surgical ward	225	39.7
Emergency room	236	41.6
Other ICU	11	1.9
High dependency care unit	6	1.1
Neonatology	0	0.0
Missing	0	

Reason for transfer from Other ICU (N=11)	N	%
Specialist expertise	5	45.5
Step-up care	2	18.2
Logistical/organizational reasons	4	36.4
Step-down care	0	0.0
Missing	0	

Scheduled admission	N	%
No	430	73.5
Yes	155	26.5
Missing	0	

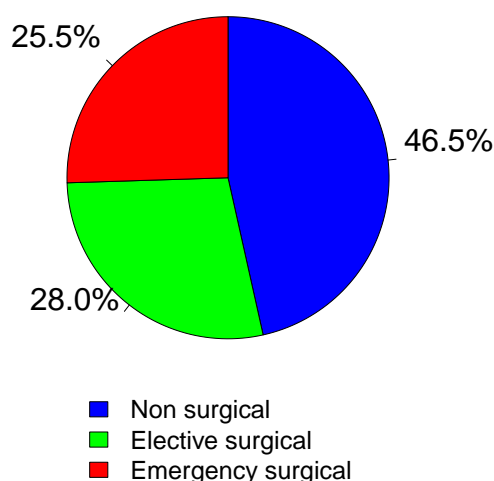
National report for general ICUs - Year 2013

Characteristics on admission - Pediatric patients evaluated with PIM 2

Trauma	N	%
No	425	72.6
Yes	160	27.4
Multiple trauma	55	9.4
Missing	0	

Surgical status	N	%
Non surgical	272	46.5
Elective surgical	164	28.0
Emergency surgical	149	25.5
Missing	0	

Surgical status



Source of admission

Surgical pts. (N=313)	N	%
Operating theatre of surgical ward	216	70.4
Operating theatre of emergency room	37	12.1
Surgical ward	3	1.0
Other	51	16.6
Missing	6	

Surgical interventions (top 10)

Elective surgical (N=164)	N	%
Orthopaedic surgery	43	26.2
Neurosurgery	42	25.6
Gastrointestinal surgery	30	18.3
ENT surgery	17	10.4
Thoracic surgery	11	6.7
Maxillo-Facial surgery	8	4.9
Nephro/Urological surgery	5	3.0
Hepatic surgery	3	1.8
Biliary tract surgery	2	1.2
Other surgery	2	1.2
Missing	0	

Timing	N	%
Elective surgical (N=164)		
From -7 to -3 days	0	0.0
From -2 to -1 days	0	0.0
On ICU admission day	159	97.0
The day after ICU admission	6	3.7
Missing	0	

Surgical interventions (top 10)

Emergency surgical (N=149)	N	%
Gastrointestinal surgery	37	24.8
Neurosurgery	28	18.8
Orthopaedic surgery	27	18.1
Splenectomy	12	8.1
Thoracic surgery	8	5.4
Organ/s transplantation	8	5.4
Hepatic surgery	7	4.7
Maxillo-Facial surgery	7	4.7
Nephro/Urological surgery	6	4.0
ENT surgery	5	3.4
Missing	0	

Timing

Emergency surgical (N=149)	N	%
From -7 to -3 days	2	1.3
From -2 to -1 days	15	10.1
On ICU admission day	130	87.2
The day after ICU admission	14	9.4
Missing	0	

Non surgical interventions

	N	%
None	551	94.2
Elective	17	2.9
Emergency	17	2.9
Missing	0	

Non surgical interventions

Elective (N=17)	N	%
Interventional radiology	4	23.5
Interventional neuroradiology	2	11.8
Therapeutic endoscopy (bronchoscopy excluded)	2	11.8
Diagnostic bronchoscopy on admission	2	11.8
Interventional cardiology	1	5.9
Therapeutic bronchoscopy	1	5.9
Missing	5	

Surgical interventions

Emergency (N=17)	N	%
Interventional radiology	6	35.3
Therapeutic bronchoscopy	3	17.6
Therapeutic endoscopy (bronchoscopy excluded)	2	11.8
Diagnostic bronchoscopy on admission	2	11.8
Interventional cardiology	0	0.0
Interventional neuroradiology	0	0.0
Missing	4	

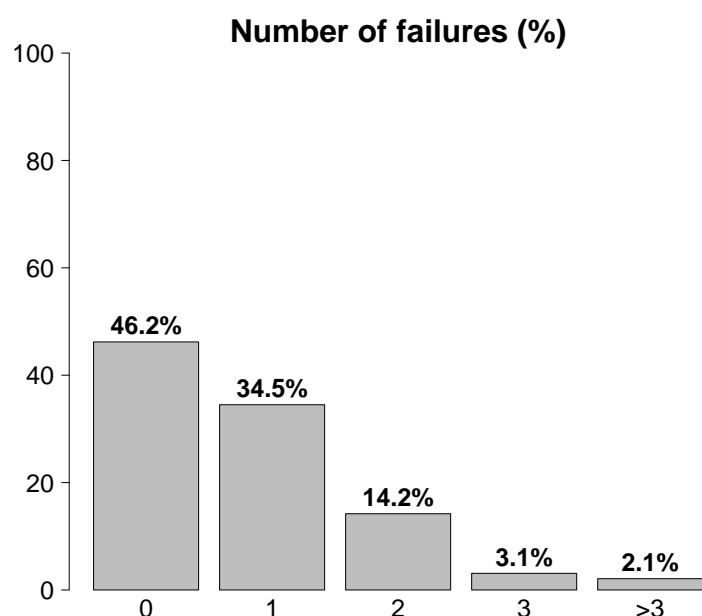
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Characteristics on admission - Pediatric patients evaluated with PIM 2

Reason for admission	N	%
Monitoring/Weaning	338	57.8
Post surgical weaning	96	16.6
Surgical monitoring	122	21.1
Post interventional weaning	4	0.7
Interventional monitoring	6	1.0
Non surgical monitoring	103	17.8
Missing	7	
Admission for procedures/treatments	27	4.6
Intensive Treatment	218	37.3
Ventilatory support	205	35.0
Cardiovascular support	47	8.0
Metabolic support	19	3.2
Missing	0	
Palliative Sedation	1	0.2
Diagnosis of death/Organ donation	1	0.2
Missing	0	

Failures on admission (top 10)	N	%
A	107	18.3
C	22	3.8
AB	20	3.4
B	19	3.2
D	19	3.2
E	19	3.2
AC	15	2.6
G	15	2.6
AD	12	2.1
AE	7	1.2
Missing	0	

Respiratory failure	N	%
None	380	65.0
Only hypoxic failure	55	9.4
Only hypercapnic failure	14	2.4
Hypoxic-hypercapnic failure	13	2.2
Intubation for airway maint.	123	21.0
Missing	0	



Cardiovascular failure	N	%
None	538	92.0
Without shock	13	2.2
Cardiogenic shock	2	0.3
Septic shock	6	1.0
Haemorrhagic/hypovolemic shock	11	1.9
Hypovolemic shock	4	0.7
Anaphylactic shock	1	0.2
Neurogenic shock	6	1.0
Other shock	1	0.2
Mixed shock	3	0.5
Missing	0	

Failures on admission	N	%
No	270	46.2
Yes	315	53.8
A: Respiratory failure	198	33.8
B: Cardiovascular failure	74	12.6
C: Neurological failure	61	10.4
D: Hepatic failure	54	9.2
E: Renal failure	54	9.2
F: Acute skin failure	0	0.0
G: Metabolic failure	33	5.6
H: Coagulation failure	2	0.3
Missing	0	

Neurologic failure	N	%
None	419	84.6
Cerebral coma	47	9.5
Metabolic coma	7	1.4
Postanoxic coma	15	3.0
Toxic coma	7	1.4
Missing or not evaluable	90	

Renal failure (RIFLE)	N	%
None	531	90.8
Risk	42	7.2
Injury	3	0.5
Failure	4	0.7
Loss	3	0.5
End-stage renal disease	2	0.3
Missing	0	

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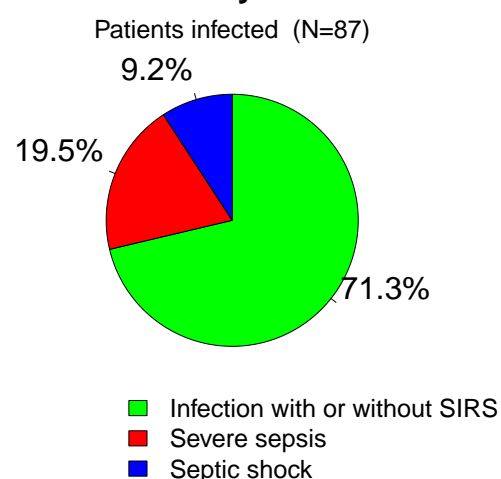
Characteristics on admission - Pediatric patients evaluated with PIM 2

