

GiViTI

Gruppo Italiano per la Valutazione degli Interventi In Terapia Intensiva

**Report
PROSAFE project**

Year 2012

National report for general ICUs (178 ICUs)

ITALY

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

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Contents

The project	5
Data collection	5
The reports	5
Description of the statistics	6
Project participation and location of Italian participating ICUs	6
Description of the hospitals and ICUs	6
Study flow-chart	7
Description of patients	9
Statistics	13
Project participation	15
Location of Italian participating ICUs	17
Description of hospitals	19
Description of ICUs	20
Study flow-chart	21
Description of adult patients	23
Analysis of hospital mortality (GiViTI 2012): forest plot	34
Description of adult patients with LOS \geq 24 hours evaluated in the GiViTI model	35
Description of adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model	47
Description of adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model	59
Description of adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model	71
Description of adult patients with LOS $<$ 24 hours evaluated in the GiViTI model	83
Description of adult elective surgical patients with LOS $<$ 24 hours evaluated in the GiViTI model	95
Description of pediatric patients evaluated with PIM 2	107
Appendix	119
Prognostic models	121
Validity of the models	125
Coauthors	129

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 2012 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 Crimyne 2 Petal, designed to assess the accuracy (in terms of sensitivity and specificity), in the diagnosis of CRIMYNE (CRITICAL Illness MYopathy and NEuropathy), of the simplified peroneal CMAP test, using the complete ENG-EMG test as the diagnostic gold standard;
- 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 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 281 ICUs collected data during 2012, 267 Italian and 14 foreign ICUs, for a total of 91638 patients registered in PROSAFE. Only the ICUs that collected valid data (242) 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 85965 patients admitted to intensive care during 2012.

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 242 ICUs which collected valid data in 2012 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 2012 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

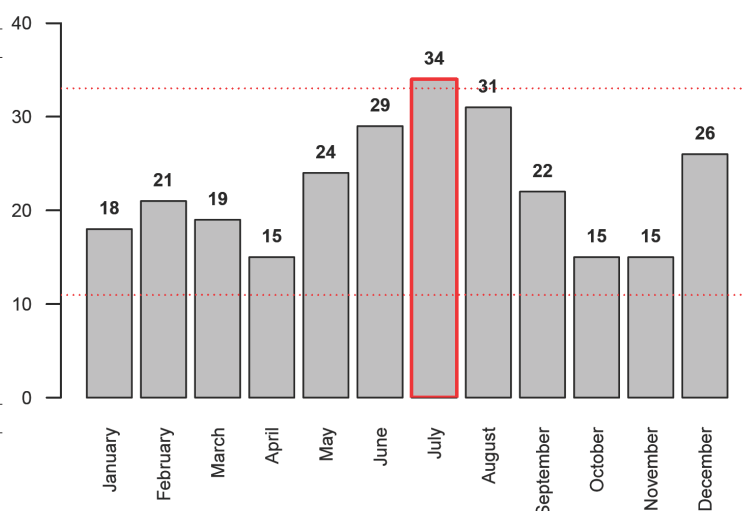
Patients admitted: 269

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

Admissions



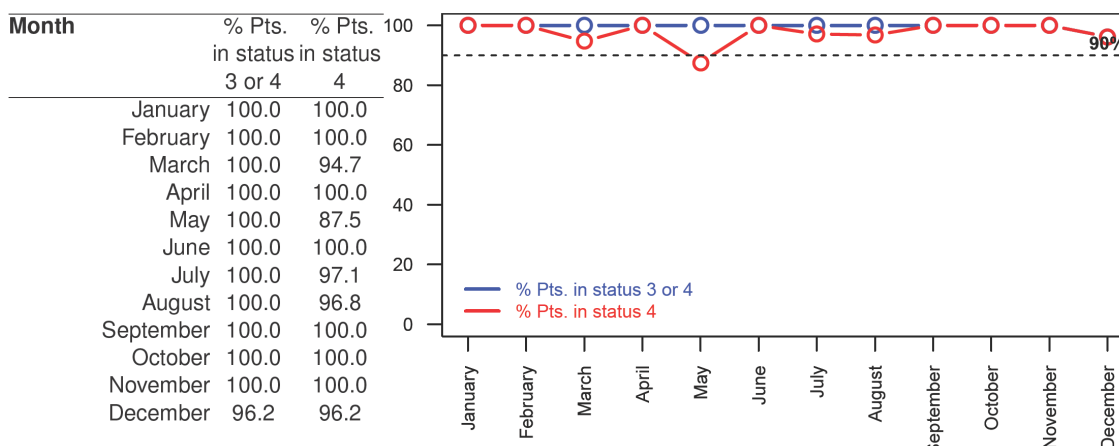
WARNING! The highlighted months have a number of patients quite different from the average. Please verify the correctness of the data and, particularly, that all consecutive patients have been registered in the Prosafe software.

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.

Month	Status (N)					Total
	1	2	3	4	5	
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%).

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

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

Incidence of VAP Two different incidence rates are presented:

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

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 2012 (GiViTI 2012 $\geq 24h$ and $< 24h$ union)	Last hospital mortality
Adults non CS with LOS $\geq 24h$	GiViTI 2012, $\geq 24h$	Last hospital mortality
	SAPS2	Hospital mortality
Adults non CS with LOS $< 24h$	GiViTI 2012, $< 24h$	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.

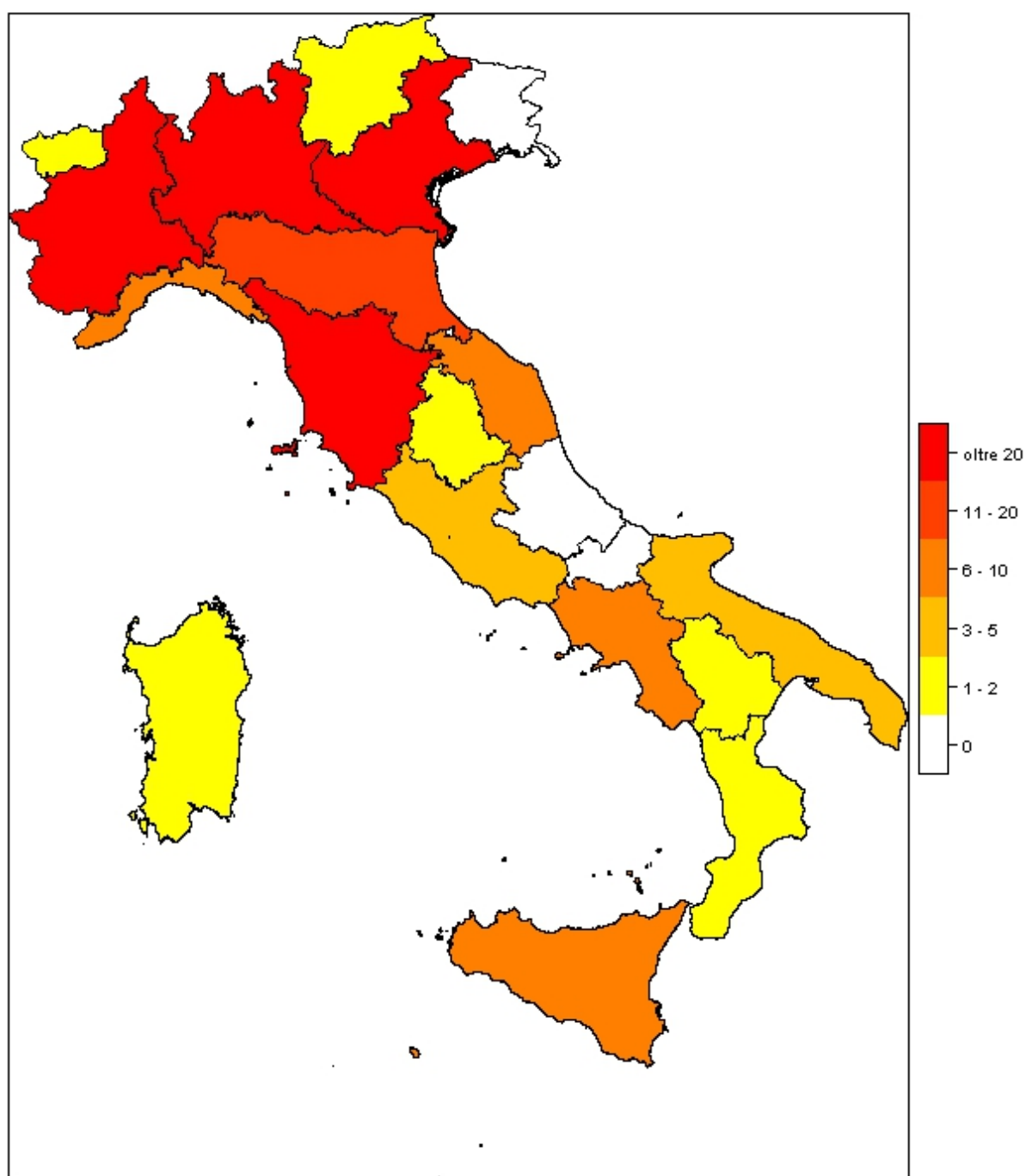
Statistics

Nation	TYPE						Total
	General	Cardiosurgical	Surgical	Neurosurgical	Pediatrics	Other	
 Cyprus	1 ICUs 857 patients						1 ICUs 857 patients
 Italy	178 ICUs 58286 patients	19 ICUs 10538 patients	9 ICUs 4746 patients	13 ICUs 3793 patients	7 ICUs 2527 patients	7 ICUs 3179 patients	233 ICUs 83069 patients
 Poland	2 ICUs 227 patients						2 ICUs 227 patients
 Slovenia			1 ICUs 100 patients			2 ICUs 833 patients	3 ICUs 933 patients
 Switzerland	1 ICUs 441 patients						1 ICUs 441 patients
 Hungary	2 ICUs 438 patients						2 ICUs 438 patients
Total	184 ICUs 60249 patients	19 ICUs 10538 patients	10 ICUs 4846 patients	13 ICUs 3793 patients	7 ICUs 2527 patients	9 ICUs 4012 patients	242 ICUs 85965 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	0	0
Basilicata	1	0.6
Calabria	2	1.1
Campania	9	5.1
Emilia Romagna	16	9
Friuli-Venezia Giulia	0	0
Lazio	4	2.2
Liguria	6	3.4
Lombardia	43	24.2
Marche	6	3.4
Molise	0	0
Piemonte	24	13.5
Puglia	3	1.7
Sardegna	2	1.1
Sicilia	6	3.4

Region	N	%
Toscana	27	15.2
Trentino Alto Adige	2	1.1
Umbria	2	1.1
Valle d'Aosta	1	0.6
Veneto	24	13.5

Geographical area	N	%
Northern Italy	116	65.2
Central Italy	39	21.9
Southern Italy	23	12.9

Description of hospitals (N=178) - Year 2012

Number of beds in hospital	N	%
< 300 beds	93	52.2
300 - 800 beds	67	37.6
> 800 beds	18	10.1
Missing	0	

Non surgical specialties	N	%
Cardiology	170	95.5
Pneumology	91	51.1
Nephrology	136	76.4
Infectious diseases	69	38.8
Pediatrics	139	78.1
Neonatology	95	53.4
Neurology	130	73.0
Haematology	74	41.6

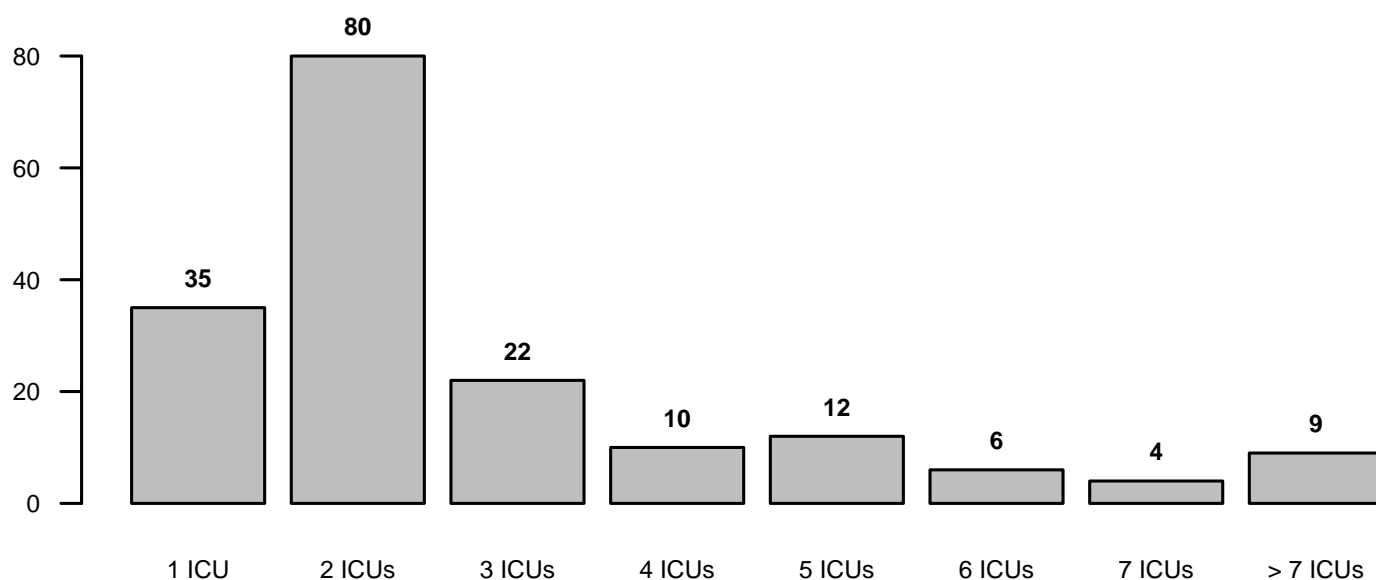
Surgical specialties (independent ward)	N	%
Neurosurgery	58	32.6
Cardiosurgery	43	24.2
Major vascular surgery	83	46.6
Thoracic surgery	66	37.1
Pediatric surgery	33	18.5
Transplantation activities (excluding corneal transplants)	29	16.4

Surgical specialties (procedures only)	N	%
Neurosurgery	9	5.1
Cardiosurgery	5	2.8
Major vascular surgery	18	10.1
Thoracic surgery	37	20.8
Pediatric surgery	36	20.2
Transplantation activities (excluding corneal transplants)	14	7.9