Clinical conditions on admission	N	%
Respiratory	87	14.9
Acute asthma/bronchospasm	20	3.4
Aspiration pneumonia	16	2.7
Upper respiratory tract disease	13	2.2
Atelectasis	10	1.7
Restrictive lung disease, exacerbation	7	1.2
Cardiovascular	18	3.1
Cardiac arrest	11	1.9
Acute severe arrhythmia: tachycardias	2	0.3
Congenital non-cyanotic cardiopathy	2	0.3
Systemic hypertensive crisis	1	0.2
Left heart failure without pulm. edema	1	0.2
Neurological	127	21.7
Seizures	57	9.7
Brain and skull malformations	24	4.1
Metabolic/postanoxic encephalopathy	18	3.1
Brain tumour	17	2.9
AVM (ArterioVenous Malformation)	5	0.9
Gastrointestinal and hepatic	52	8.9
Intestinal occlusion	13	2.2
Oesophago-gastro-intestinal malf.	11	1.9
Gastrointestinal perforation	7	1.2
Acute inflammatory bowel disease	6	1.0
Hepatic-pancreatic-bile duct malf.	5	0.9
Trauma (anatomical districts)	160	27.4
Head	79	13.5
Abdomen	55	9.4
Pelvis/bone/joint & muscle	48	8.2
Chest	44	7.5
Spine	24	4.1
Miscellaneous	5	0.9
Major vessels injury	4	0.7
Other	178	30.4
Other disease	53	9.1
Orthopaedic disease	35	6.0
Metabolic disorder	33	5.6
ENT/maxillofacial disease	25	4.3
Acute intoxication	24	4.1
Post transplantation	12	2.1
Bone marrow transplantation	4	0.7
Liver transplantation	4	0.7
Infections	89	15.2
Pneumonia	32	5.5
NON-surgical secondary peritonitis	10	1.7
NON-surgical CNS infection	9	1.5
Upper respiratory tract infection	9	1.5
L.R.T.I. other than pneumonia	7	1.2
Pleurisy/Pleural empyema	7	1.2
Primary bacteraemia of unknown origin	3	0.5
Catheter-related bacteremia (CR-BSI)	3	0.5
Gastroenteritis	3	0.5
Primary peritonitis	3	0.5
Missing	0	

Trauma (anatomical districts)	N	%
Head	79	13.5
Skull fracture	23	3.9
Maxillofacial fracture	22	3.8
Cerebral contusion/laceration	17	2.9
Traumatic subarachnoid haemorrhage	12	2.1
Traumatic Subdural haematoma	11	1.9
Spine	24	4.1
Vertebral fracture, without deficit	19	3.2
Cervical injury, incomplete deficit	2	0.3
Lumbar injury, complete deficit	2	0.3
Chest	44	7.5
Traum. haemothorax/pneumothorax	20	3.4
Other injuries of the chest	16	2.7
Severe lung contusion/laceration	14	2.4
Abdomen	55	9.4
Liver: Moderate-Severe laceration	20	3.4
Spleen: Moderate-Severe laceration	18	3.1
Kidney: Rupture/laceration	11	1.9
Pelvis/bone/joint & muscle	48	8.2
Long bone fracture	39	6.7
Multiple fracture of the pelvis	19	3.2
Massive crush/amputation	3	0.5
Major vessels injury	4	0.7
Proximal limbs vessels: transection	3	0.5
Major thoracic vessels: transection	1	0.2
-	0	0.0
Miscellaneous	5	0.9
Inhalation injury	3	0.5
Burns (>30% BSA)	2	0.3
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	496	85.1
Infection with or without SIRS	62	10.6
Severe sepsis	17	2.9
Septic shock	8	1.4
Missing	2	

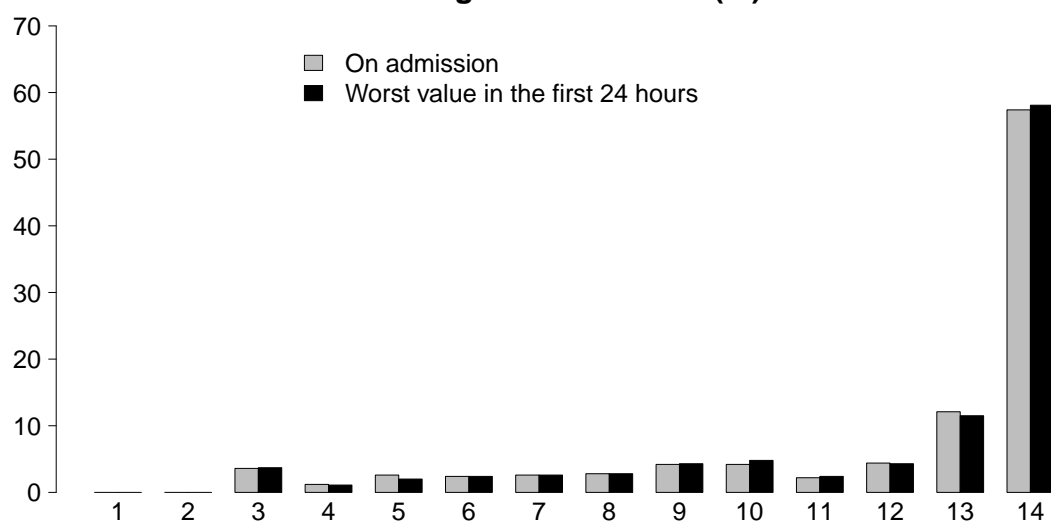
Infection severity on admission



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Severity scores - Pediatric patients evaluated with PIM 2

Glasgow Coma Scale (%)



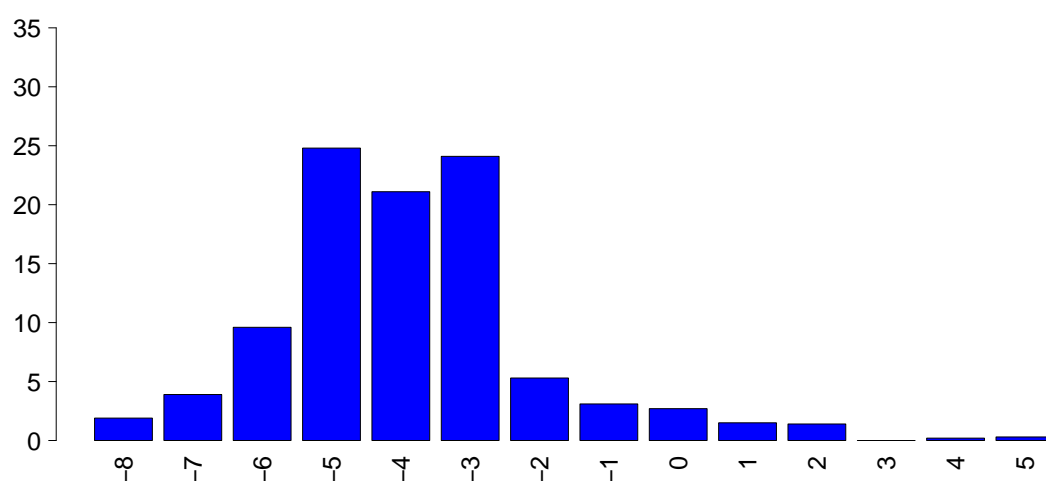
GCS (admission)

Median	14
Q1-Q3	11-14
Not evaluable	90
Missing	0

GCS (first 24 hours)

Median	14
Q1-Q3	11-14
Not evaluable	46
Missing	0

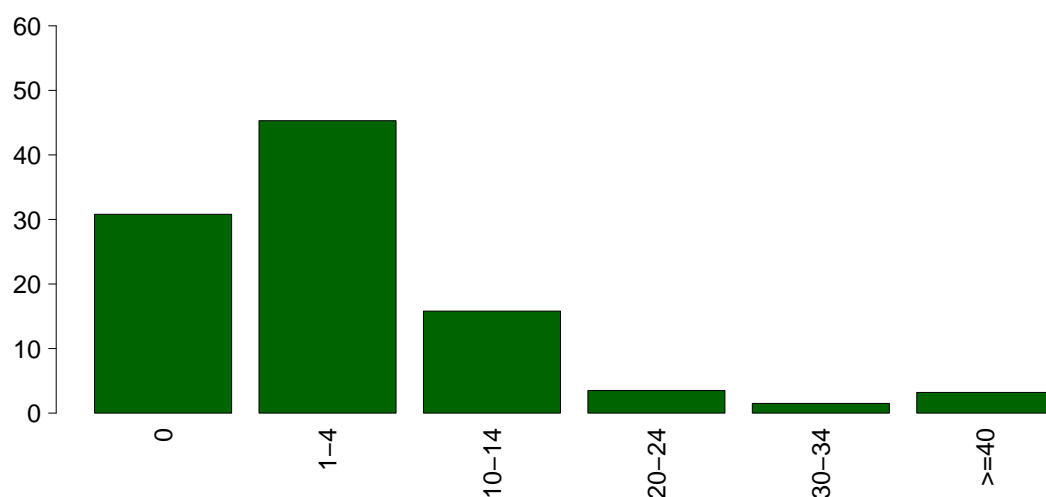
PIM 2 (%)



PIM 2

Mean	-3.9
SD	1.9
Median	-4.1
Q1-Q3	-4.9-3
Not evaluable	0
Missing	0

PELOD (%)



PELOD

Mean	5.3
SD	11.1
Median	1
Q1-Q3	0-3
Not evaluable	46
Missing	0

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Characteristics during the stay - Pediatric patients evaluated with PIM 2

Complications during the stay	N	%
No	524	89.6
Yes	61	10.4
Missing	0	

Failures during the stay	N	%
No	565	96.6
Yes	20	3.4
A: Respiratory failure	7	1.2
B: Cardiovascular failure	7	1.2
C: Neurological failure	3	0.5
D: Hepatic failure	2	0.3
E: Renal failure (AKIN)	4	0.7
F: Acute skin failure	0	0.0
G: Metabolic failure	7	1.2
H: Coagulation failure	0	0.0
Missing	0	

Failures during the stay (top 10)	N	%
G	5	0.9
A	4	0.7
B	4	0.7
AB	1	0.2
ABC	1	0.2
AC	1	0.2
BDEG	1	0.2
CEG	1	0.2
DE	1	0.2
E	1	0.2
Missing	0	

Respiratory failure occurred	N	%
None	578	98.8
Intubation for airway maint.	3	0.5
Hypoxic failure	3	0.5
Hypercapnic failure	1	0.2
Missing	0	

Cardiovascular failure occurred	N	%
None	578	98.8
Cardiogenic shock	1	0.2
Hypovolemic shock	1	0.2
Haemorrhagic/hypovolemic shock	1	0.2
Septic shock	1	0.2
Anaphylactic shock	0	0.0
Neurogenic shock	3	0.5
Other shock	0	0.0
Missing	0	

Neurological failure occurred	N	%
None	582	99.5
Cerebral coma	1	0.2
Metabolic coma	1	0.2
Postanoxic coma	1	0.2
Missing	0	

Renal failure occurred (AKIN)	N	%
None	581	99.3
Mild	0	0.0
Moderate	1	0.2
Severe	3	0.5
Missing	0	

Complications during the stay	N	%
Respiratory	13	2.2
Pleural effusion	3	0.5
Pneumothorax/Pneumomediastinum	3	0.5
Mild ARDS	2	0.3
Haemoptysis	2	0.3
Moderate ARDS	1	0.2
Cardiovascular	7	1.2
Acute severe arrhythmia: bradycardias	4	0.7
Cardiac arrest	1	0.2
Hypertensive crisis	1	0.2
Peripheral vascular disease	1	0.2
Pulmonary hypertension	1	0.2
Neurological	19	3.2
Brain edema	8	1.4
Intracranial hypertension	4	0.7
Seizures	4	0.7
Drowsiness/agitation/delirium	3	0.5
Post-surgical intracranial bleeding	3	0.5
Gastrointestinal and hepatic	6	1.0
Gastrointestinal bleeding: upper tract	2	0.3
Abdominal compartment syndrome	1	0.2
Ascites	1	0.2
Liver Dysfunction Syndrome	1	0.2
Paralytic Ileus	1	0.2
Other	12	2.1
Metabolic disorder	7	1.2
Other disease	3	0.5
Graft versus host disease	1	0.2
Severe graft dysfunction	1	0.2
Other skin and/or soft tissue pathology	1	0.2
-	0	0.0
-	0	0.0
Infections	22	3.8
Pneumonia	9	1.5
Primary bacteraemia of unknown origin	3	0.5
L.R.T.I. other than pneumonia	3	0.5
Catheter-related bacteremia (CR-BSI)	2	0.3
NON-surgical urinary tract infection	2	0.3
Clinical sepsis	1	0.2
NON-surgical CNS infection	1	0.2
F.U.O. fever of unknown origin	1	0.2
Gastroenteritis	1	0.2
-	0	0.0
Missing	0	

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Characteristics during the stay - Pediatric patients evaluated with PIM 2

Infections	N	%
None	476	81.4
Only on admission	87	14.9
On admission and during ICU stay	2	0.3
Only during ICU stay	20	3.4
Missing	0	

Maximum severity of infection	N	%
None	476	81.8
Infection with or without SIRS	75	12.9
Severe sepsis	22	3.8
Septic shock	9	1.5
Missing	3	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock
Admission	None	476 (96.2%)	14 (2.8%)	4 (0.8%)	1 (0.2%)	495
	Infection with or without SIRS	-	61 (98.4%)	1 (1.6%)	0 (0.0%)	62
	Severe sepsis	-	-	17 (100.0%)	0 (0.0%)	17
	Septic shock	-	-	-	8 (100.0%)	8
	TOT	476	75	22	9	582

Ventil. Associat. Pneumonia (VAP)	N	%
No	576	98.5
Yes	9	1.5
Missing	0	

Incidence of VAP

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

Estimate	11.3
CI (95%)	5.2-21.4

Incidence of VAP

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

Estimate	9.0%
CI (95%)	4.1-17.1

Catheter Bacteraemia (CR-BSI)	N	%
No	583	99.7
Yes	2	0.3
Missing	0	

Incidence of CR-BSI

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

Estimate	1.4
CI (95%)	0.2-5.2

Incidence of CR-BSI

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

Estimate	1.7%
CI (95%)	0.2-6.2

National report for general ICUs - Year 2013 Process indicators - Pediatric patients evaluated with PIM 2

Procedures and/or treatments (Missing=0) Procedures (antibiotics excluded)	Use		On admission		On discharge		Length (days)		Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Median	Q1-Q3	Missing
	509	87									
Invasive ventilation	326	55.7	247	42.2	27	4.6	1	0-2	0	0-0	0
Non invasive ventilation	39	6.7	8	1.4	10	1.7	1	1-3	0	0-1	0
Tracheostomy	25	4.3	9	1.5	22	3.8	13	5-20	0	2-9	0
iNO (inhaled nitric oxide)	0	0.0									
Central Venous Catheter	255	43.6	130	22.2	201	34.4	3	1-6	0	0-0	0
Arterial Catheter	321	54.9	167	28.5	52	8.9	2	1-4	0	0-0	0
Vasoactive drugs	51	8.7	19	3.2	14	2.4	1	1-4	0	0-1	0
Antiarrhythmics	4	0.7	1	0.2	3	0.5	1	1-4	0	0-1	0
IABP	0	0.0									
Invasive monitoring of C.O.	8	1.4	0	0	1	0.2	4	3-4	1	1-1	0
Continuous monitoring of ScVO2	3	0.5	1	0.2	0	0	4	4-6	0	0-1	0
Temporary pacing	0	0.0									
Ventricular assistance	0	0.0									
DC-shock	2	0.3									
CPR	8	1.4							0	0-0	0
Massive transfusion	3	0.5							0	0-0	0
ICP monitoring without liquor-drainage	11	1.9	3	0.5	1	0.2	6	2-8	0	0-0	0
ICP monitoring with liquor-drainage	6	1.0	2	0.3	2	0.3	7	1-21	1	1-2	0
External ventricular drainage without ICP	4	0.7	3	0.5	2	0.3	3	2-5	6	6-6	0
Haemofiltration	2	0.3	0	0	0	0	2	1-2	0	0-1	0
Haemodialysis	1	0.2	0	0	1	0.2	32	32-32	4	4-4	0
ECMO	2	0.3	1	0.2	1	0.2	8	5-12	0	0-0	0
Hepatic clearance techniques	0	0.0									
Clearance techniques during sepsis	1	0.2	0	0	1	0.2	1	1-1	0	0-0	0
IAP (intra-abdominal pressure)	9	1.5									
Hypothermia	5	0.9									
Enteral nutrition	100	17.1	21	3.6	59	10.1	6	2-13	1	0-2	0
Parenteral nutrition	64	10.9	8	1.4	42	7.2	2	1-4	1	0-2	0
SDD (Topical, Topical and systemic)	3	0.5									
Patient restraint	14	2.4									
Diagnostic fibero bronchoscopy	16	2.7							1	0-3	0
Surfactant treatment	0	0.0									
Vacuum therapy	2	0.3									
Oxygen therapy	78	13.3	31	5.3	36	6.2	1	1-2	0	0-1	0
Blood transfusion	1	0.2									
Peritoneal dialysis	0	0.0									
Plasmapheresis	2	0.3									
Thoracic drainage	14	2.4	8	1.4	8	1.4	4	2-10	0	0-0	0
Peridural catheter	14	2.4	14	2.4	13	2.2	1	1-1	0		
Urinary catheter	111	19.0	70	12	81	13.8	2	1-5	0	0-0	0
Near-infrared spectroscopy	0	0.0									
Phototherapy	0	0.0									
Electrical cardioversion	1	0.2							0	0-0	0
Antibiotics	357	61									
Antibiotics for surgical prophylaxis	192	32.8	151	25.8	119	20.3	1	1-2	0	0-0	0
Antibiotics for medical prophylaxis	94	16.1	31	5.3	63	10.8	2	1-4	0	0-0	0
Empirical antibiotic therapy	62	10.6	25	4.3	43	7.4	3	1-5	0	0-0	0
Targeted antibiotic therapy	40	6.8	10	1.7	25	4.3	4	2-7	6	3-12	0

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Process indicators - Pediatric patients evaluated with PIM 2

			Length (days)				
Invasive ventilation (N=326)	N	%	Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	66	19.4	7.2	11.6	3	1-8	0
For airway maintenance	122	35.8	3.5	6.5	1	1-3.8	0
In weaning	104	30.5	0.3	0.5	0	0-1	0
Not evaluable	49	14.4	1.8	2.9	1	0-2	16
Reintubation within 48 hours	4	1.2	3.2	1.0	3.5	2.8-4.0	0

Non invasive ventilation (N=39)	N	%
Non invasive ventilation only	20	51.3
Non invasive ventilation failed	4	10.3
For weaning	13	33.3
Other	2	5.1
Missing	0	

Tracheostomy (N=25)	N	%
Surgical	11	44.0
Percutwist	0	0.0
Ciaglia	1	4.0
Monodil. Ciaglia	7	28.0
Fantoni	0	0.0
Griggs	5	20.0
Other Kind	1	4.0
Missing	0	

Tracheostomy - Days after the beginning of inv. vent.