Type of ICUs present in hospital	N	%
General	178	100.0
Medical	0	0.0
Surgical	9	5.1
Neurosurgical	24	13.5
Cardiosurgical	39	21.9
Coronary unit	132	74.2
Burns	8	4.5
Transplants	12	6.7
Pediatrics	14	7.9
High dependency unit	31	17.4
Respiratory Intensive Care Unit	17	9.6
Other	32	18.0

Services/activities available in H	N	%
Invasive radiology	93	52.2
Invasive cardiology	120	67.4
Endoscopy	161	90.4
Microbiology	147	82.6
Emergency department	153	86.0

Number of ICUs in hospital



Description of ICUs (N=178) - Year 2012

Number of functioning beds

Mean	7.1
SD	2.6
Median	6.2
Q1-Q3	5-8
Missing	0

University affiliation

	N	%
Yes	40	22.5
No	138	77.5
Missing	0	

Number of physician

Mean	11.1
SD	4.7
Median	10
Q1-Q3	8-13
Missing	0

Physicians

	N	%
Dedicated to ICU only	44	25.0
Dedicated to ICU on a rotation basis	15	8.5
Dedicated to ICU only and on a rotation basis	117	66.5
Missing	2	

Beds per physician (average)

Mean	4.3
SD	1.6
Median	4.1
Q1-Q3	3.3-5.3
Missing	0

Beds per physician (night-time)

Mean	6.1
SD	2.6
Median	6
Q1-Q3	4-8
Missing	0

Number of nurses

Mean	23.8
SD	12.1
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	0.4
Median	2
Q1-Q3	1.8-2.3
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)	0.7	0.6	0.2-1.1
Advanced ICU Monitors with invasive pressure	1.1	0.4	1.0-1.2
Cardiac output monitors	0.4	0.3	0.2-0.5
Ventilators	1.4	0.3	1.1-1.5
Syringe pumps	4.3	2.1	3.0-5.3
IV. infusion pumps	2.7	1.6	1.5-3.4
Enteral nutrition pumps	1.2	0.4	1.0-1.3

Biomedical equipment in ICU

	N	%
Transoesophageal ECHO (TOE)	45	25.3
Basic ultrasound with linear probe	139	78.1
Advanced ultrasound with abdominal probe	119	66.9
Blood gas analyser	172	96.6
Haemodialysis/haemofiltration system	143	80.3
Transport ventilator	161	90.4
Fiberscope	178	100.0

Patients admitted

Mean	332.6
SD	174.0
Median	301.1
Q1-Q3	222.2-403.5

Occupancy rate (%)

Mean	84.7
SD	15.6
Median	85
Q1-Q3	77-93.2

Rotation index (patients/bed)

Mean	46.8
SD	16.0
Median	44.1
Q1-Q3	36.4-55

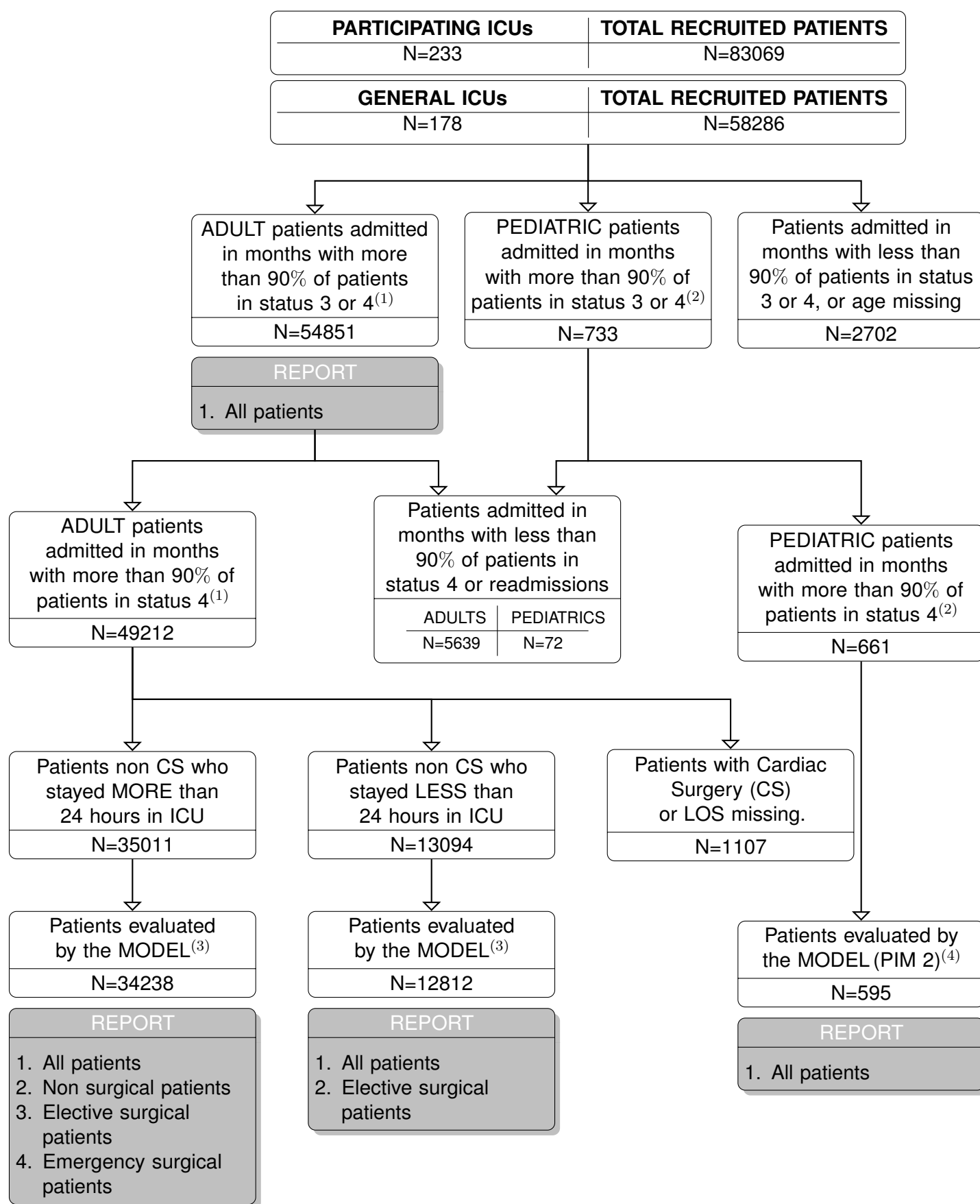
Turnover (hours)

Mean	38.1
SD	52.0
Median	28
Q1-Q3	12-48.5

Data source: ICU registration form of PROSAFE project.

National report for general ICUs (178 ICUs) - Year 2012

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 2012
Characteristics on admission - Adult patients

Patients (N): 54851

Sex	N	%
Male	32482	59.3
Female	22295	40.7
Missing	74	

Age (years)	N	%
17-45	6789	12.4
46-65	14319	26.1
66-75	14392	26.2
>75	19351	35.3
Missing	0	
Mean	66.6	
SD	16.3	
Median	71	
Q1-Q3	58-79	
Min-Max	17-103	

Body mass Index (BMI)	N	%
Underweight	2965	5.5
Normal	25188	46.4
Overweight	17070	31.5
Obese	9052	16.7
Missing	576	

Pregnancy status	N	%
Females (N=22295)		
Not fertile	12017	53.9
Not pregnant/Unknown	9703	43.5
Currently pregnant	79	0.4
Post partum	486	2.2
Missing	10	

Comorbidities	N	%
No	8387	15.3
Yes	46392	84.7
Missing	72	

Comorbidities (top 10)	N	%
Hypertension	27994	51.1
Arrhythmia	9093	16.6
Moderate COPD	8811	16.1
Myocardial infarction	7435	13.6
Any tumour without metastasis	7135	13.0
Diabetes Type II without insulin tr.	6547	12.0
NYHA class II-III	6247	11.4
Cerebrovascular disease	6171	11.3
Peripheral vascular disease	5721	10.4
Moderate or severe renal disease	4997	9.1
Missing	72	

Stay before ICU (days)		
Mean		4.9
SD		12.1
Median		1
Q1-Q3		0-5
Missing		267

Source of admission	N	%
Same hospital	49010	89.4
Other hospital	5641	10.3
Long-term chronic care hospital	171	0.3
Directly from the community (e.g., ambulance, home, ...)	4	0.0
Missing	25	

Ward of admission	N	%
Hospital (N=54651)		
Medical ward	7974	14.6
Surgical ward	26189	47.9
Emergency room	16306	29.8
Other ICU	2960	5.4
High dependency care unit	1221	2.2
Missing	1	

Reason for transfer from	N	%
Other ICU (N=2960)		
Specialist expertise	756	25.5
Step-up care	617	20.8
Logistical/organizational reasons	1426	48.2
Step-down care	161	5.4
Missing	0	

Ward of admission	N	%
Same hospital (N=49010)		
Medical ward	7034	14.4
Surgical ward	25683	52.4
Emergency room	14050	28.7
Other ICU	1160	2.4
High dependency care unit	1083	2.2
Missing	0	

Ward of admission	N	%
Other hospital (N=5641)		
Medical ward	940	16.7
Surgical ward	506	9.0
Emergency room	2256	40.0
Other ICU	1800	31.9
High dependency care unit	138	2.4
Missing	1	

Scheduled admission	N	%
No	41037	74.9
Yes	13741	25.1
Missing	73	

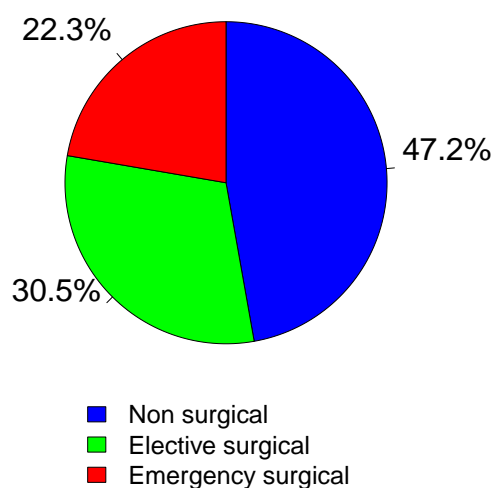
National report for general ICUs - Year 2012

Characteristics on admission - Adult patients

Trauma	N	%
No	48370	88.3
Yes	6418	11.7
Multiple trauma	2518	4.6
Missing	63	

Surgical status	N	%
Non surgical	25878	47.2
Elective surgical	16692	30.5
Emergency surgical	12217	22.3
Missing	64	

Surgical status



Source of admission	N	%
Surgical pts. (N=28909)		
Operating theatre of surgical ward	22590	78.2
Operating theatre of emergency room	1826	6.3
Surgical ward	1472	5.1
Other	3002	10.4
Missing	19	

Surgical interventions (top 10)	N	%
Elective surgical (N=16692)		
Gastrointestinal surgery	4140	24.8
Orthopaedic surgery	2117	12.7
Nephro/Urological surgery	2097	12.6
Neurosurgery	1215	7.3
Thoracic surgery	954	5.7
Abdominal vascular surgery	941	5.6
ENT surgery	852	5.1
Pancreatic surgery	729	4.4
Gynaecological surgery	737	4.4
Peripheral vascular surgery	723	4.3
Missing	0	

Timing	N	%
Elective surgical (N=16692)		
From -7 to -3 days	281	1.7
From -2 to -1 days	517	3.1
On ICU admission day	16924	101.4
The day after ICU admission	198	1.2
Missing	30	

Surgical interventions (top 10)	N	%
Emergency surgical (N=12217)		
Gastrointestinal surgery	5348	43.8
Neurosurgery	1638	13.4
Orthopaedic surgery	1147	9.4
Abdominal vascular surgery	663	5.4
Nephro/Urological surgery	509	4.2
Biliary tract surgery	516	4.2
Peripheral vascular surgery	448	3.7
Splenectomy	367	3.0
Obstetric surgery	339	2.8
Thoracic surgery	308	2.5
Missing	0	

Timing	N	%
Emergency surgical (N=12217)		
From -7 to -3 days	346	2.8
From -2 to -1 days	1360	11.1
On ICU admission day	10752	88.0
The day after ICU admission	538	4.4
Missing	39	

Non surgical interventions	N	%
None	51155	93.4
Elective	822	1.5
Emergency	2801	5.1
Missing	73	

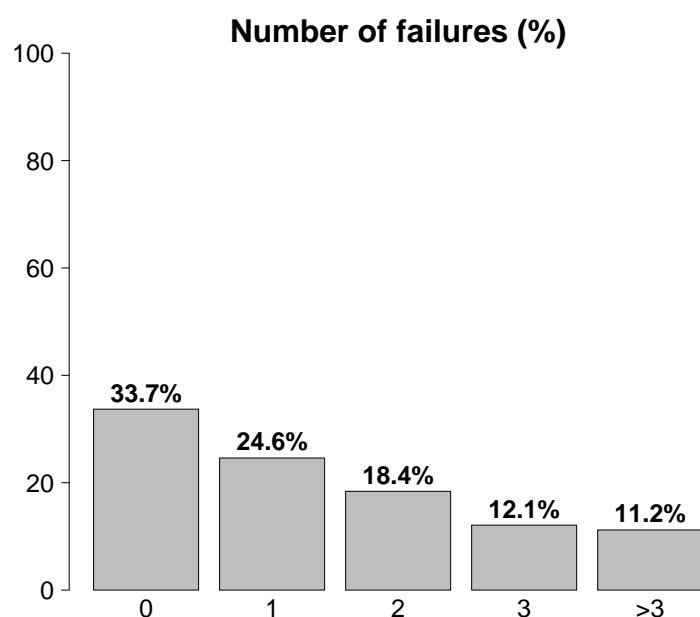
Non surgical interventions	N	%
Elective (N=822)		
Interventional endoscopy	193	23.5
Interventional radiology	168	20.4
Interventional cardiology	154	18.7
Interventional neuroradiology	103	12.5
Missing	204	

Surgical interventions	N	%
Emergency (N=2801)		
Interventional cardiology	1118	39.9
Interventional radiology	672	24.0
Interventional endoscopy	637	22.7
Interventional neuroradiology	310	11.1
Missing	62	