N	24
Mean	4.6
SD	6.7
Median	2
Q1-Q3	0-6.5

Invasive monitoring of C.O. (N=8)	N	%
Swan Ganz	1	12.5
PICCO	2	25.0
LIDCO	0	0.0
Vigileo-PRAM	5	62.5
Other	0	0.0
Missing	0	

SDD (N=3)	N	%
Topical	0	0.0
Topical and systemic	3	100.0
Missing	0	

Antibiotic therapy

Pts. infected in ICU only (N=20)	N	%
Only empirical	2	11.8
Only targeted	9	52.9
Targeted after empirical	4	23.5
Other	2	11.8
Missing	3	

Surgical interventions	N	%
No	571	97.6
Yes	14	2.4
Missing	0	

Number of surgical interventions	N	%
0	571	97.6
1	12	2.1
2	2	0.3
3	0	0.0
>3	0	0.0
Missing	0	

Surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	12.9	9.4	9	6-22.5	0

Surgical interventions (top 10)	N	%
Orthopaedic surgery	6	1.0
Gastrointestinal surgery	3	0.5
Neurosurgery	3	0.5
Maxillo-Facial surgery	2	0.3
ENT surgery	1	0.2
Other surgery	1	0.2
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Non surgical interventions	N	%
No	580	99.1
Yes	5	0.9
Missing	0	

Non surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	16.8	13.7	15.5	5-27.2	1

Non surgical interventions	N	%
Therapeutic endoscopy (bronchoscopy excluded)	3	0.5
Interventional neuroradiology	1	0.2
Therapeutic bronchoscopy	1	0.2
Interventional radiology	0	0.0
Interventional cardiology	0	0.0
Interventional endoscopy	0	0.0
Missing	0	

National report for general ICUs - Year 2013**Outcome indicators** - Pediatric patients evaluated with PIM 2

ICU outcome	N	%
Dead	25	4.3
Transferred to same hospital	519	88.7
Transferred to other hospital	29	5.0
Discharged home	12	2.1
Disch. terminally ill	0	0.0
Missing	0	

Transferred to (N=548)	N	%
Ward	494	90.1
Other ICU	0	0.0
High dependency care unit	42	7.7
Rehabilitation	11	2.0
Day hospital or Long-term care	1	0.2
Missing	0	

Reason for 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=519)	N	%
Ward	478	92.1
Other ICU	0	0.0
High dependency care unit	40	7.7
Rehabilitation	0	0.0
Day hospital or Long-term care	1	0.2
Missing	0	

Transferred to Other hospital (N=29)	N	%
Ward	16	55.2
Other ICU	0	0.0
High dependency care unit	2	6.9
Rehabilitation	11	37.9
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	560	95.7
Dead	25	4.3
Missing	0	

Timing of ICU mortality (N=25)	N	%
Daytime (08:00AM - 07:59PM)	18	72.0
Nighttime (08:00PM - 07:59AM)	7	28.0
Weekdays (Monday - Friday)	17	68.0
Weekend (Saturday - Sunday)	8	32.0
Missing	0	

Brain death assessment (N=25)	N	%
Yes, with organ donation	7	28.0
Yes, without organ donation	8	32.0
No	10	40.0
Missing	0	

Organ/Tissue removal (N=7)	N	%
No removal	0	0.0
Only organ removal	5	71.4
Only tissue removal	0	0.0
Organ and tissue removal	2	28.6
Missing	0	

Hospital mortality	N	%
Dead	31	5.3
Transf. to other acute-care hospital	37	6.4
Transf. to other type of hosp. stay	30	5.2
Nursing home	5	0.9
Voluntary discharge	6	1.0
Discharged home	473	81.3
Missing	3	

To other type of H stay (N=30)	N	%
Rehabilitation in the same institute	5	16.7
Rehabilitation in other institute	23	76.7
DH/long-term care, same inst.	1	3.3
DH/long-term care, other inst.	1	3.3
Missing	0	

Disch. terminally ill (N=551)	N	%
Yes	3	0.5
No	548	99.5
Missing	0	

Hospital mortality	N	%
Alive	548	94.2
Dead	34	5.8
Missing	3	

Timing of hosp. mortality (N=34)	N	%
In ICU	25	73.5
Within 24 hours after ICU	3	8.8
Within 48 hours after ICU	3	8.8
Within 72 hours after ICU	3	8.8
Within 96 hours after ICU	4	11.8
After more than 96 hours after ICU	5	14.7
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=9)		
Mean	33.4	
SD	71.1	
Median	11	
Q1-Q3	0-21	
Missing	0	

National report for general ICUs - Year 2013**Outcome indicators - Pediatric patients evaluated with PIM 2**

Last hospital mortality	N	%
Alive	548	94.2
Dead	34	5.8
Missing	3	

Expected outcome (N=560)	N	%
Recovery/resolution of acute episode	534	95.4
Palliative care grade 1	11	2.0
Palliative care grade 2	1	0.2
Palliative care grade 3	4	0.7
Palliative care grade 4	10	1.8
Missing	0	

Outcome treatments (N=26)	N	%
NON invasive ventilation	4	15.4
Invasive ventilation	3	11.5
Oxygen therapy	10	38.5
Tracheostomy	9	34.6
Diuretics grugs	5	19.2
Inotropic agents drugs	1	3.8
Antiepileptics drugs	9	34.6
Dialytic therapy	1	3.8
Limb replacement	0	0.0
Nasogastric tube	4	15.4
Ostomies	10	38.5
Home based parenteral nutrition	0	0.0
Motor physiotherapy	11	42.3
Respiratory physiotherapy	6	23.1
Posture	8	30.8
Psychological counselling	6	23.1
Missing	0	

ICU stay (days)		
Mean		3.6
SD		6.8
Median		1
Q1-Q3		1-3
Missing		0

ICU stay (days) Alive (N=560)		
Mean		3.5
SD		6.7
Median		1
Q1-Q3		1-3
Missing		0

ICU stay (days) Dead (N=25)		
Mean		4.9
SD		7.5
Median		2
Q1-Q3		1-5
Missing		0

Stay after ICU (days) Alive (N=560)		
Mean		10.1
SD		18.0
Median		6
Q1-Q3		3-11
Missing		3

Hospital stay (days)		
Mean		15.4
SD		24.6
Median		9
Q1-Q3		5-16.8
Missing		3

Hospital stay (days) Alive (N=548)		
Mean		15.2
SD		23.0
Median		9
Q1-Q3		5-17
Missing		0

Hospital stay (days) Dead (N=34)		
Mean		17.7
SD		42.8
Median		2
Q1-Q3		1-11.5
Missing		0

Appendix

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Prognostic models - Adult patients with LOS>=to 24 hours

Model: Logistic regression.

Dependent variable: Hospital mortality°.

Sample used for model development: Patients with LOS>=24 hours from general Italian ICUs.

Sample size: 35612 patients.

Independent variables	Coefficients (95% CI)	Odds Ratio (95% CI)	p
Intercept	-6.36 (-6.69;-6.04)	/	/
Miscellanea			
Age in decades (continuous, <40)	0.432 (0.342;0.521)	/	
Age in decades (continuous, 40-80)	0.377 (0.338;0.416)	/	<0.001
Age in decades (continuous, >80)	0.401 (0.367;0.435)	/	
Body mass Index (BMI) (Underweight vs. Normal)	0.15 (0.02;0.28)	1.16 (1.02;1.32)	
Body mass Index (BMI) (Overweight or Obese vs. Normal)	-0.19 (-0.25;-0.13)	0.83 (0.78;0.88)	<0.001
Surgical status (Non surgical vs. Elective surgical)	0.5 (0.34;0.66)	/	×
Surgical status (Emergency surgical vs. Elective surgical)	0.34 (0.22;0.46)	/	
Stay before ICU (days) (logarithm, if <28 days)	0.31 (0.26;0.36)	/	
Stay before ICU (days) (>28 vs. <=28)	3.04 (2.24;3.85)	/	×
Admitted in hospital the same day of ICU admission (Yes vs. No)	0.27 (0.16;0.37)	/	
Ward of admission: Medical ward vs. Surgical ward	0.15 (0.04;0.26)	/	
Ward of admission: Emergency room vs. Surgical ward	-0.28 (-0.42;-0.14)	/	
Ward of admission: High dependency care unit vs. Surgical ward	0.22 (0.04;0.39)	/	
Ward of admission: Other ICU because of Specialist expertise vs. Surgical ward	-0.1 (-0.34;0.14)	/	×
Ward of admission: Other ICU because of Step-up care vs. Surgical ward	0.3 (0;0.6)	/	
Ward of admission: Other ICU because of Logistical/organizational reasons vs. Surgical ward	-0.24 (-0.41;-0.06)	/	
Ward of admission: Long-term chronic care hospital vs. Surgical ward	0.3 (-0.07;0.66)	/	
Operating theatre (Yes vs. No)	-0.32 (-0.45;-0.19)	0.73 (0.64;0.83)	<0.001
Physiopatological components			
Bilirubin (mg/100ml) (1.2-3.9 vs. <1.2)	0.15 (0.07;0.22)	1.16 (1.07;1.25)	
Bilirubin (mg/100ml) (4-11.9 vs. <1.2)	0.35 (0.17;0.53)	1.42 (1.18;1.7)	<0.001
Bilirubin (mg/100ml) (>=12 vs. <1.2)	0.52 (0.14;0.89)	1.68 (1.15;2.43)	
Sodium (mEq/L) (>=145 vs. <145)	0.28 (0.19;0.37)	/	×
Platelets (10 ³ /mm3) (50-99 vs. >=100)	0.23 (0.13;0.33)	/	
Platelets (10 ³ /mm3) (20-49 vs. >=100)	0.57 (0.41;0.74)	/	×
Platelets (10 ³ /mm3) (<20 vs. >=100)	0.73 (0.45;1.01)	/	
Urine Output (L/24h) (<0.2 vs. >=1)	0.73 (0.54;0.92)	/	
Urine Output (L/24h) (0.2-0.49 vs. >=1)	0.43 (0.28;0.59)	/	×
Urine Output (L/24h) (0.5-0.99 vs. >=1)	0.21 (0.12;0.3)	/	
WBC (10 ⁹ /L) (<1 vs. 1-20)	0.35 (0.15;0.56)	1.42 (1.16;1.75)	
WBC (10 ⁹ /L) (>20 vs. 1-20)	0.15 (0.07;0.24)	1.17 (1.07;1.27)	<0.001
Serum urea (mg/100 ml) (60-179 vs. <60)	0.19 (0.12;0.27)	/	×
Serum urea (mg/100 ml) (>=180 vs. <60)	0.51 (0.34;0.69)	/	
PaO2/FiO2 (100*mmHg/%) (200-299 vs. >=300)	0.2 (-0.12;0.28)	/	
PaO2/FiO2 (100*mmHg/%) (100-199 vs. >=300)	0.36 (0.27;0.45)	/	×
PaO2/FiO2 (100*mmHg/%) (<100 vs. >=300)	0.78 (0.63;0.92)	/	
Heart rate (bpm) (<70 vs. 70-119)	-0.24 (-0.33;-0.15)	/	
Heart rate (bpm) (>=120 vs. 70-119)	0.1 (0.02;0.18)	/	×
Systolic Blood Pressure (mmHg) (<70 vs. >=100)	0.51 (0.41;0.62)	1.67 (1.51;1.86)	
Systolic Blood Pressure (mmHg) (70-99 vs. >=100)	0.19 (0.12;0.26)	1.21 (1.13;1.3)	<0.001
Potassium (mEq/L) (<3 vs. 3-4.9)	0.21 (0.08;0.33)	1.23 (1.08;1.39)	
Potassium (mEq/L) (>=5 vs. 3-4.9)	0.1 (0.01;0.19)	1.1 (1.01;1.21)	0.001
Clinical conditions on admission			
Acute intoxication (Yes vs. No)	-0.89 (-1.22;-0.56)	0.41 (0.3;0.57)	<0.001
Spontaneous Intraparenchymal bleeding (Yes vs. No)	0.72 (0.51;0.93)	/	×
ARDS (Moderate or Severe vs. No or Mild)	0.25 (0.09;0.41)	1.29 (1.09;1.51)	0.002
Haematological disease (Yes vs. No)	0.54 (0.21;0.88)	1.72 (1.23;2.4)	0.002
Ascites (Yes vs. No)	0.47 (0.13;0.81)	1.6 (1.14;2.25)	0.007
Lung cancer (Yes vs. No)	0.88 (0.61;1.15)	2.41 (1.84;3.15)	<0.001
Acute pancreatitis (Yes vs. No)	0.49 (0.24;0.74)	1.64 (1.28;2.1)	<0.001
Seizures (Yes vs. No)	-0.33 (-0.52;-0.13)	0.72 (0.6;0.88)	0.001
Bowel ischaemia (Yes vs. No)	0.66 (0.43;0.89)	1.94 (1.54;2.43)	<0.001
Spontaneous Subarachnoid haemorrhage (Yes vs. No)	0.61 (0.4;0.83)	1.85 (1.49;2.29)	0.001
Gastrointestinal perforation (Yes vs. No)	0.47 (0.31;0.63)	1.6 (1.36;1.88)	<0.001
Cardiac arrest (Yes vs. No)	0.31 (0.16;0.45)	1.36 (1.17;1.57)	<0.001
Cerebral artery stroke (Yes vs. No)	0.29 (0.12;0.46)	1.34 (1.13;1.59)	<0.001
Left heart failure with pulmonary edema (Yes vs. No)	-0.28 (-0.41;-0.16)	0.75 (0.66;0.86)	<0.001
Pancreatic malignancy (Yes vs. No)	0.6 (0.26;0.95)	1.83 (1.29;2.59)	0.001
Metabolic disorder (Yes vs. No)	-0.18 (-0.3;-0.06)	0.84 (0.74;0.94)	0.003
Pleural effusion (Yes vs. No)	0.18 (0.05;0.3)	1.19 (1.05;1.35)	0.006
Liver Dysfunction Syndrome (Yes vs. No)	0.61 (0.25;0.96)	1.83 (1.28;2.62)	<0.001
Infections (Yes vs. No)	0.08 (-0.02;0.19)	/	×
Pneumonia (Yes vs. No)	0.15 (0.03;0.26)	1.16 (1.04;1.29)	0.01
Urinary tract infection (Yes vs. No)	-0.45 (-0.63;-0.28)	0.63 (0.53;0.76)	<0.001
Skin or soft tissue infection (Yes vs. No)	0.4 (0.18;0.62)	1.49 (1.2;1.86)	<0.001
Cholecystitis/cholangitis (Yes vs. No)	-0.45 (-0.72;-0.18)	0.64 (0.49;0.83)	<0.001
Primary bacteraemia of unknown origin (Yes vs. No)	-0.39 (-0.66;-0.13)	0.67 (0.52;0.88)	0.004
Multiple trauma (Yes vs. No)	-0.39 (-0.59;-0.19)	0.68 (0.56;0.83)	<0.001
Traumatic brain injury (Yes vs. No)	-0.18 (-0.4;0.04)	/	×
Traumatic Subdural haematoma (Yes vs. No)	0.41 (0.13;0.69)	1.51 (1.14;2)	0.004
<i>(to be continued)</i>			

° 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			
Any tumour without metastasis (Yes vs. No tumor)	0.13 (0.03;0.22)	1.13 (1.03;1.25)	
Metastatic cancer (Yes vs. No tumor)	0.93 (0.79;1.07)	2.54 (2.21;2.93)	<0.001
NYHA class II-III (Yes vs. None)	0.18 (0.1;0.27)	1.2 (1.1;1.31)	
NYHA class IV (Yes vs. None)	0.65 (0.47;0.83)	1.91 (1.6;2.29)	<0.001
Malignant haematological disease (Yes vs. No)	0.55 (0.36;0.74)	1.73 (1.43;2.09)	<0.001
Moderate or severe liver disease (Yes vs. No)	0.53 (0.35;0.7)	1.69 (1.42;2.02)	<0.001
Severe COPD (Yes vs. No)	0.33 (0.23;0.43)	1.39 (1.25;1.54)	<0.001
Severe malnutrition (Yes vs. No)	1.82 (0.75;2.89)	/	×
Dementia (Yes vs. No)	0.2 (0.07;0.33)	1.23 (1.08;1.4)	0.002
Immunosuppression or AIDS (Yes vs. No)	0.55 (0.36;0.73)	1.73 (1.44;2.08)	<0.001
Restrictive lung disease (Yes vs. No)	0.36 (0.19;0.52)	1.43 (1.22;1.69) /	<0.001
Arrhythmia (Yes vs. No)	0.27 (0.18;0.35)	/	×
Hypertension(Yes vs. No)	-0.14 (-0.2;-0.07)	0.87 (0.82;0.93)	<0.001
Cerebrovascular disease (Yes vs. No)	0.14 (0.06;0.22)	1.15 (1.06;1.25)	0.001
Autoimmune disease (Yes vs. No)	0.28 (0.11;0.44)	1.32 (1.12;1.55)	<0.001
Organ failures			
GCS (3,4 vs. 14-15)	2.78 (2.31;3.25)	/	
GCS (5 vs. 14-15)	2.17 (1.63;2.71)	/	
GCS (6 vs. 14-15)	2 (1.51;2.49)	/	
GCS (7,8,9,10 vs. 14-15)	0.64 (0.51;0.78)	/	×
GCS (11,12,13 vs. 14-15)	0.32 (0.21;0.43)	/	
GCS (Not evaluable in the first 24 hours in neurological patient* vs. 14-15)	1.16 (0.92;1.4)	/	
GCS (Not evaluable in the first 24 hours in NON-neurological patient* vs. 14-15)	0.65 (0.52;0.78)	/	
Neurologic failure (Cerebral coma vs. None or Not evaluable in the first 24 hours)	0.18 (0.03;0.33)	1.2 (1.03;1.39)	
Neurologic failure (Metabolic coma vs. None or Not evaluable in the first 24 hours)	-0.25 (-0.44;-0.06)	0.78 (0.65;0.94)	
Neurologic failure (Postanoxic coma vs. None or Not evaluable in the first 24 hours)	-0.09 (-0.29;0.11)	0.92 (0.75;1.12)	<0.001
Neurologic failure (Toxic coma vs. None or Not evaluable in the first 24 hours)	-0.89 (-1.41;-0.38)	0.41 (0.24;0.69)	
Cardiovascular failure (Neurogenic shock vs. None or Without shock)	0.9 (0.59;1.21)	/	
Cardiovascular failure (Mixed shock vs. None or Without shock)	0.51 (0.3;0.71)	/	×
Cardiovascular failure (Other shock vs. None or Without shock)	0.26 (0.17;0.34)	/	
Renal failure (AKIN) (Mild vs. None)	0.14 (0.05;0.22)	/	
Renal failure (AKIN) (Moderate vs. None)	0.68 (0.52;0.83)	/	×
Renal failure (AKIN) (Severe vs. None)	0.86 (0.67;1.05)	/	
Respiratory failure (Yes vs. No)	0.36 (0.28;0.45)	/	×
Metabolic failure (Yes vs. No)	0.24 (0.16;0.31)	1.27 (1.18;1.37)	<0.001
Surgical and non surgical procedures			
Nephro/Urological surgery (Yes vs. No)	-0.59 (-0.82;-0.36)	0.55 (0.44;0.7)	<0.001
Orthopaedic surgery (Yes vs. No)	-0.31 (-0.5;-0.11)	0.74 (0.61;0.89)	0.001
Peripheral vascular surgery (Yes vs. No)	0.37 (0.13;0.61)	1.45 (1.14;1.85)	0.003
Abdominal vascular surgery (Yes vs. No)	0.28 (0.07;0.49)	1.33 (1.07;1.64)	0.01
Interactions among independent variables			
GCS (3,4,5,6) × Platelets ($10^3/\text{mm}^3$) (<50)	-0.79 (-1.19;-0.39)	/	<0.001
GCS (3,4,5,6) × PaO2/FiO2 (100*mmHg/%) (<200)	-0.65 (-0.85;-0.45)	/	
GCS Not evaluable in the first 24 hours in neurological patient* × PaO2/FiO2 (100*mmHg/%) (<200)	-0.33 (-0.65;-0.01)	/	<0.001
GCS (3,4,5) × PaO2/FiO2 (100*mmHg/%) (<300)	-0.35 (-0.56;-0.13)	/	
GCS (7,8,9,10) × PaO2/FiO2 (100*mmHg/%) (<100)	-0.6 (-0.92;-0.27)	/	
GCS (3,4) × Serum urea (mg/100 ml) (>=60)	-0.23 (-0.44;-0.02)	/	0.034
Serum urea (mg/100 ml) (>=180) × Urine Output (L/24h) (<0.5)	-0.35 (-0.6;-0.11)	/	0.004
Sodium (mEq/L) (>=145) × Urine Output (L/24h) (<0.5)	-0.33 (-0.56;-0.09)	/	0.007
Heart rate (bpm) (<70) × Urine Output (L/24h) (<1)	0.38 (0.21;0.54)	/	<0.001
Surgical status (Non surgical) × Renal failure (AKIN) (Moderate or Severe)	-0.39 (-0.53;-0.24)	/	<0.001
GCS (3,4) × Infections	-0.56 (-0.81;-0.31)	/	
GCS Not evaluable in the first 24 hours in neurological patient* × Infections	-0.59 (-0.96;-0.21)	/	<0.001
GCS Not evaluable in the first 24 hours in NON-neurological patient* × Infections	-0.2 (-0.38;-0.03)	/	
GCS (3,4) × Ward of admission - Emergency room	0.66 (0.43;0.88)	/	
GCS (5) × Ward of admission - Emergency room	1.55 (1.2;4)	/	
GCS (6) × Ward of admission - Emergency room	0.3 (-0.06;0.66)	/	
GCS (7,8,9,10) × Ward of admission - Emergency room	0.26 (0.06;0.46)	/	<0.001
GCS (11,12,13) × Ward of admission - Emergency room	0.21 (0.01;0.42)	/	
GCS (Not evaluable in the first 24 hours in neurological patient*) × Ward of admission - Emergency room	0.67 (0.39;0.94)	/	
GCS (Not evaluable in the first 24 hours in NON-neurological patient*) × Ward of admission - Emergency room	0.19 (0;0.39)	/	
GCS (3,4,5,6) × Age	-0.01 (-0.02;-0.01)	/	<0.001
GCS (3,4,5,6) × Spontaneous Intraparenchymal bleeding	0.64 (0.33;0.94)	/	<0.001
Severe malnutrition × Age	-0.02 (-0.04;-0.01)	/	0.01
Arrhythmia × Neurogenic shock or Mixed shock or Other shock	-0.28 (-0.43;-0.13)	/	<0.001
GCS (3,4) × Traumatic brain injury	0.72 (0.37;1.07)	/	<0.001
Ward of admission: Other ICU because of Step-up care × Renal failure (AKIN) - Mild	-0.25 (-0.78;0.27)	/	
Ward of admission: Other ICU because of Step-up care × Renal failure (AKIN) - Moderate or Severe	-0.66 (-1.17;-0.15)	/	0.039
Age × Stay before ICU (days) (>28)	-0.02 (-0.03;-0.01)	/	<0.001
GCS (<11,Not evaluable in the first 24 hours) × Stay before ICU (days) (>28)	-0.44 (-0.76;-0.11)	/	0.008
Respiratory failure × Stay before ICU (days) (>28)	-0.33 (-0.66;0)	/	0.053
Dependent variable explained		Goodness-of-fit	
Likelihood Ratio Test:	11254	Area under the ROC curve:	0.843
Degree of freedom:	136	GiViTi Calibration Test:	1.54
p-value:	<0.0001	p-value:	0.214
		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.