National report for general ICUs - Year 2012

Characteristics on admission - Adult patients

Reason for admission	N	%
Monitoring/Weaning	24221	44.2
Post surgical weaning	10044	18.5
Surgical monitoring	8867	16.3
Post interventional weaning	145	0.3
Interventional monitoring	611	1.1
Non surgical monitoring	4192	7.7
Missing	362	
Admission for procedures/treatments	82	0.1
Intensive Treatment	30328	55.4
Only ventilatory support	16081	29.4
Only cardiovascular support	2482	4.5
Ventilatory and cardiovascular support	11765	21.5
Missing	0	
Palliative Sedation	112	0.2
Diagnosis of death/Organ donation	42	0.1
Missing	66	



Failures on admission	N	%
No	18477	33.7
Yes	36374	66.3
A: Respiratory failure	27844	50.8
B: Cardiovascular failure	14247	26.0
C: Neurological failure	7110	13.0
D: Hepatic failure	480	0.9
E: Renal failure	18119	33.0
F: Acute skin failure	49	0.1
G: Metabolic failure	11188	20.4
H: Coagulation failure	1068	1.9
Missing	0	

Failures on admission (top 10)	N	%
A	7760	14.1
E	3781	6.9
ABEG	3023	5.5
AB	2621	4.8
AC	2490	4.5
AE	2338	4.3
ABE	1878	3.4
AEG	1306	2.4
ABCEG	1232	2.2
ABC	906	1.7
Missing	0	

Respiratory failure	N	%
None	27005	49.2
Only hypoxic failure	9140	16.7
Only hypercapnic failure	2030	3.7
Hypoxic-hypercapnic failure	4092	7.5
Intubation for airway maint.	12582	22.9
Missing	2	

Cardiovascular failure	N	%
None	40604	74.0
Without shock	2912	5.3
Cardiogenic shock	3425	6.2
Septic shock	3319	6.1
Haemorrhagic/hypovolemic shock	2086	3.8
Hypovolemic shock	902	1.6
Anaphylactic shock	57	0.1
Neurogenic shock	359	0.7
Other shock	417	0.8
Mixed shock	770	1.4
Missing	0	

Neurologic failure	N	%
None	35507	83.3
Cerebral coma	3403	8.0
Metabolic coma	1333	3.1
Postanoxic coma	2059	4.8
Toxic coma	311	0.7
Missing or not evaluable	12238	

Renal failure (AKIN)	N	%
None	36598	66.9
Mild	9261	16.9
Moderate	4131	7.5
Severe	4727	8.6
Missing	134	

Metabolic failure	N	%
None	43524	79.6
pH \leq 7.3, PaCO ₂ $<$ 45 mmHg	4432	8.1
Base deficit \geq 5 mmol/L, lactate $>$ 1.5x	6756	12.3
Missing	139	

National report for general ICUs - Year 2012

Characteristics on admission - Adult patients

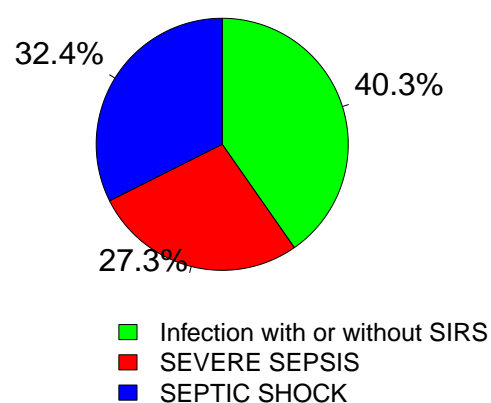
Clinical conditions on admission	N	%
Respiratory	11752	21.5
Acute exacerbation of COPD	3323	6.1
Pleural effusion	2202	4.0
ALI (Acute Lung Injury)	1353	2.5
Atelectasis	1093	2.0
Aspiration pneumonia	1022	1.9
Cardiovascular	12849	23.5
Cardiac arrest	2447	4.5
Left heart failure with pulmonary edema	2363	4.3
Left heart failure without pulm. edema	1577	2.9
Acute severe arrhythmia: tachycardias	1363	2.5
Non-ruptured aneurysm	1127	2.1
Neurological	7478	13.7
Spontaneous Intraparenchymal bleeding	1557	2.8
Cerebral artery stroke	1131	2.1
Seizures	1177	2.1
Brain tumour	1016	1.9
Metabolic/postanoxic encephalopathy	897	1.6
Gastrointestinal and hepatic	11632	21.2
Digestive tract malignancy	3372	6.2
Intestinal occlusion	1627	3.0
Gastrointestinal perforation	1648	3.0
Acute bile-duct disease	847	1.5
Gastrointestinal bleeding: upper tract	751	1.4
Trauma (anatomical districts)	6416	11.7
Pelvis/bone/joint & muscle	2940	5.4
Head	2608	4.8
Chest	2321	4.2
Spine	1197	2.2
Abdomen	1082	2.0
Major vessels injury	216	0.4
Miscellaneous	102	0.2
Other	13599	24.8
Nephrourologic disease	3134	5.7
Metabolic disorder	3003	5.5
Other disease	2431	4.4
Orthopaedic disease	1323	2.4
Acute intoxication	1148	2.1
Post transplantation	474	0.9
Liver transplantation	210	0.4
Renal transplantation	172	0.3
Infections	12052	22.0
Pneumonia	4947	9.0
NON-surgical secondary peritonitis	1256	2.3
NON-surgical urinary tract infection	959	1.8
L.R.T.I. other than pneumonia	877	1.6
Post-surgical peritonitis	874	1.6
Primary bacteraemia of unknown origin	487	0.9
Cholecystitis/cholangitis	507	0.9
NON-surgical skin/soft tissue infection	478	0.9
Clinical sepsis	420	0.8
NON-surgical CNS infection	312	0.6
Missing	74	

Trauma (anatomical districts)	N	%
Head	2608	4.8
Traumatic subarachnoid haemorrhage	806	1.5
Maxillofacial fracture	796	1.5
Traumatic Subdural haemathoma	685	1.3
Skull fracture	599	1.1
Cerebral contusion/laceration	547	1.0
Spine	1197	2.2
Vertebral fracture, without deficit	980	1.8
Cervical injury, incomplete deficit	63	0.1
Tetraplegia	51	0.1
Chest	2321	4.2
Traum. haemothorax/pneumothorax	1001	1.8
Other injuries of the chest	970	1.8
Severe lung contusion/laceration	750	1.4
Abdomen	1082	2.0
Liver: Moderate-Severe laceration	268	0.5
Spleen: Moderate-Severe laceration	255	0.5
Spleen: Massive rupture	244	0.4
Pelvis/bone/joint & muscle	2940	5.4
Long bones fracture	2447	4.5
Multiple fracture of the pelvis	635	1.2
Very severe or open fracture of the pelvis	135	0.2
Major vessels injury	216	0.4
Neck vessels: dissection/transection	40	0.1
Aorta: rupture/dissection	50	0.1
Major abdominal vessels: transection	43	0.1
Miscellaneous	102	0.2
Inhalation injury	36	0.1
Burns (>30% BSA)	69	0.1
-	0	0.0
Missing	74	

Infection severity on admission	N	%
None	42725	78.1
Infection with or without SIRS	4825	8.8
SEVERE SEPSIS	3267	6.0
SEPTIC SHOCK	3871	7.1
Missing	163	

Infection severity on admission

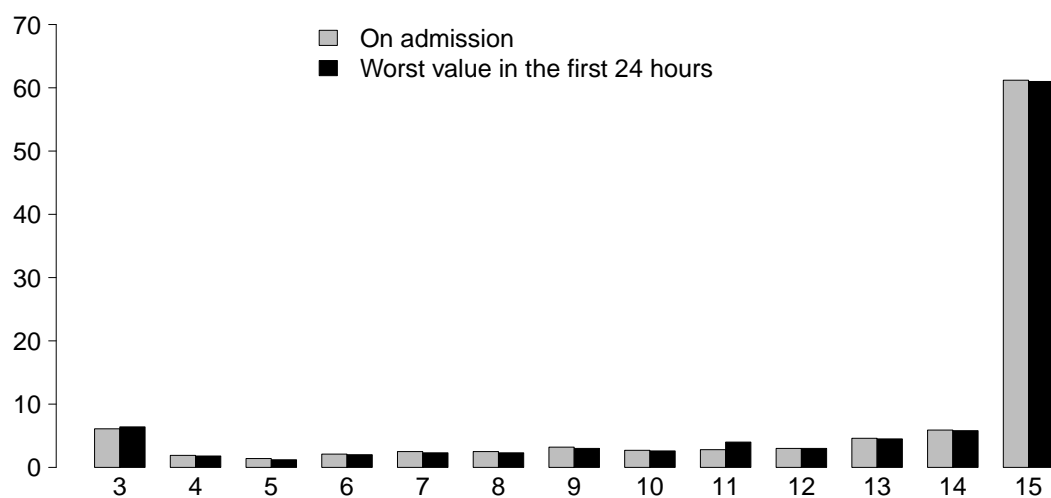
Patients infected (N=11963)



National report for general ICUs - Year 2012

Severity scores - Adult patients

Glasgow Coma Scale (%)



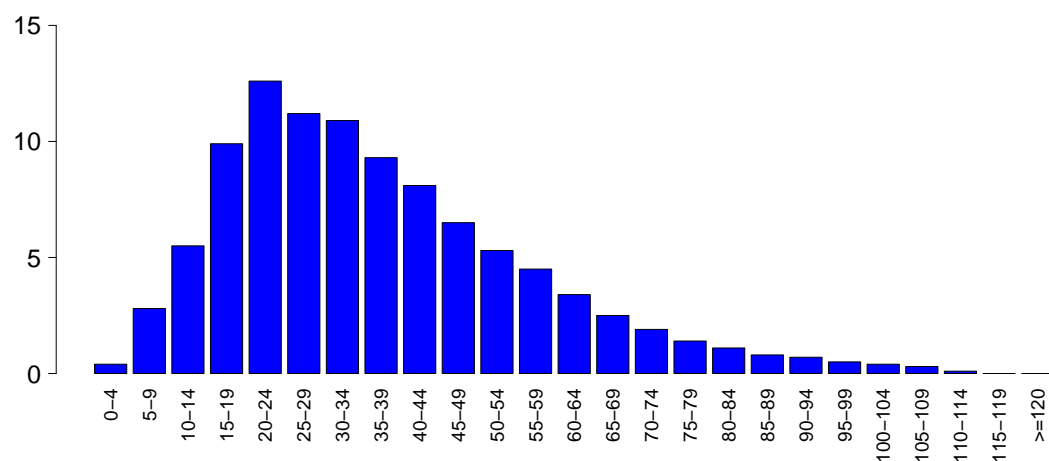
GCS (admission)

Median	15
Q1-Q3	11-15
Not evaluable	12151
Missing	87

GCS (first 24 hours)

Median	15
Q1-Q3	11-15
Not evaluable	8682
Missing	116

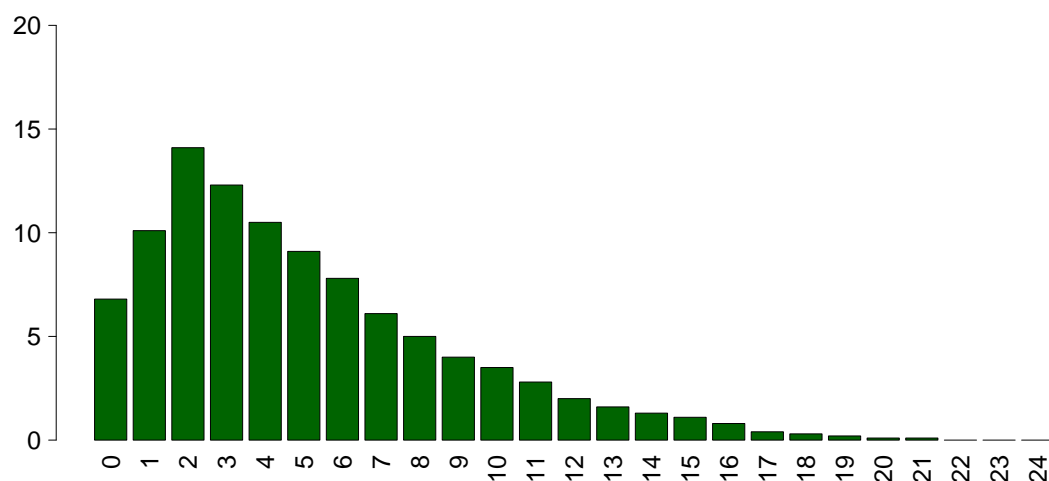
SAPS II (%)



SAPSII

Mean	36.9
SD	19.9
Median	33
Q1-Q3	22-48
Not evaluable	8682
Missing	135

SOFA (%)



SOFA

Mean	5.1
SD	3.9
Median	4
Q1-Q3	2-7
Not evaluable	8682
Missing	144

National report for general ICUs - Year 2012

Characteristics during the stay - Adult patients

Complications during the stay	N	%
No	39396	72.0
Yes	15339	28.0
Missing	116	

Failures during the stay	N	%
No	48746	88.9
Yes	6105	11.1
A: Respiratory failure	1804	3.3
B: Cardiovascular failure	3157	5.8
C: Neurological failure	494	0.9
D: Hepatic failure	225	0.4
E: Renal failure (AKIN)	2122	3.9
F: Acute skin failure	11	0.0
G: Metabolic failure	555	1.0
H: Coagulation failure	301	0.5
Missing	0	

Failures during the stay (top 10)	N	%
B	1814	3.3
A	929	1.7
E	941	1.7
BE	429	0.8
AB	325	0.6
G	312	0.6
ABE	156	0.3
C	170	0.3
AE	113	0.2
D	103	0.2
Missing	0	

Respiratory failure occurred	N	%
None	52931	96.7
Intubation for airway maint.	479	0.9
Hypoxic failure	1222	2.2
Hypercapnic failure	416	0.8
Missing	116	

Cardiovascular failure occurred	N	%
None	51578	94.2
Cardiogenic shock	981	1.8
Hypovolemic shock	212	0.4
Haemorrhagic/hypovolemic shock	324	0.6
Septic shock	1484	2.7
Anaphylactic shock	5	0.0
Neurogenic shock	168	0.3
Other shock	174	0.3
Missing	116	

Neurological failure occurred	N	%
None	54241	99.1
Cerebral coma	267	0.5
Metabolic coma	143	0.3
Postanoxic coma	92	0.2
Missing	116	

Renal failure occurred (AKIN)	N	%
None	52613	96.1
Mild	270	0.5
Moderate	326	0.6
Severe	1526	2.8
Missing	116	

Complications during the stay	N	%
Respiratory	3010	5.5
Pleural effusion	1128	2.1
Atelectasis	645	1.2
ARDS	460	0.8
ALI (Acute Lung Injury)	393	0.7
Pneumothorax/Pneumomediastinum	323	0.6
Cardiovascular	4650	8.5
Acute severe arrhythmia: tachycardias	1661	3.0
Cardiac arrest	1593	2.9
Acute severe arrhythmia: bradycardias	433	0.8
Left heart failure w/o pulm. edema	434	0.8
Pulmonary edema	362	0.7
Neurological	2468	4.5
Drowsiness/agitation/delirium	1085	2.0
Seizures	522	1.0
Brain edema	356	0.7
Intracranial hypertension	268	0.5
New ischaemic stroke	189	0.3
Gastrointestinal and hepatic	1519	2.8
Gastrointestinal bleeding: upper tract	264	0.5
Bowel ischaemia	177	0.3
Gastrointestinal bleeding: lower tract	169	0.3
Gastrointestinal perforation	180	0.3
Intrabdominal bleeding	143	0.3
Other	1306	2.4
Metabolic disorder	555	1.0
Nephrourologic disease	360	0.7
Other disease	359	0.7
Extremity compartment syndrome (severe)	30	0.1
Other skin and/or soft tissue pathology	80	0.1
Blunt cerebral vessels trauma	1	0.0
Delayed liver rupture	1	0.0
Infections	4436	8.1
Pneumonia	1794	3.3
L.R.T.I. other than pneumonia	833	1.5
NON-surgical urinary tract infection	656	1.2
Primary bacteraemia of unknown origin	495	0.9
Catheter-related bacteremia (CR-BSI)	424	0.8
Post-surgical peritonitis	205	0.4
Clinical sepsis	142	0.3
Post-surgical skin/soft tissue infection	148	0.3
Upper respiratory tract infection	171	0.3
F.U.O. fever of unknown origin	87	0.2
Missing	116	

National report for general ICUs - Year 2012
Characteristics during the stay - Adult patients

Infections	N	%
None	39686	72.5
Only on admission	10610	19.4
On admission and during ICU stay	1426	2.6
Only during ICU stay	3010	5.5
Missing	119	

Maximum severity of infection	N	%
None	39686	72.7
Infection with or without SIRS	5586	10.2
SEVERE SEPSIS	4214	7.7
SEPTIC SHOCK	5089	9.3
Missing	276	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	SEVERE SEPSIS	SEPTIC SHOCK
Admission	None	39686 (93.1%)	1448 (3.4%)	971 (2.3%)	514 (1.2%)	42619
	Infection with or without SIRS	-	4135 (85.8%)	452 (9.4%)	231 (4.8%)	4818
	SEVERE SEPSIS	-	-	2786 (85.4%)	475 (14.6%)	3261
	SEPTIC SHOCK	-	-	-	3869 (100.0%)	3869
	TOT	39686	5583	4209	5089	54567

Ventil. Associat. Pneumonia (VAP)	N	%
No	53283	97.2
Yes	1536	2.8
Missing	32	

Incidence of VAP

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

Estimate	8.8
CI (95%)	8.3-9.2

Incidence of VAP

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

Estimate	7.0%
CI (95%)	6.7-7.4

Catheter Bacteraemia (CR-BSI)	N	%
No	54311	99.2
Yes	424	0.8
Missing	116	

Incidence of CR-BSI

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

Estimate	1.5
CI (95%)	1.4-1.6

Incidence of CR-BSI

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

Estimate	1.8%
CI (95%)	1.6-2.0

National report for general ICUs - Year 2012
Process indicators - Adult patients

Procedures and/or treatments (Missing=77)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	51621	94.2										
Invasive ventilation	38733	70.7	27347	49.9	6904	12.6	1	0-6	39	0	0-0	4
Non invasive ventilation	8141	14.9	1632	3	1679	3.1	2	1-3	12	0	0-2	1
Tracheostomy	5908	10.8	1475	2.7	4796	8.8	10	4-19	10	8	5-12	0
iNO (inhaled nitric oxide)	110	0.2	16	0	22	0	3	1-6	0	2	0-7	0
Central Venous Catheter	38100	69.6	19642	35.9	29911	54.6	4	1-9	49	0	0-0	3
Arterial Catheter	39354	71.8	19803	36.2	10342	18.9	3	1-7	48	0	0-0	3
Vasoactive drugs	17565	32.1	7511	13.7	4301	7.9	2	1-5	21	0	0-0	3
Antiarrhythmics	4667	8.5	1379	2.5	2359	4.3	3	1-7	7	1	0-2	1
IABP	440	0.8	327	0.6	124	0.2	2	1-4	0	0	0-1	0
Invasive monitoring of C.O.	2268	4.1	502	0.9	394	0.7	4	2-7	2	0	0-1	0
Continuous monitoring of ScVO2	280	0.5	85	0.2	67	0.1	4	2-8	0	0	0-1	0
Temporary pacing	575	1.0	428	0.8	254	0.5	1	1-3	0	0	0-2	0
Ventricular assistance	14	0.0	4	0	10	0	5	4-14	0	8	4-9	0
DC-shock	1177	2.1								0	0-1	0
CPR	1836	3.4								0	0-1	1
Massive blood transfusion	1376	2.5								0	0-0	0
ICP monitoring without liquor-drainage	397	0.7	152	0.3	70	0.1	6	3-9	0	0	0-1	0
ICP monitoring with liquor-drainage	469	0.9	271	0.5	219	0.4	8	3-15	0	0	0-1	0
External ventricular drainage without ICP	155	0.3	110	0.2	86	0.2	4	2-11	1	0	0-3	1
Haemofiltration	2002	3.7	220	0.4	494	0.9	4	2-9	3	1	0-3	0
Haemodialysis	1228	2.2	259	0.5	498	0.9	3	1-8	1	1	0-3	0
ECMO	98	0.2	39	0.1	32	0.1	6	1-11	0	0	0-2	0
Hepatic clearance techniques	7	0.0										
Clearance techniques during sepsis	252	0.5	9	0	31	0.1	2	1-4	0	1	0-5	0
IAP (intra-abdominal pressure)	620	1.1										
Hypothermia	797	1.5										
Enteral nutrition	15823	28.9	2387	4.4	9816	17.9	7	3-14	14	1	1-3	5
Parenteral nutrition	13794	25.2	2404	4.4	8236	15	4	2-9	15	1	0-2	1
SDD (Topical, Topical and systemic)	607	1.1										
Patient restraint	2148	3.9										
Peridural catheter	1893	3.5	1679	3.1	1472	2.7	1	1-2	2	0	0-1	0
Electrical cardioversion	328	0.6								1	0-3	0
Vacuum therapy	140	0.3										
Antibiotics	41230	75.3										
Antibiotics for surgical prophylaxis	20527	37.5	16213	29.6	13560	24.8	1	1-3	19	0	0-0	1
Antibiotics for medical prophylaxis	8627	15.8	2844	5.2	5200	9.5	4	2-7	13	0	0-0	2
Empirical antibiotic therapy	11147	20.4	4672	8.5	5968	10.9	4	2-8	17	0	0-1	5
Targeted antibiotic therapy	6395	11.7	1352	2.5	4053	7.4	8	4-15	11	5	2-9	2

National report for general ICUs - Year 2012

Process indicators - Adult patients

			Length (days)				
Invasive ventilation (N=38733)	N	%	Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	12843	32.9	7.9	12.1	4	1-10	12
For airway maintenance	12387	31.7	6.0	9.6	2	1-7	14
In weaning	9564	24.5	0.4	0.5	0	0-1	0
Not evaluable	4271	10.9	4.5	10.2	2	1-4	351
Reintubation within 48 hours	613	1.6	7.6	10.8	4	2.0-9.0	1

Non invasive ventilation (N=8141)	N	%
Non invasive ventilation only	4084	50.2
Non invasive ventilation failed	1275	15.7
For weaning	2457	30.2
Other	325	4.0
Missing	0	

Tracheostomy (N=5908)	N	%
Surgical	1457	24.7
Percutwist	730	12.4
Ciaglia	783	13.3
Monodil. Ciaglia	1620	27.4
Fantoni	314	5.3
Griggs	676	11.4
Other Kind	325	5.5
Missing	3	

Tracheostomy - Days after the beginning of inv. vent.

N	5576
Mean	7.3
SD	8.7
Median	6
Q1-Q3	1-11

Invasive monitoring of C.O. (N=2268)	N	%
Swan Ganz	565	24.9
PICCO	1220	53.8
LIDCO	6	0.3
Vigileo-PRAM	442	19.5
Other	30	1.3
Missing	5	

SDD (N=607)	N	%
Topical	329	54.2
Topical and systemic	278	45.8
Missing	0	

Antibiotic therapy

Pts. infected in ICU only (N=3010)	N	%
Only empirical	882	30.5
Only targeted	1299	44.9
Targeted after empirical	557	19.2
Other	156	5.4
Missing	116	

Surgical interventions	N	%
No	52637	96.1
Yes	2125	3.9
Missing	89	

Number of surgical interventions	N	%
0	52637	96.1
1	1700	3.1
2	294	0.5
3	73	0.1
>3	58	0.1
Missing	89	

Surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	10.2	13.5	6	3-12	0

Surgical interventions (top 10)	N	%
Gastrointestinal surgery	847	1.5
Orthopaedic surgery	539	1.0
Neurosurgery	253	0.5
ENT surgery	204	0.4
Other surgery	148	0.3
Pancreatic surgery	85	0.2
Nephro/Urological surgery	98	0.2
Maxillo-Facial surgery	105	0.2
Thoracic surgery	119	0.2
Hepatic surgery	34	0.1
Missing	89	

Non surgical interventions	N	%
No	53843	98.3
Yes	913	1.7
Missing	95	

Non surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	13.3	18.6	8	4-16	17

Non surgical interventions	N	%
Interventional endoscopy	562	1.0
Interventional radiology	235	0.4
Interventional cardiology	183	0.3
Interventional neuroradiology	59	0.1
Missing	95	

National report for general ICUs - Year 2012

Outcome indicators - Adult patients

ICU outcome	N	%
Dead	9529	17.4
Transferred to same hospital	40397	73.8
Transferred to other hospital	4131	7.5
Discharged home	501	0.9
Disch. terminally ill	215	0.4
Missing	78	

Transferred to (N=44528)	N	%
Ward	36235	81.4
Other ICU	2930	6.6
High dependency care unit	4007	9.0
Rehabilitation	1013	2.3
Day hospital or Long-term care	342	0.8
Missing	1	

Reason of transfer to Other ICU (N=3021)	N	%
Specialist expertise	1341	44.4
Step-up care	282	9.3
Logistical/organizational reasons	1336	44.2
Step-down care	62	2.1
Missing	0	

Transferred to Same hospital (N=40397)	N	%
Ward	35024	86.7
Other ICU	1356	3.4
High dependency care unit	3722	9.2
Rehabilitation	198	0.5
Day hospital or Long-term care	96	0.2
Missing	1	

Transferred to Other hospital (N=4131)	N	%
Ward	1211	29.3
Other ICU	1574	38.1
High dependency care unit	285	6.9
Rehabilitation	815	19.7
Day hospital or Long-term care	246	6.0
Missing	0	

ICU mortality	N	%
Alive	45029	82.2
Dead	9744	17.8
Missing	78	

Timing of ICU mortality (N=9744)	N	%
Daytime (08:00AM - 07:59PM)	6389	65.6
Nighttime (08:00PM - 07:59AM)	3347	34.4
Weekdays (Monday - Friday)	7250	74.4
Weekend (Saturday - Sunday)	2493	25.6
Missing	8	

Brain death assessment (N=9744)	N	%
Yes, with organ donation	538	5.6
Yes, without organ donation	495	5.2
No	8496	89.2
Missing	215	

Organ/Tissue removal (N=538)	N	%
No removal	21	3.9
Only organ removal	273	50.7
Only tissue removal	102	19.0
Organ and tissue removal	142	26.4
Missing	0	

Hospital mortality *	N	%
Dead	11623	23.7
Transf. to other acute-care hospital	4084	8.3
Transf. to other type of hosp. stay	6034	12.3
Nursing home	966	2.0
Voluntary discharge	387	0.8
Discharged home	25915	52.9
Missing	203	

To other type of H stay* (N=6034)	N	%
Rehabilitation in the same institute	984	16.3
Rehabilitation in other institute	3468	57.5
DH/long-term care, same inst.	591	9.8
DH/long-term care, other inst.	989	16.4
Missing	2	

Disch. terminally ill * (N=37386)	N	%
Yes	584	1.6
No	36791	98.4
Missing	11	

Hospital mortality *	N	%
Alive	36808	75.1
Dead	12199	24.9
Missing	205	

Timing of hosp. mortality * (N=12199)	N	%
In ICU	8714	71.4
Within 24 hours after ICU	175	1.4
Within 48 hours after ICU	396	3.2
Within 72 hours after ICU	614	5.0
Within 96 hours after ICU	787	6.5
After more than 96 hours after ICU	2694	22.1
Missing	0	

Timing of hosp. mortality (days from ICU disch.) * Discharged alive from ICU (N=3485)		
Mean		17.8
SD		23.1
Median		11
Q1-Q3		4-23
Missing		2

* Statistics computed on patients admitted in months with more than 90% of patients in status 4 (readmissions excluded) (N=49212).