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Prognostic models - Adult patients with LOS<24 hours

Model: Logistic regression.

Dependent variable: Hospital mortality°.

Sample used for model development: Patients with LOS<24 hours from general Italian ICUs.

Sample size: 14548 patients.

Independent variables	Coefficients (95% CI)	Odds Ratio (95% CI)	p
Intercept	-5.92 (-6.49;-5.36)	/	/
Miscellanea			
Age in decades	0.36 (0.30;0.42)	1.43 (1.35;1.52)	<0.001
Body mass Index (BMI) (Underweight vs. Normal)	0.45 (0.18;0.72)	1.57 (1.2;2.05)	<0.001
Body mass Index (BMI) (Overweight or Obese vs. Normal)	-0.38 (-0.54;-0.22)	0.69 (0.58;0.8)	
Surgical status (Non surgical vs. Elective surgical)	0.01 (-0.4;0.42)	1.01 (0.67;1.53)	×
Surgical status (Emergency surgical vs. Elective surgical)	0.45 (0.22;0.69)	1.57 (1.24;1.99)	
Stay before ICU (days) (logarithm)	0.25 (0.17;0.33)	1.28 (1.18;1.39)	<0.001
Reason for admission (Intensive Treatment vs. Monitoring/Weaning)	-0.44 (-0.9;0.03)	0.65 (0.41;1.03)	0.063
Ward of admission: Medical ward vs. Surgical ward	0.69 (0.39;0.99)	1.99 (1.48;2.68)	
Ward of admission: Emergency room vs. Surgical ward	0.22 (-0.07;0.51)	1.24 (0.93;1.66)	
Ward of admission: High dependency care unit vs. Surgical ward	0.19 (-0.48;0.87)	1.21 (0.62;2.39) /	
Ward of admission: Other ICU because of Specialist expertise vs. Surgical ward	0.14 (-0.85;1.13)	1.15 (0.43;3.1)	<0.001
Ward of admission: Other ICU because of Step-up care vs. Surgical ward	0.25 (-0.69;1.2)	1.29 (0.5;3.32)	
Ward of admission: Other ICU because of Logistical/organizational reasons vs. Surgical ward	0.72 (-0.04;1.48)	2.05 (0.96;4.4)	
Ward of admission: Long-term chronic care hospital vs. Surgical ward	1.01 (-0.31;2.32)	2.73 (0.73;10.2)	
Operating theatre (Yes vs. No)	-0.99 (-1.35;-0.63)	0.37 (0.26;0.53)	<0.001
Physiopatological components			
Bilirubin (mg/100ml) (>=4 vs. <4)	0.89 (0.47;1.32)	2.44 (1.59;3.73)	0.001
Heart rate (bpm) (<40 vs. 40-119)	0.74 (0.27;1.2)	2.09 (1.31;3.33)	<0.001
Heart rate (bpm) (>=120 vs. 40-119)	0.29 (0.05;0.53)	1.34 (1.05;1.71)	<0.001
WBC (10 ⁹ /L) (>20 vs. <=20)	0.4 (0.14;0.66)	1.49 (1.15;1.94)	0.003
HCO3 (mEq/L) (<15 vs. >=15)	0.61 (0.29;0.94)	1.84 (1.33;2.55)	<0.001
Systolic Blood Pressure (mmHg) (<70 vs. 100-199)	0.56 (0.11;1.02)	/	
Systolic Blood Pressure (mmHg) (70-99 vs. 100-199)	-0.04 (-0.3;0.22)	/	×
Systolic Blood Pressure (mmHg) (>=200 vs. 100-199)	-0.48 (-1.03;0.07)	/	
Urine Output (L/24h) (<0.49 vs. >=1)	1.14 (0.81;1.48)	/	
Urine Output (L/24h) (0.5-0.99 vs. >=1)	0.44 (0.18;0.7)	/	×
PaO2/FiO2 (100*mmHg/%) (100-199 vs. >=200)	0.3 (0.09;0.51)	1.35 (1.1;1.67)	<0.001
PaO2/FiO2 (100*mmHg/%) (<100 vs. >=200)	0.97 (0.53;1.42)	2.65 (1.69;4.14)	<0.001
Serum urea (mg/100 ml) (>=60 vs. <60)	0.38 (0.2;0.56)	1.46 (1.22;1.75)	<0.001
Clinical conditions on admission			
Spontaneous Intraparenchymal bleeding (Yes vs. No)	1.09 (0.56;1.63)	/	×
Ascites (Yes vs. No)	2.28 (1.37;3.18)	9.75 (3.94;24.16)	<0.001
Spontaneous Subarachnoid haemorrhage (Yes vs. No)	1.19 (0.63;1.75)	3.28 (1.88;5.73)	<0.001
Ruptured or fissured aneurysm (Yes vs. No)	1.26 (0.68;1.85)	3.54 (1.97;6.37)	<0.001
Seizures (Yes vs. No)	-1.05 (-1.76;-0.33)	0.35 (0.17;0.72)	0.002
Acute intoxication (Yes vs. No)	-1.07 (-1.89;-0.25)	0.34 (0.15;0.78)	0.006
Pulmonary embolism (Yes vs. No)	0.93 (0.22;1.65)	2.54 (1.24;5.19)	0.013
Infections (Yes vs. No)	0.26 (-0.02;0.54)	1.3 (0.98;1.71)	0.072
Comorbidities			
Metastatic cancer (Yes vs. No)	0.75 (0.49;1.01)	2.12 (1.64;2.75)	<0.001
Restrictive lung disease (Yes vs. No)	0.66 (0.23;1.08)	1.93 (1.26;2.95)	0.004
Malignant haematological disease (Yes vs. No)	0.94 (0.46;1.42)	2.55 (1.58;4.12)	<0.001
NYHA class IV (Yes vs. No)	1 (0.56;1.43)	2.71 (1.76;4.16)	<0.001
Organ failures			
GCS (3,4 vs. 15)	2.98 (2.49;3.47)	/	
GCS (5,6,7,8 vs. 15)	1.3 (0.84;1.76)	/	
GCS (9,10,11,12,13,14 vs. 15)	0.61 (0.4;0.82)	/	×
GCS (Not evaluable in the first 24 hours in neurological patient* vs. 15)	1.04 (0.46;1.62)	/	
GCS (Not evaluable in the first 24 hours in NON-neurological patient* vs. 15)	0 (-0.47;0.46)	/	
Cardiovascular failure (Without shock vs. None)	0.78 (0.34;1.23)	2.19 (1.4;3.42)	
Cardiovascular failure (Cardiogenic shock vs. None)	0.8 (0.4;1.2)	2.23 (1.49;3.33)	
Cardiovascular failure (Septic shock vs. None)	1.06 (0.47;1.66)	2.9 (1.59;5.27)	
Cardiovascular failure (Haemorrhagic/hypovolemic shock vs. None)	1.15 (0.68;1.61)	3.15 (1.98;5.01)	<0.001
Cardiovascular failure (Hypovolemic shock vs. None)	1.06 (0.43;1.69)	2.88 (1.53;5.41)	
Cardiovascular failure (Neurogenic shock vs. None)	1.69 (0.67;2.71)	5.42 (1.95;15.04)	
Cardiovascular failure (Other shock vs. None)	1.27 (0.41;2.12)	3.55 (1.51;8.33)	
Cardiovascular failure (Mixed shock vs. None)	1.48 (0.36;2.59)	4.37 (1.43;13.33)	
Respiratory failure (Only hypoxic failure vs. None)	0.83 (0.37;1.28)	2.28 (1.44;3.61)	
Respiratory failure (Only hypercapnic failure vs. None)	0.58 (-0.06;1.22)	1.79 (0.95;3.39)	0.004
Respiratory failure (Hypoxic-hypercapnic failure vs. None)	0.95 (0.4;1.49)	2.58 (1.5;4.45)	
Respiratory failure (Intubation for airway maint. vs. None)	0.59 (0.15;1.03)	1.8 (1.16;2.79)	
Surgical and non surgical procedures			
Gastrointestinal surgery (Yes vs. No)	0.55 (0.35;0.76)	1.74 (1.42;2.14)	<0.001
Pancreatic surgery (Yes vs. No)	0.76 (0.27;1.26)	2.14 (1.31;3.52)	0.005
Interventional cardiology (Yes vs. No)	-0.57 (-1.09;0.05)	0.57 (0.34;0.95)	0.028