National report for general ICUs - Year 2012

Outcome indicators - Adult patients

Last hospital mortality *	N	%
Alive	36576	74.7
Dead	12367	25.3
Missing	269	

Readmission from ward	N	%
No	52951	96.7
Yes	1789	3.3
Missing	111	

Number of readmissions (N=1789)	N	%
1	1655	92.5
2	116	6.5
>2	18	1.0
Missing	0	

Timing of readmission (N=1789)	N	%
Within 48 hours	466	26.0
Within 72 hours	638	35.7
Within 96 hours	789	44.1
After 96 hours	1000	55.9
Missing	0	

Timing readmission (days)	N	
Mean	10.2	
SD	19.7	
Median	5	
Q1-Q3	1.9-11.1	

ICU stay (days)		
Mean	6.2	
SD	10.6	
Median	2	
Q1-Q3	1-7	
Missing	75	

ICU stay (days) Alive (N=45029)		
Mean	5.7	
SD	10.0	
Median	2	
Q1-Q3	1-6	
Missing	4	

ICU stay (days) Dead (N=9744)		
Mean	8.1	
SD	12.5	
Median	3	
Q1-Q3	1-10	
Missing	1	

Stay after ICU (days) *		
Alive (N=40447)		
Mean	13.3	
SD	16.9	
Median	9	
Q1-Q3	4-16	
Missing	161	

Hospital stay (days) *		
Mean	20.5	
SD	22.1	
Median	14	
Q1-Q3	8-26	
Missing	218	

Hospital stay (days) *		
Alive (N=36808)		
Mean	21.5	
SD	21.4	
Median	15	
Q1-Q3	9-27	
Missing	9	

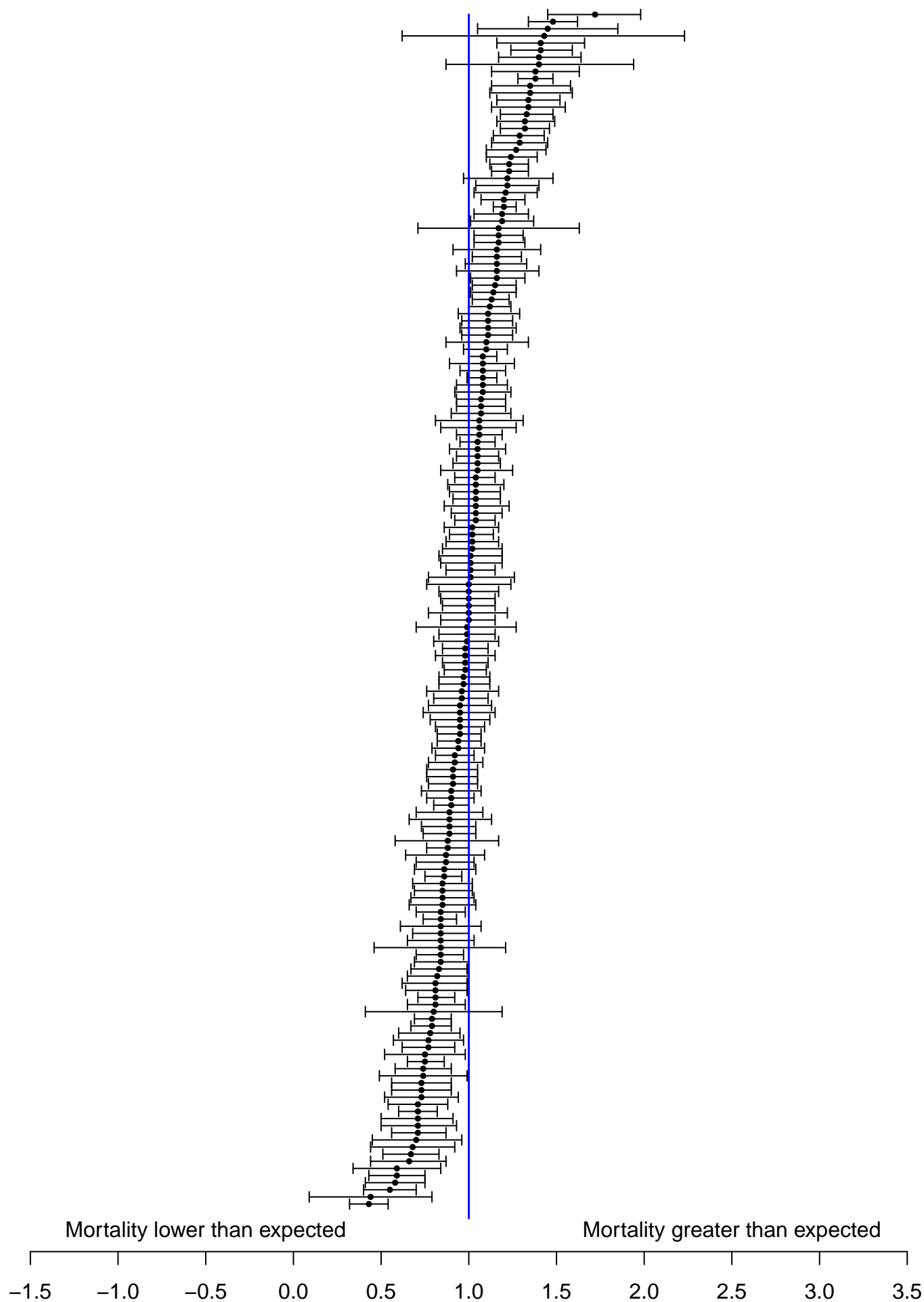
Hospital stay (days) *		
Dead (N=12199)		
Mean	17.5	
SD	23.8	
Median	10	
Q1-Q3	3-23	
Missing	7	

* Statistics computed on patients admitted in months with more than 90% of patients in status 4 (readmissions excluded) (N=49212).

National report for general ICUs - Year 2012

Analysis of hospital mortality - Adult patients

Predictive model: **GiViTI 2012**



National report for general ICUs - Year 2012

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

Patients (N): 34238

Sex	N	%
Male	20337	59.4
Female	13901	40.6
Missing	0	

Age (years)	N	%
17-45	4307	12.6
46-65	8769	25.6
66-75	8892	26.0
>75	12270	35.8
Missing	0	
Mean	66.6	
SD	16.5	
Median	71	
Q1-Q3	58-79	
Min-Max	17-102	

Body mass Index (BMI)	N	%
Underweight	1857	5.4
Normal	15674	45.8
Overweight	10814	31.6
Obese	5893	17.2
Missing	0	

Pregnancy status	N	%
Females (N=13901)		
Not fertile	7630	54.9
Not pregnant/Unknown	5944	42.8
Currently pregnant	50	0.4
Post partum	277	2.0
Missing	0	

Comorbidities	N	%
No	5372	15.7
Yes	28866	84.3
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	17192	50.2
Arrhythmia	5964	17.4
Moderate COPD	5678	16.6
Myocardial infarction	4649	13.6
Diabetes Type II without insulin tr.	4207	12.3
Cerebrovascular disease	4156	12.1
NYHA class II-III	4125	12.0
Any tumour without metastasis	4018	11.7
Peripheral vascular disease	3535	10.3
Moderate or severe renal disease	3366	9.8
Missing	0	

Stay before ICU (days)	Mean	SD	Median	Q1-Q3	Missing
	4.5	11.4	1	0-4	0

Source of admission	N	%
Same hospital	29673	86.7
Other hospital	4565	13.3
Long-term chronic care hospital	0	0.0
Directly from the community (e.g., ambulance, home, ...)	0	0.0
Missing	0	

Ward of admission	N	%
Hospital (N=34238)		
Medical ward	5709	16.7
Surgical ward	13037	38.1
Emergency room	12239	35.7
Other ICU	2368	6.9
High dependency care unit	885	2.6
Missing	0	

Reason for transfer from	N	%
Other ICU (N=2368)		
Specialist expertise	579	24.5
Step-up care	454	19.2
Logistical/organizational reasons	1197	50.5
Step-down care	138	5.8
Missing	0	

Ward of admission	N	%
Same hospital (N=29673)		
Medical ward	4967	16.7
Surgical ward	12635	42.6
Emergency room	10503	35.4
Other ICU	800	2.7
High dependency care unit	768	2.6
Missing	0	

Ward of admission	N	%
Other hospital (N=4565)		
Medical ward	742	16.3
Surgical ward	402	8.8
Emergency room	1736	38.0
Other ICU	1568	34.3
High dependency care unit	117	2.6
Missing	0	

Scheduled admission	N	%
No	28659	83.7
Yes	5579	16.3
Missing	0	

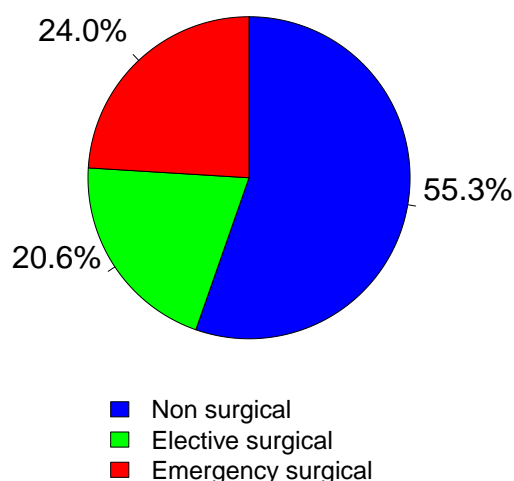
National report for general ICUs - Year 2012

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

Trauma	N	%
No	29707	86.8
Yes	4531	13.2
Multiple trauma	1993	5.8
Missing	0	

Surgical status	N	%
Non surgical	18949	55.3
Elective surgical	7064	20.6
Emergency surgical	8225	24.0
Missing	0	

Surgical status



Source of admission	N	%
Surgical pts. (N=15289)		
Operating theatre of surgical ward	10830	70.8
Operating theatre of emergency room	1354	8.9
Surgical ward	1008	6.6
Other	2097	13.7
Missing	0	

Surgical interventions (top 10)	N	%
Elective surgical (N=7064)		
Gastrointestinal surgery	2147	30.4
Nephro/Urological surgery	877	12.4
Orthopaedic surgery	870	12.3
Thoracic surgery	475	6.7
Neurosurgery	424	6.0
Abdominal vascular surgery	409	5.8
ENT surgery	367	5.2
Peripheral vascular surgery	362	5.1
Pancreatic surgery	345	4.9
Gynaecological surgery	299	4.2
Missing	0	

Timing	N	%
Elective surgical (N=7064)		
From -7 to -3 days	180	2.5
From -2 to -1 days	320	4.5
On ICU admission day	7016	99.3
The day after ICU admission	155	2.2
Missing	9	

Surgical interventions (top 10)	N	%
Emergency surgical (N=8225)		
Gastrointestinal surgery	3649	44.4
Neurosurgery	1286	15.6
Orthopaedic surgery	780	9.5
Abdominal vascular surgery	438	5.3
Biliary tract surgery	357	4.3
Nephro/Urological surgery	341	4.1
Splenectomy	278	3.4
Peripheral vascular surgery	273	3.3
Thoracic surgery	220	2.7
Obstetric surgery	200	2.4
Missing	0	

Timing	N	%
Emergency surgical (N=8225)		
From -7 to -3 days	260	3.2
From -2 to -1 days	969	11.8
On ICU admission day	7147	86.9
The day after ICU admission	438	5.3
Missing	21	

Non surgical interventions	N	%
None	31776	92.8
Elective	407	1.2
Emergency	2055	6.0
Missing	0	

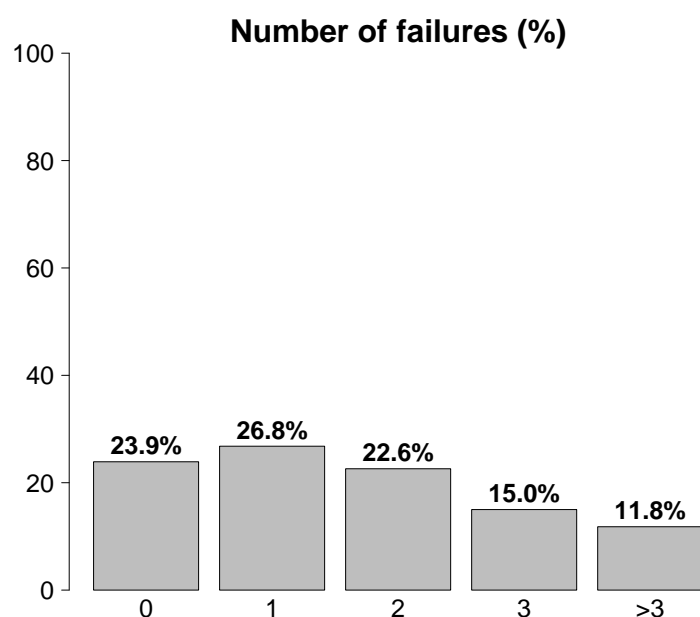
Non surgical interventions	N	%
Elective (N=407)		
Interventional endoscopy	129	31.7
Interventional radiology	89	21.9
Interventional cardiology	75	18.4
Interventional neuroradiology	51	12.5
Missing	63	

Surgical interventions	N	%
Emergency (N=2055)		
Interventional cardiology	826	40.2
Interventional radiology	510	24.8
Interventional endoscopy	440	21.4
Interventional neuroradiology	250	12.2
Missing	29	

National report for general ICUs - Year 2012

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

Reason for admission	N	%
Monitoring/Weaning	11531	33.7
Post surgical weaning	4493	13.2
Surgical monitoring	3573	10.5
Post interventional weaning	66	0.2
Interventional monitoring	325	1.0
Non surgical monitoring	2834	8.3
Missing	240	
Admission for procedures/treatments	55	0.2
Intensive Treatment	22652	66.2
Only ventilatory support	12503	36.5
Only cardiovascular support	1672	4.9
Ventilatory and cardiovascular support	8477	24.8
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	8171	23.9
Yes	26067	76.1
A: Respiratory failure	20980	61.3
B: Cardiovascular failure	10149	29.6
C: Neurological failure	5091	14.9
D: Hepatic failure	322	0.9
E: Renal failure	12307	35.9
F: Acute skin failure	31	0.1
G: Metabolic failure	7549	22.0
H: Coagulation failure	766	2.2
Missing	0	

Failures on admission (top 10)	N	%
A	5990	17.5
AB	2085	6.1
E	2096	6.1
ABEG	2065	6.0
AC	1998	5.8
AE	1828	5.3
ABE	1478	4.3
AEG	1007	2.9
ABC	710	2.1
ABCEG	648	1.9
Missing	0	

Respiratory failure	N	%
None	13258	38.7
Only hypoxic failure	6798	19.9
Only hypercapnic failure	1607	4.7
Hypoxic-hypercapnic failure	3211	9.4
Intubation for airway maint.	9364	27.3
Missing	0	

Cardiovascular failure	N	%
None	24089	70.4
Without shock	2202	6.4
Cardiogenic shock	2174	6.3
Septic shock	2529	7.4
Haemorrhagic/hypovolemic shock	1452	4.2
Hypovolemic shock	683	2.0
Anaphylactic shock	35	0.1
Neurogenic shock	263	0.8
Other shock	293	0.9
Mixed shock	518	1.5
Missing	0	

Neurologic failure	N	%
None	21776	81.1
Cerebral coma	2523	9.4
Metabolic coma	922	3.4
Postanoxic coma	1409	5.2
Toxic coma	236	0.9
Missing or not evaluable	7372	

Renal failure (AKIN)	N	%
None	21931	64.1
Mild	6554	19.1
Moderate	2874	8.4
Severe	2879	8.4
Missing	0	

Metabolic failure	N	%
None	26687	78.0
pH \leq 7.3, PaCO ₂ $<$ 45 mmHg	3059	8.9
Base deficit \geq 5 mmol/L, lactate $>$ 1.5x	4490	13.1
Missing	2	

National report for general ICUs - Year 2012**Characteristics on admission** - Adult patients with LOS \geq 24 hours evaluated in the GiViTI model

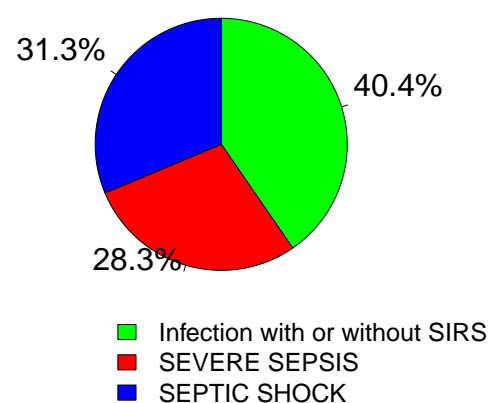
Clinical conditions on admission	N	%
Respiratory	8434	24.6
Acute exacerbation of COPD	2619	7.6
Pleural effusion	1638	4.8
ALI (Acute Lung Injury)	1045	3.1
Atelectasis	824	2.4
Aspiration pneumonia	793	2.3
Cardiovascular	7685	22.4
Left heart failure with pulmonary edema	1738	5.1
Cardiac arrest	1647	4.8
Left heart failure without pulm. edema	1064	3.1
Acute severe arrhythmia: tachycardias	938	2.7
Acute myocardial infarction	682	2.0
Neurological	5079	14.8
Spontaneous Intraparenchymal bleeding	1165	3.4
Cerebral artery stroke	864	2.5
Seizures	844	2.5
Metabolic/postanoxic encephalopathy	718	2.1
Spontaneous Subarachnoid haemorrhage	553	1.6
Gastrointestinal and hepatic	7022	20.5
Digestive tract malignancy	1797	5.2
Gastrointestinal perforation	1178	3.4
Intestinal occlusion	1048	3.1
Acute bile-duct disease	517	1.5
Gastrointestinal bleeding: upper tract	489	1.4
Trauma (anatomical districts)	4531	13.2
Head	1997	5.8
Chest	1867	5.5
Pelvis/bone/joint & muscle	1883	5.5
Spine	925	2.7
Abdomen	822	2.4
Major vessels injury	142	0.4
Miscellaneous	63	0.2
Other	7707	22.5
Metabolic disorder	2106	6.2
Nephrourologic disease	1676	4.9
Other disease	1276	3.7
Acute intoxication	833	2.4
Coagulation disorder	766	2.2
Post transplantation	318	0.9
Liver transplantation	157	0.5
Renal transplantation	99	0.3
Infections	9346	27.3
Pneumonia	4014	11.7
NON-surgical secondary peritonitis	1010	2.9
NON-surgical urinary tract infection	782	2.3
L.R.T.I. other than pneumonia	750	2.2
Post-surgical peritonitis	577	1.7
Primary bacteraemia of unknown origin	370	1.1
Cholecystitis/choolangitis	386	1.1
NON-surgical skin/soft tissue infection	371	1.1
Clinical sepsis	300	0.9
NON-surgical CNS infection	268	0.8
Missing	0	

Trauma (anatomical districts)	N	%
Head	1997	5.8
Traumatic subarachnoid haemorrhage	623	1.8
Maxillofacial fracture	605	1.8
Traumatic Subdural haemathoma	512	1.5
Cerebral contusion/laceration	440	1.3
Skull fracture	459	1.3
Spine	925	2.7
Vertebral fracture, without deficit	756	2.2
Cervical injury, incomplete deficit	53	0.2
Tetraplegia	44	0.1
Chest	1867	5.5
Traum. haemothorax/pneumothorax	793	2.3
Other injuries of the chest	798	2.3
Severe lung contusion/laceration	593	1.7
Abdomen	822	2.4
Liver: Moderate-Severe laceration	217	0.6
Spleen: Moderate-Severe laceration	197	0.6
Spleen: Massive rupture	184	0.5
Pelvis/bone/joint & muscle	1883	5.5
Long bones fracture	1525	4.5
Multiple fracture of the pelvis	471	1.4
Very severe or open fracture of the pelvis	100	0.3
Major vessels injury	142	0.4
Neck vessels: dissection/transection	29	0.1
Aorta: rupture/dissection	24	0.1
Major abdominal vessels: transection	29	0.1
Miscellaneous	63	0.2
Inhalation injury	29	0.1
Burns (>30% BSA)	36	0.1
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	24892	72.7
Infection with or without SIRS	3773	11.0
SEVERE SEPSIS	2645	7.7
SEPTIC SHOCK	2928	8.6
Missing	0	

Infection severity on admission

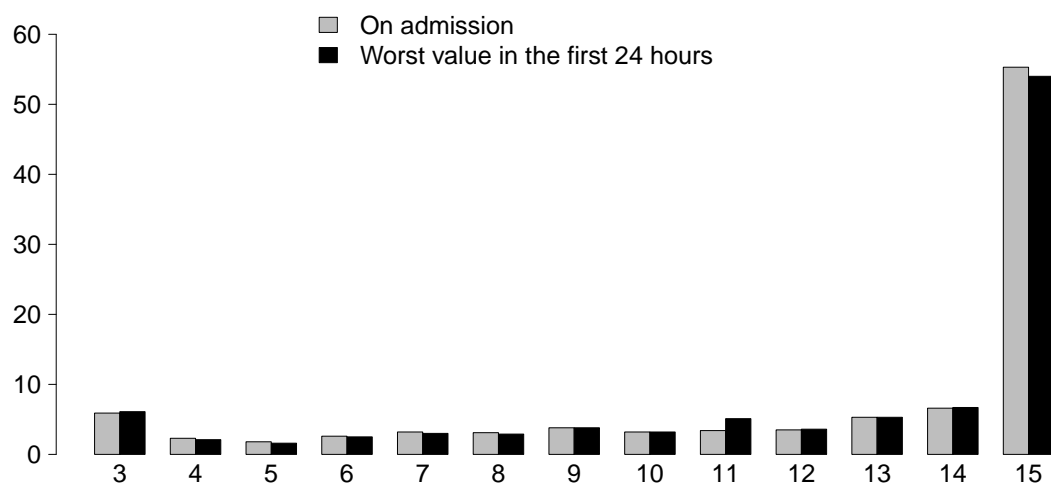
Patients infected (N=9346)



National report for general ICUs - Year 2012

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

Glasgow Coma Scale (%)



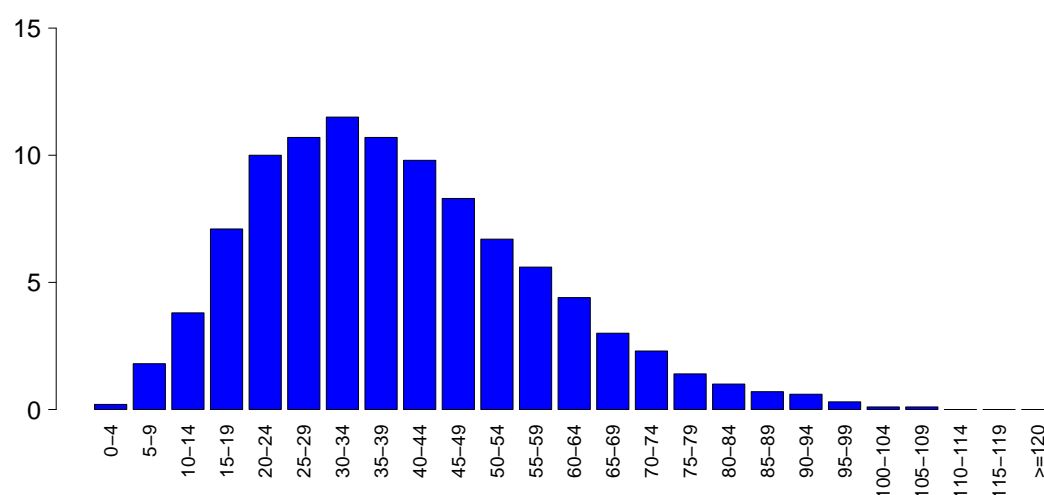
GCS (admission)

Median	15
Q1-Q3	10-15
Not evaluable	7372
Missing	0

GCS (first 24 hours)

Median	15
Q1-Q3	10-15
Not evaluable	5598
Missing	0

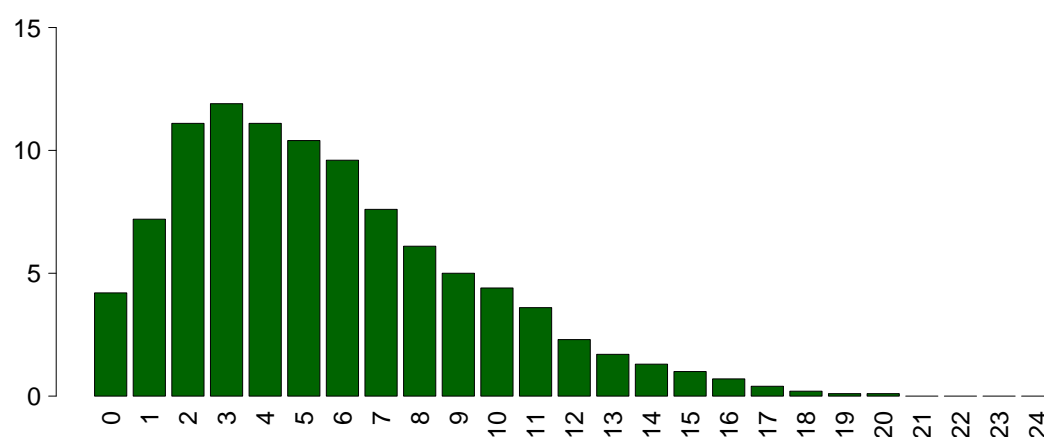
SAPS II (%)



SAPSII

Mean	39.1
SD	18.2
Median	37
Q1-Q3	26-50
Not evaluable	5598
Missing	0

SOFA (%)



SOFA

Mean	5.6
SD	3.8
Median	5
Q1-Q3	3-8
Not evaluable	5598
Missing	0

National report for general ICUs - Year 2012

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

Complications during the stay	N	%
No	22650	66.2
Yes	11588	33.8
Missing	0	

Failures during the stay	N	%
No	29431	86.0
Yes	4807	14.0
A: Respiratory failure	1482	4.3
B: Cardiovascular failure	2466	7.2
C: Neurological failure	395	1.2
D: Hepatic failure	182	0.5
E: Renal failure (AKIN)	1690	4.9
F: Acute skin failure	9	0.0
G: Metabolic failure	412	1.2
H: Coagulation failure	233	0.7
Missing	0	

Failures during the stay (top 10)	N	%
B	1384	4.0
A	779	2.3
E	752	2.2
BE	347	1.0
AB	259	0.8
G	221	0.6
ABE	123	0.4
C	128	0.4
AE	89	0.3
D	79	0.2
Missing	0	

Respiratory failure occurred	N	%
None	32756	95.7
Intubation for airway maint.	378	1.1
Hypoxic failure	1019	3.0
Hypercapnic failure	345	1.0
Missing	0	

Cardiovascular failure occurred	N	%
None	31772	92.8
Cardiogenic shock	716	2.1
Hypovolemic shock	172	0.5
Haemorrhagic/hypovolemic shock	240	0.7
Septic shock	1208	3.5
Anaphylactic shock	4	0.0
Neurogenic shock	142	0.4
Other shock	137	0.4
Missing	0	

Neurological failure occurred	N	%
None	33843	98.8
Cerebral coma	218	0.6
Metabolic coma	113	0.3
Postanoxic coma	72	0.2
Missing	0	

Renal failure occurred (AKIN)	N	%
None	32548	95.1
Mild	210	0.6
Moderate	277	0.8
Severe	1203	3.5
Missing	0	

Complications during the stay	N	%
Respiratory	2422	7.1
Pleural effusion	938	2.7
Atelectasis	548	1.6
ALI (Acute Lung Injury)	332	1.0
ARDS	358	1.0
Pneumothorax/Pneumomediastinum	262	0.8
Cardiovascular	3111	9.1
Acute severe arrhythmia: tachycardias	1336	3.9
Cardiac arrest	701	2.0
Left heart failure w/o pulm. edema	324	0.9
Acute severe arrhythmia: bradycardias	257	0.8
Pulmonary edema	271	0.8
Neurological	1931	5.6
Drowsiness/agitation/delirium	831	2.4
Seizures	429	1.3
Brain edema	281	0.8
Intracranial hypertension	210	0.6
New ischaemic stroke	149	0.4
Gastrointestinal and hepatic	1180	3.4
Gastrointestinal bleeding: upper tract	204	0.6
Bowel ischaemia	132	0.4
Gastrointestinal bleeding: lower tract	123	0.4
Gastrointestinal perforation	153	0.4
Liver Dysfunction Syndrome	127	0.4
Other	948	2.8
Metabolic disorder	412	1.2
Nephrourologic disease	284	0.8
Other disease	221	0.6
Other skin and/or soft tissue pathology	61	0.2
Extremity compartment syndrome (severe)	28	0.1
-	0	0.0
-	0	0.0
Infections	3756	11.0
Pneumonia	1538	4.5
L.R.T.I. other than pneumonia	718	2.1
NON-surgical urinary tract infection	566	1.7
Primary bacteraemia of unknown origin	426	1.2
Catheter-related bacteremia (CR-BSI)	359	1.0
Post-surgical peritonitis	161	0.5
Upper respiratory tract infection	151	0.4
Clinical sepsis	115	0.3
Post-surgical skin/soft tissue infection	111	0.3
Cholecystitis/cholangitis	60	0.2
Missing	0	