° 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.

* 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.

Interactions among independent variables			
GCS (Not evaluable in the first 24 hours) × Surgical status (Non surgical)	1.12 (0.57;1.67)	/	<0.001
GCS (Not evaluable in the first 24 hours) × Surgical status (Emergency surgical)	0.35 (-0.24;0.93)	/	
GCS (3,4,5,6,7,8) × Systolic Blood Pressure (mmHg) (<70)	1.31 (0.42;2.2)	/	<0.001
GCS (3,4,5,6,7,8) × Systolic Blood Pressure (mmHg) (70-99)	0.7 (0.11;1.29)	/	
GCS (Not evaluable in the first 24 hours in NON-neurological patient*) × Systolic Blood Pressure (mmHg) (<70)	1.45 (0.66;2.25)	/	
GCS (Not evaluable in the first 24 hours in NON-neurological patient*) × Systolic Blood Pressure (mmHg) (70-99)	0.86 (0.3;1.41)	/	
Systolic Blood Pressure (mmHg) (<70) × Urine Output (L/24h) (<0.49)	1.87 (1.16;2.58)	/	<0.001
Systolic Blood Pressure (mmHg) (70-99) × Urine Output (L/24h) (<0.49)	0.72 (0.21;1.23)	/	
Systolic Blood Pressure (mmHg) (<100) × Urine Output (L/24h) (0.5-0.99)	0.58 (0.17;0.99)	/	
GCS (3,4) × Spontaneous Intraparenchymal bleeding	0.96 (-0.07;1.98)	/	0.057

Dependent variable explained

Likelihood ratio test: 9474.5
Degree of freedom: 70
p-value: <0.0001

Goodness-of-fit

Area under the ROC curve: 0.952
GiViTI Calibration Test: 1.39
p-value: 0.239
Polynomial Degree: 2

× See interaction significance.

* 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.

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Validity of the models - Calibration belts

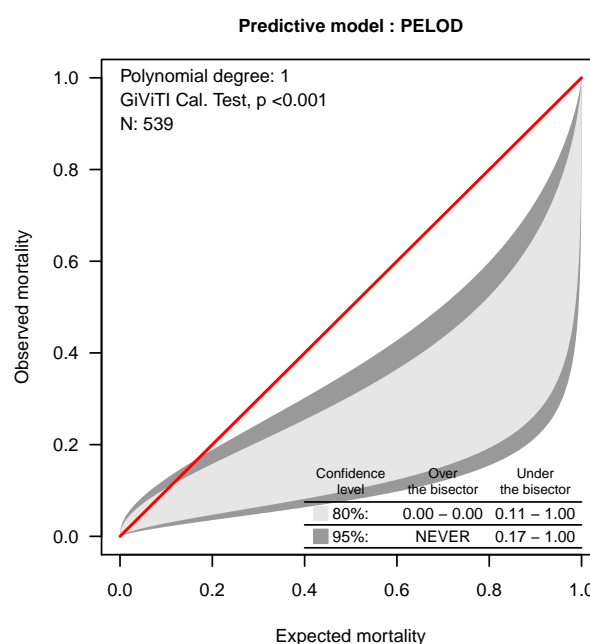
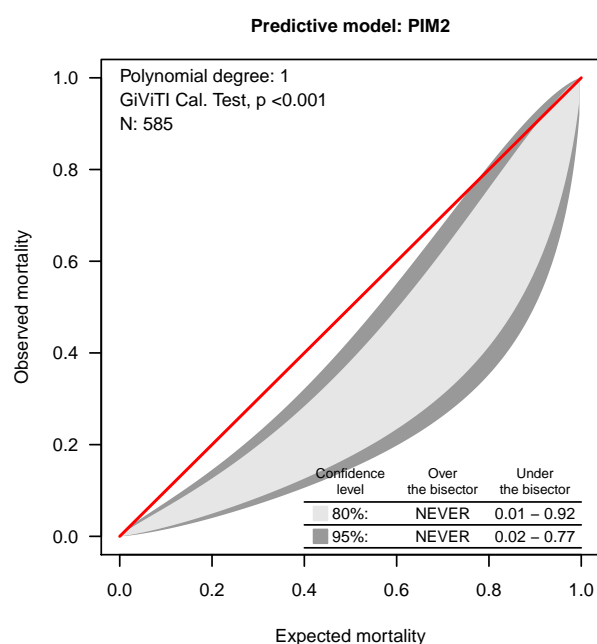
The calibration belt is designed to compare actually observed mortality with expected mortality according to a given prediction model. Expected mortality is plotted on the x axis while observed mortality is plotted on the y-axis. Two overlapping belts are presented in each graph: the first, in light grey, with a confidence level of 80%, and the second, in dark grey, with a confidence level of 95%. The belt lying above the bisector indicates that observed mortality is higher than expected mortality; vice versa, the belt lying below the bisector indicates that observed mortality is lower than expected mortality. The belt is plotted in the range of expected mortality values actually present in the sample under study. The higher the polynomial, the more complex the relationship between expected and observed mortality. A significant test ($p < 0.05$) indicates poor calibration.

These pages show the calibration belts built on 2013 data using PIM 2, PELOD, SAPSII, and GiViTI 2013 prognostic models. The latter are reported for both the overall population and the subgroups presented in the report, according to length of stay of more or less than 24 hours.