National report for general ICUs - Year 2012

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

Infections	N	%	Maximum severity of infection	N	%
None	22326	65.2	None	22326	65.3
Only on admission	8156	23.8	Infection with or without SIRS	4456	13.0
On admission and during ICU stay	1190	3.5	SEVERE SEPSIS	3458	10.1
Only during ICU stay	2566	7.5	SEPTIC SHOCK	3929	11.5
Missing	0		Missing	69	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	SEVERE SEPSIS	SEPTIC SHOCK
Admission	None	22326 (89.9%)	1238 (5.0%)	832 (3.4%)	428 (1.7%)	24824
	Infection with or without SIRS	-	3218 (85.3%)	360 (9.5%)	195 (5.2%)	3773
	SEVERE SEPSIS	-	-	2266 (85.7%)	378 (14.3%)	2644
	SEPTIC SHOCK	-	-	-	2928 (100.0%)	2928
	TOT	22326	4456	3458	3929	34169

Ventil. Associat. Pneumonia (VAP)	N	%
No	32912	96.1
Yes	1325	3.9
Missing	1	

Incidence of VAP

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

Estimate	8.9
CI (95%)	8.4-9.4

Incidence of VAP

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

Estimate	7.1%
CI (95%)	6.8-7.5

Catheter Bacteraemia (CR-BSI)	N	%
No	33879	99.0
Yes	359	1.0
Missing	0	

Incidence of CR-BSI

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

Estimate	1.5
CI (95%)	1.4-1.7

Incidence of CR-BSI

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

Estimate	1.8%
CI (95%)	1.6-2.0

National report for general ICUs - Year 2012
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	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	33065	96.6										
Invasive ventilation	25559	74.7	17372	50.7	4572	13.4	3	1-8	1	0	0-0	0
Non invasive ventilation	6274	18.3	1167	3.4	1174	3.4	2	1-4	0	0	0-2	0
Tracheostomy	4797	14.0	1008	2.9	3901	11.4	11	5-20	0	8	5-12	0
iNO (inhaled nitric oxide)	80	0.2	7	0	14	0	3	1-6	0	2	0-7	0
Central Venous Catheter	26506	77.4	11988	35	20847	60.9	5	2-11	2	0	0-0	0
Arterial Catheter	25954	75.8	11336	33.1	6693	19.5	4	2-9	2	0	0-0	0
Vasoactive drugs	12514	36.6	4933	14.4	2512	7.3	3	1-6	2	0	0-1	0
Antiarrhythmics	3533	10.3	953	2.8	1724	5	3	2-8	1	1	0-2	0
IABP	243	0.7	167	0.5	49	0.1	3	2-4	0	0	0-1	0
Invasive monitoring of C.O.	1847	5.4	355	1	305	0.9	4	2-8	0	0	0-1	0
Continuous monitoring of ScVO2	203	0.6	53	0.2	51	0.1	5	3-8	0	0	0-1	0
Temporary pacing	168	0.5	69	0.2	59	0.2	2	1-5	0	0	0-2	0
Ventricular assistance	7	0.0	3	0	4	0	5	4-12	0	6	2-10	0
DC-shock	725	2.1								0	0-2	0
CPR	978	2.9								0	0-3	0
Massive blood transfusion	943	2.8								0	0-0	0
ICP monitoring without liquor-drainage	352	1.0	135	0.4	55	0.2	6	4-10	0	0	0-1	0
ICP monitoring with liquor-drainage	372	1.1	195	0.6	164	0.5	9	4-16	0	0	0-1	0
External ventricular drainage without ICP	117	0.3	84	0.2	63	0.2	5	3-11	0	0	0-4	0
Haemofiltration	1661	4.9	179	0.5	403	1.2	4	2-9	1	1	0-3	0
Haemodialysis	953	2.8	194	0.6	386	1.1	3	1-9	0	1	0-4	0
ECMO	71	0.2	27	0.1	18	0.1	8	4-12	0	0	0-4	0
Hepatic clearance techniques	6	0.0										
Clearance techniques during sepsis	216	0.6	8	0	23	0.1	2	1-4	0	1	1-4	0
IAP (intra-abdominal pressure)	530	1.5										
Hypothermia	683	2.0										
Enteral nutrition	13530	39.5	1947	5.7	8412	24.6	7	3-14	2	1	1-3	1
Parenteral nutrition	11037	32.2	1688	4.9	6395	18.7	4	2-9	1	1	0-2	0
SDD (Topical, Topical and systemic)	489	1.4										
Patient restraint	1504	4.4										
Peridural catheter	968	2.8	812	2.4	635	1.9	2	2-3	0	1	0-2	0
Electrical cardioversion	259	0.8								1	0-3	0
Vacuum therapy	106	0.3										
Antibiotics	26854	78.4										
Antibiotics for surgical prophylaxis	10512	30.7	7770	22.7	6379	18.6	2	1-4	0	0	0-0	0
Antibiotics for medical prophylaxis	6847	20.0	2124	6.2	4052	11.8	4	2-8	0	0	0-0	0
Empirical antibiotic therapy	8837	25.8	3520	10.3	4639	13.5	5	3-9	1	0	0-1	0
Targeted antibiotic therapy	5312	15.5	1011	3	3373	9.9	8	4-15	2	5	2-9	0

National report for general ICUs - Year 2012**Process indicators** - Adult patients with LOS \geq 24 hours evaluated in the GiViTI model

Invasive ventilation (N=25559)	N	%	Length (days)				
			Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	9852	38.2	8.9	12.7	5	2-11	1
For airway maintenance	9216	35.8	6.8	9.3	3	1-9	0
In weaning	4022	15.6	0.5	0.5	1	0-1	0
Not evaluable	2677	10.4	5.2	8.8	2	1-5	215
Reintubation within 48 hours	533	2.1	7.4	9.5	4	2.0-9.0	0

Non invasive ventilation (N=6274)	N	%
Non invasive ventilation only	2890	46.1
Non invasive ventilation failed	1054	16.8
For weaning	2062	32.9
Other	268	4.3
Missing	0	

Tracheostomy (N=4797)	N	%
Surgical	1066	22.2
Percutwist	649	13.5
Ciaglia	619	12.9
Monodil. Ciaglia	1394	29.1
Fantoni	271	5.6
Griggs	525	10.9
Other Kind	273	5.7
Missing	0	

Tracheostomy - Days after the beginning of inv. vent.

N	4582
Mean	7.6
SD	8.9
Median	6
Q1-Q3	2-11

Invasive monitoring of C.O. (N=1847)	N	%
Swan Ganz	398	21.5
PICCO	1049	56.8
LIDCO	5	0.3
Vigileo-PRAM	369	20.0
Other	24	1.3
Missing	2	

SDD (N=489)	N	%
Topical	275	56.2
Topical and systemic	214	43.8
Missing	0	

Antibiotic therapy

Pts. infected in ICU only (N=2566)	N	%
Only empirical	757	30.6
Only targeted	1113	45.0
Targeted after empirical	469	18.9
Other	137	5.5
Missing	90	

Surgical interventions	N	%
No	32499	94.9
Yes	1739	5.1
Missing	0	

Number of surgical interventions	N	%
0	32499	94.9
1	1393	4.1
2	252	0.7
3	56	0.2
>3	38	0.1
Missing	0	

Surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	9.6	10.5	6	3-12	0

Surgical interventions (top 10)	N	%
Gastrointestinal surgery	689	2.0
Orthopaedic surgery	451	1.3
Neurosurgery	205	0.6
ENT surgery	179	0.5
Thoracic surgery	91	0.3
Other surgery	116	0.3
Pancreatic surgery	76	0.2
Nephro/Urological surgery	81	0.2
Maxillo-Facial surgery	84	0.2
Peripheral vascular surgery	59	0.2
Missing	0	

Non surgical interventions	N	%
No	33457	97.7
Yes	781	2.3
Missing	0	

Non surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	12.4	12.7	8	4-16	11

Non surgical interventions	N	%
Interventional endoscopy	497	1.5
Interventional radiology	197	0.6
Interventional cardiology	150	0.4
Interventional neuroradiology	50	0.1
Missing	0	

National report for general ICUs - Year 2012**Outcome indicators** - Adult patients with LOS \geq 24 hours evaluated in the GiViTI model

ICU outcome	N	%
Dead	6020	17.6
Transferred to same hospital	24599	71.8
Transferred to other hospital	3121	9.1
Discharged home	354	1.0
Disch. terminally ill	144	0.4
Missing	0	
Transferred to (N=27720)		
Ward	22131	79.8
Other ICU	1977	7.1
High dependency care unit	2485	9.0
Rehabilitation	839	3.0
Day hospital or Long-term care	288	1.0
Missing	0	
Reason of transfer to Other ICU (N=2033)		
Specialist expertise	834	41.0
Step-up care	129	6.3
Logistical/organizational reasons	1020	50.2
Step-down care	50	2.5
Missing	0	
Transferred to Same hospital (N=24599)		
Ward	21179	86.1
Other ICU	906	3.7
High dependency care unit	2271	9.2
Rehabilitation	156	0.6
Day hospital or Long-term care	87	0.4
Missing	0	
Transferred to Other hospital (N=3121)		
Ward	952	30.5
Other ICU	1071	34.3
High dependency care unit	214	6.9
Rehabilitation	683	21.9
Day hospital or Long-term care	201	6.4
Missing	0	
ICU mortality		
Alive	28074	82.0
Dead	6164	18.0
Missing	0	
Timing of ICU mortality (N=6164)		
Daytime (08:00AM - 07:59PM)	4172	67.7
Nighttime (08:00PM - 07:59AM)	1992	32.3
Weekdays (Monday - Friday)	4591	74.5
Weekend (Saturday - Sunday)	1573	25.5
Missing	0	

Brain death assessment (N=6164)	N	%
Yes, with organ donation	369	6.1
Yes, without organ donation	277	4.6
No	5374	89.3
Missing	144	
Organ/Tissue removal (N=369)		
No removal	15	4.1
Only organ removal	185	50.1
Only tissue removal	67	18.2
Organ and tissue removal	102	27.6
Missing	0	
Hospital mortality		
Dead	8561	25.0
Transf. to other acute-care hospital	3187	9.3
Transf. to other type of hosp. stay	4909	14.3
Nursing home	717	2.1
Voluntary discharge	284	0.8
Discharged home	16579	48.4
Missing	1	
To other type of H stay (N=4909)		
Rehabilitation in the same institute	761	15.5
Rehabilitation in other institute	2815	57.4
DH/long-term care, same inst.	498	10.1
DH/long-term care, other inst.	834	17.0
Missing	1	
Disch. terminally ill (N=25676)		
Yes	454	1.8
No	25221	98.2
Missing	1	
Hospital mortality		
Alive	25231	73.7
Dead	9007	26.3
Missing	0	
Timing of hosp. mortality (N=9007)		
In ICU	6164	68.4
Within 24 hours after ICU	131	1.5
Within 48 hours after ICU	313	3.5
Within 72 hours after ICU	493	5.5
Within 96 hours after ICU	641	7.1
After more than 96 hours after ICU	2202	24.4
Missing	0	
Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=2843)		
Mean		17.6
SD		21.6
Median		11
Q1-Q3		4-23
Missing		0

National report for general ICUs - Year 2012**Outcome indicators** - Adult patients with LOS \geq 24 hours evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	25100	73.3
Dead	9138	26.7
Missing	0	

ICU stay (days)		
	Mean	8.0
	SD	11.4
	Median	4
	Q1-Q3	2-9
	Missing	0

ICU stay (days)		
Alive (N=28074)		
	Mean	7.4
	SD	10.8
	Median	4
	Q1-Q3	2-8
	Missing	0

ICU stay (days)		
Dead (N=6164)		
	Mean	10.5
	SD	13.6
	Median	6
	Q1-Q3	3-13
	Missing	0

Stay after ICU (days)		
Alive (N=28074)		
	Mean	14.1
	SD	17.6
	Median	9
	Q1-Q3	4-18
	Missing	2

Hospital stay (days)		
	Mean	23.1
	SD	22.8
	Median	17
	Q1-Q3	9-30
	Missing	2

Hospital stay (days)		
Alive (N=25231)		
	Mean	24.1
	SD	22.5
	Median	18
	Q1-Q3	10-30
	Missing	2

Hospital stay (days)		
Dead (N=9007)		
	Mean	20.3
	SD	23.4
	Median	13
	Q1-Q3	5-27
	Missing	0

National report for general ICUs - Year 2012

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

Patients (N): 18949

Sex	N	%
Male	11311	59.7
Female	7638	40.3
Missing	0	

Age (years)	N	%
17-45	2410	12.7
46-65	4901	25.9
66-75	4900	25.9
>75	6738	35.6
Missing	0	
Mean	66.4	
SD	16.4	
Median	71	
Q1-Q3	57-79	
Min-Max	17-102	

Body mass Index (BMI)	N	%
Underweight	1021	5.4
Normal	8470	44.7
Overweight	6032	31.8
Obese	3426	18.1
Missing	0	

Pregnancy status	N	%
Females (N=7638)		
Not fertile	4247	55.6
Not pregnant/Unknown	3326	43.5
Currently pregnant	29	0.4
Post partum	36	0.5
Missing	0	

Comorbidities	N	%
No	2855	15.1
Yes	16094	84.9
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	9323	49.2
Arrhythmia	3494	18.4
Moderate COPD	3392	17.9
Cerebrovascular disease	2631	13.9
NYHA class II-III	2637	13.9
Myocardial infarction	2641	13.9
Diabetes Type II without insulin tr.	2500	13.2
Severe COPD	2177	11.5
Moderate or severe renal disease	2159	11.4
Peripheral vascular disease	1774	9.4
Missing	0	

Stay before ICU (days)	Mean	SD	Median	Q1-Q3	Missing
	4.3	12.3	0	0-3	0

Source of admission	N	%
Same hospital	15237	80.4
Other hospital	3712	19.6
Long-term chronic care hospital	0	0.0
Directly from the community (e.g., ambulance, home, ...)	0	0.0
Missing	0	

Ward of admission	N	%
Hospital (N=18949)		
Medical ward	4992	26.3
Surgical ward	1199	6.3
Emergency room	10082	53.2
Other ICU	1946	10.3
High dependency care unit	730	3.9
Missing	0	