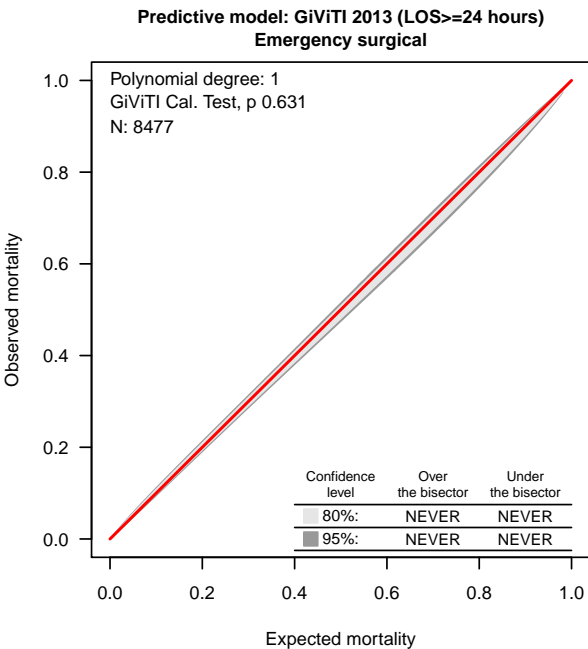
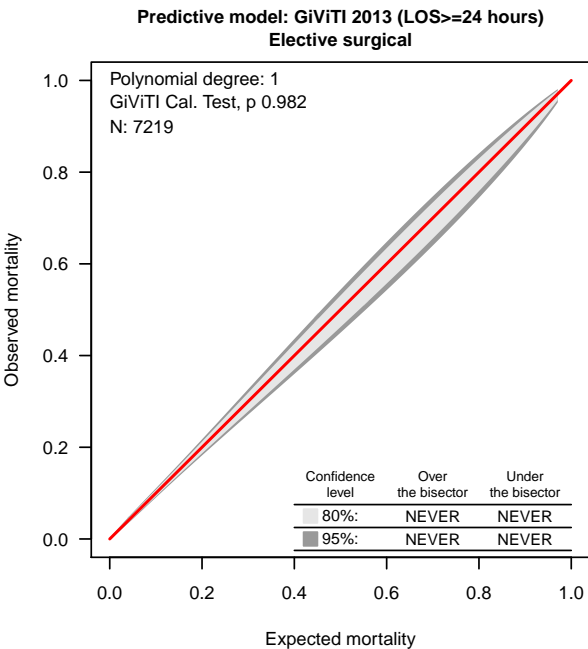
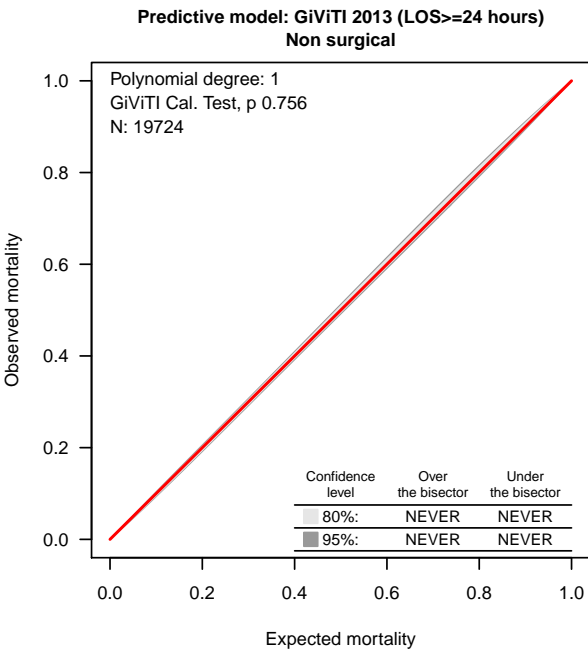
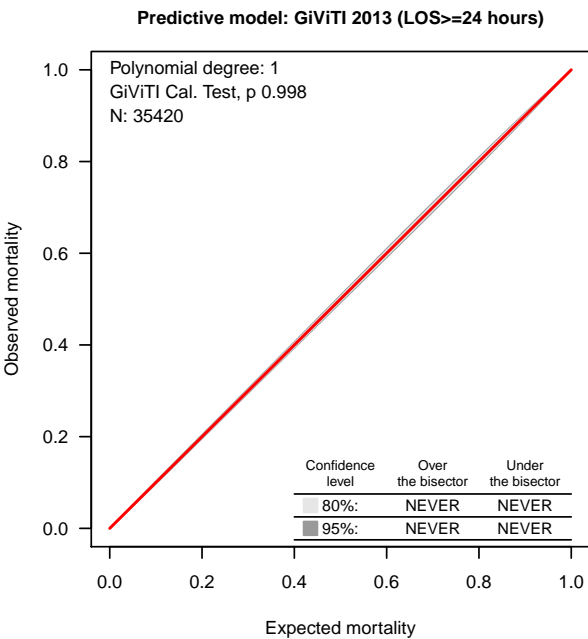
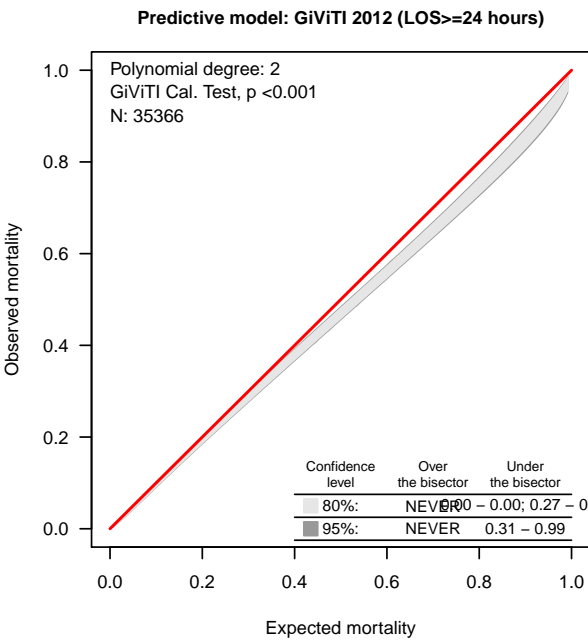
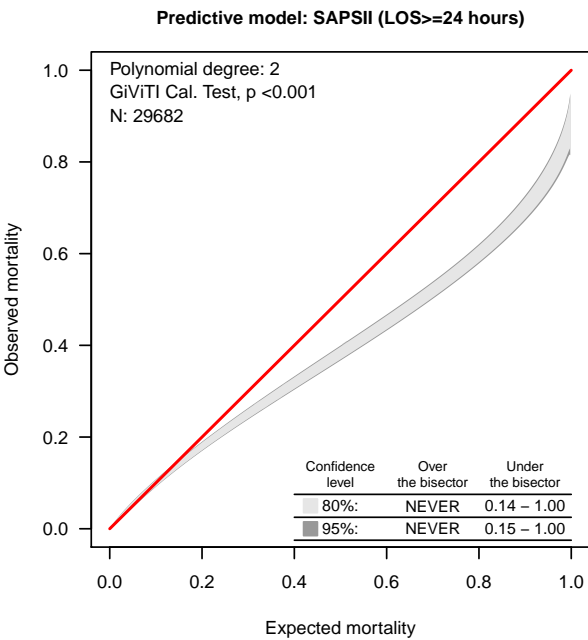
These belts serve as a representation of the validity of the models used to evaluate the performance of each ICU. A model is well calibrated, and thus a useful tool for evaluating individual departments, when the bisector is fully included in the belt. Only when this occurs can a deviation from the bisector be attributed to local factors and not to poor calibration of the model. Poor calibration is clearly visible for SAPSII, PIM 2 and PELOD and, accordingly, these should be used with caution to assess the performance of individual ICUs.

Moreover, the calibration belts built on 2013 data using the GiViTI 2012 models are reported. The aim of these belts is to investigate 2012 to 2013 difference in terms of performance of the GiViTI general ICUs.

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

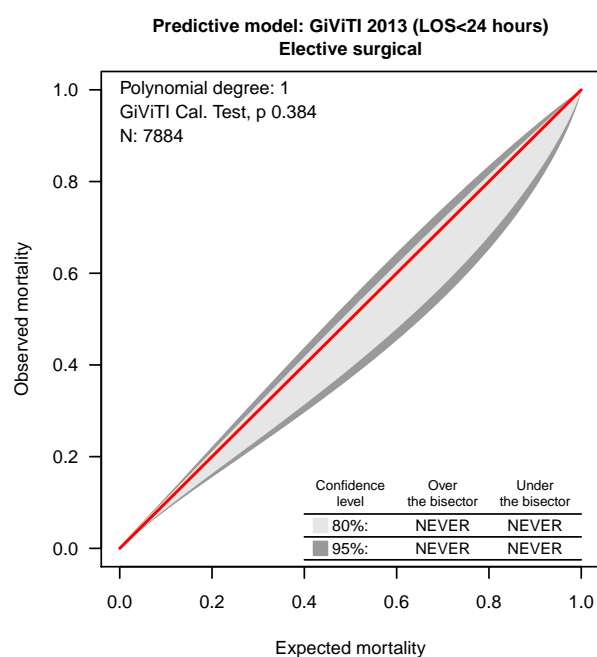
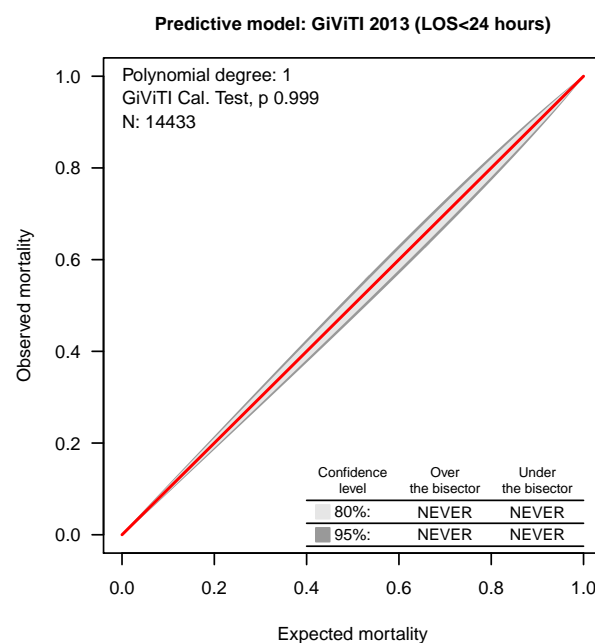
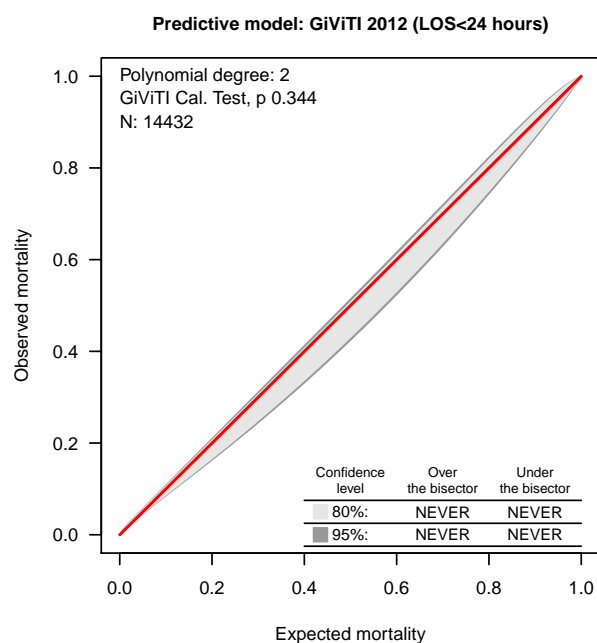


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