Reason for transfer from	N	%
Other ICU (N=1946)		
Specialist expertise	426	21.9
Step-up care	349	17.9
Logistical/organizational reasons	1057	54.3
Step-down care	114	5.9
Missing	0	

Ward of admission	N	%
Same hospital (N=15237)		
Medical ward	4306	28.3
Surgical ward	1066	7.0
Emergency room	8611	56.5
Other ICU	623	4.1
High dependency care unit	631	4.1
Missing	0	

Ward of admission	N	%
Other hospital (N=3712)		
Medical ward	686	18.5
Surgical ward	133	3.6
Emergency room	1471	39.6
Other ICU	1323	35.6
High dependency care unit	99	2.7
Missing	0	

Scheduled admission	N	%
No	18875	99.6
Yes	74	0.4
Missing	0	

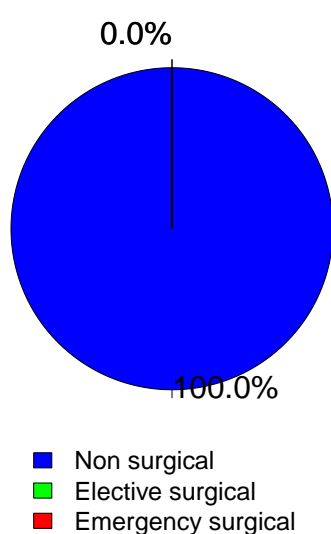
National report for general ICUs - Year 2012

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

Trauma	N	%
No	16644	87.8
Yes	2305	12.2
Multiple trauma	1086	5.7
Missing	0	

Surgical status	N	%
Non surgical	18949	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	17180	90.7
Elective	234	1.2
Emergency	1535	8.1
Missing	0	

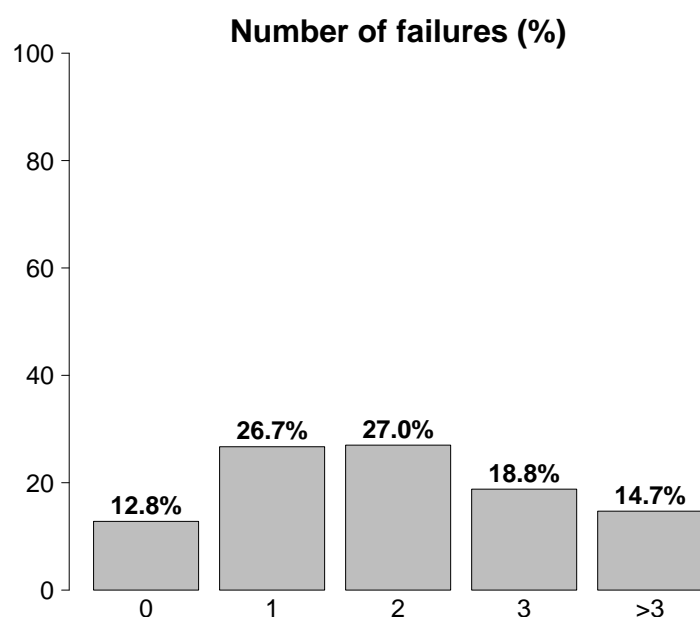
Non surgical interventions	N	%
Elective (N=234)		
Interventional endoscopy	79	33.8
Interventional cardiology	64	27.4
Interventional radiology	57	24.4
Interventional neuroradiology	37	15.8
Missing	0	

Surgical interventions	N	%
Emergency (N=1535)		
Interventional cardiology	801	52.2
Interventional endoscopy	326	21.2
Interventional radiology	290	18.9
Interventional neuroradiology	131	8.5
Missing	0	

National report for general ICUs - Year 2012

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

Reason for admission	N	%
Monitoring/Weaning	3438	18.1
Post surgical weaning	0	0.0
Surgical monitoring	0	0.0
Post interventional weaning	60	0.3
Interventional monitoring	319	1.7
Non surgical monitoring	2834	15.1
Missing	225	
Admission for procedures/treatments	47	0.2
Intensive Treatment	15464	81.6
Only ventilatory support	9191	48.5
Only cardiovascular support	931	4.9
Ventilatory and cardiovascular support	5342	28.2
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	2423	12.8
Yes	16526	87.2
A: Respiratory failure	14533	76.7
B: Cardiovascular failure	6273	33.1
C: Neurological failure	4272	22.5
D: Hepatic failure	244	1.3
E: Renal failure	7334	38.7
F: Acute skin failure	24	0.1
G: Metabolic failure	4816	25.4
H: Coagulation failure	471	2.5
Missing	0	

Failures on admission (top 10)	N	%
A	4111	21.7
AC	1633	8.6
AE	1290	6.8
AB	1188	6.3
ABEG	1171	6.2
ABE	882	4.7
AEG	769	4.1
ABC	562	3.0
ABCEG	543	2.9
E	498	2.6
Missing	0	

Respiratory failure	N	%
None	4416	23.3
Only hypoxic failure	4847	25.6
Only hypercapnic failure	1432	7.6
Hypoxic-hypercapnic failure	2856	15.1
Intubation for airway maint.	5398	28.5
Missing	0	

Cardiovascular failure	N	%
None	12676	66.9
Without shock	1465	7.7
Cardiogenic shock	1948	10.3
Septic shock	1455	7.7
Haemorrhagic/hypovolemic shock	366	1.9
Hypovolemic shock	325	1.7
Anaphylactic shock	28	0.1
Neurogenic shock	166	0.9
Other shock	207	1.1
Mixed shock	313	1.7
Missing	0	

Neurologic failure	N	%
None	11413	72.8
Cerebral coma	1903	12.1
Metabolic coma	805	5.1
Postanoxic coma	1335	8.5
Toxic coma	228	1.5
Missing or not evaluable	3265	

Renal failure (AKIN)	N	%
None	11615	61.3
Mild	3642	19.2
Moderate	1738	9.2
Severe	1954	10.3
Missing	0	

Metabolic failure	N	%
None	14131	74.6
pH \leq 7.3, PaCO ₂ $<$ 45 mmHg	2046	10.8
Base deficit \geq 5 mmol/L, lactate $>$ 1.5x	2770	14.6
Missing	2	

National report for general ICUs - Year 2012**Characteristics on admission** - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

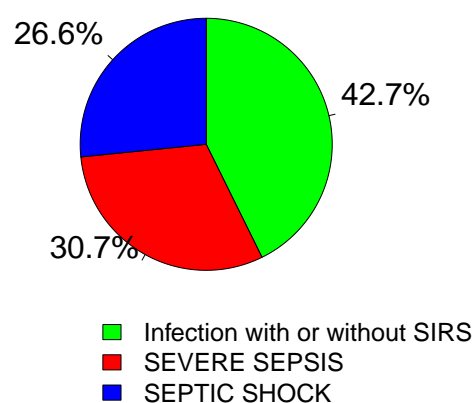
Clinical conditions on admission	N	%
Respiratory	6564	34.6
Acute exacerbation of COPD	2467	13.0
Pleural effusion	1224	6.5
ALI (Acute Lung Injury)	860	4.5
Aspiration pneumonia	665	3.5
Atelectasis	578	3.1
Cardiovascular	5569	29.4
Left heart failure with pulmonary edema	1604	8.5
Cardiac arrest	1512	8.0
Left heart failure without pulm. edema	905	4.8
Acute severe arrhythmia: tachycardias	707	3.7
Acute myocardial infarction	634	3.3
Neurological	3689	19.5
Seizures	776	4.1
Spontaneous Intraparenchymal bleeding	769	4.1
Cerebral artery stroke	753	4.0
Metabolic/postanoxic encephalopathy	686	3.6
Spontaneous Subarachnoid haemorrhage	327	1.7
Gastrointestinal and hepatic	1281	6.8
Gastrointestinal bleeding: upper tract	302	1.6
Acute pancreatitis	222	1.2
Liver Dysfunction Syndrome	153	0.8
Ascites	141	0.7
Acute bile-duct disease	99	0.5
Trauma (anatomical districts)	2305	12.2
Head	1256	6.6
Chest	1122	5.9
Pelvis/bone/joint & muscle	666	3.5
Spine	564	3.0
Abdomen	286	1.5
Major vessels injury	47	0.2
Miscellaneous	40	0.2
Other	3769	19.9
Metabolic disorder	1561	8.2
Acute intoxication	805	4.2
Nephrourologic disease	639	3.4
Other disease	585	3.1
Coagulation disorder	471	2.5
Post transplantation	91	0.5
Renal transplantation	33	0.2
Bone marrow transplantation	16	0.1
Infections	6394	33.7
Pneumonia	3625	19.1
L.R.T.I. other than pneumonia	662	3.5
NON-surgical urinary tract infection	635	3.4
Primary bacteraemia of unknown origin	321	1.7
NON-surgical CNS infection	241	1.3
Clinical sepsis	228	1.2
NON-surgical skin/soft tissue infection	217	1.1
Cholecystitis/choolangitis	166	0.9
Upper respiratory tract infection	148	0.8
Gastroenteritis	138	0.7
Missing	0	

Trauma (anatomical districts)	N	%
Head	1256	6.6
Traumatic subarachnoid haemorrhage	464	2.4
Maxillofacial fracture	384	2.0
Cerebral contusion/laceration	318	1.7
Skull fracture	303	1.6
Traumatic Subdural haemathoma	248	1.3
Spine	564	3.0
Vertebral fracture, without deficit	474	2.5
Tetraplegia	29	0.2
Cervical injury, incomplete deficit	27	0.1
Chest	1122	5.9
Other injuries of the chest	510	2.7
Traum. haemothorax/pneumothorax	471	2.5
Severe lung contusion/laceration	352	1.9
Abdomen	286	1.5
Liver: Moderate-Severe laceration	99	0.5
Minor injuries of the abdomen	88	0.5
Spleen: Moderate-Severe laceration	85	0.4
Pelvis/bone/joint & muscle	666	3.5
Long bones fracture	468	2.5
Multiple fracture of the pelvis	263	1.4
Very severe or open fracture of the pelvis	25	0.1
Major vessels injury	47	0.2
Neck vessels: dissection/transection	12	0.1
Aorta: rupture/dissection	14	0.1
Major abdominal vessels: transection	12	0.1
Miscellaneous	40	0.2
Inhalation injury	20	0.1
Burns (>30% BSA)	21	0.1
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	12555	66.3
Infection with or without SIRS	2730	14.4
SEVERE SEPSIS	1964	10.4
SEPTIC SHOCK	1700	9.0
Missing	0	

Infection severity on admission

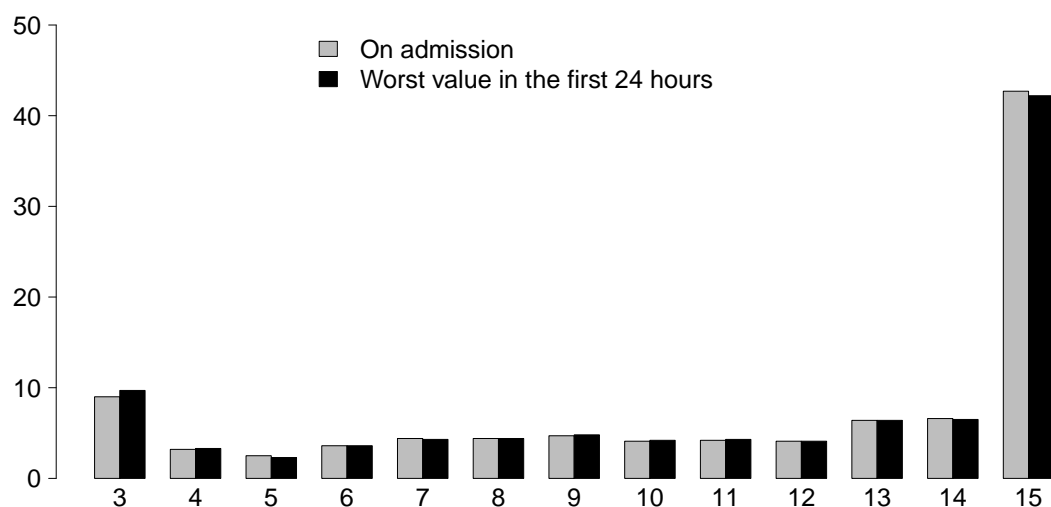
Patients infected (N=6394)



National report for general ICUs - Year 2012

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

Glasgow Coma Scale (%)



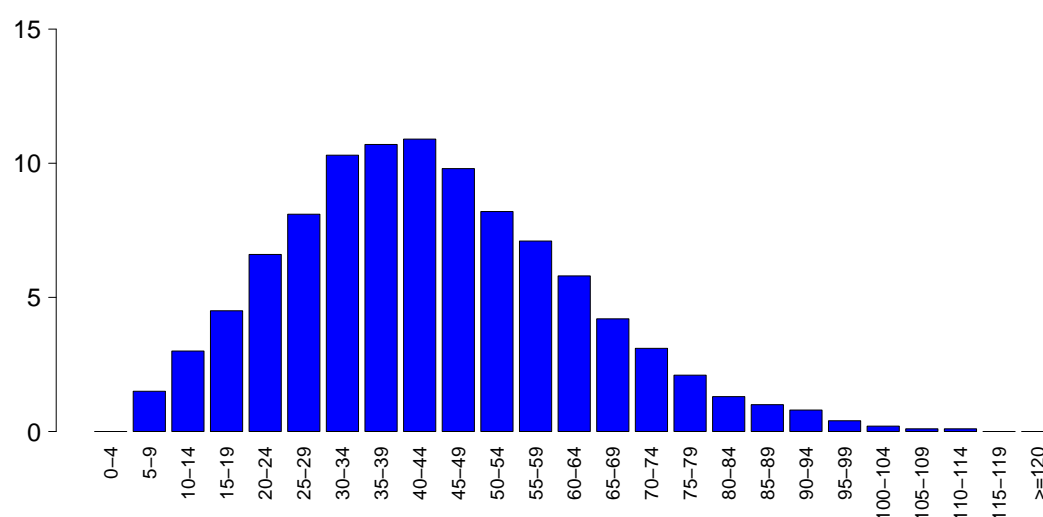
GCS (admission)

Median	13
Q1-Q3	8-15
Not evaluable	3265
Missing	0

GCS (first 24 hours)

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

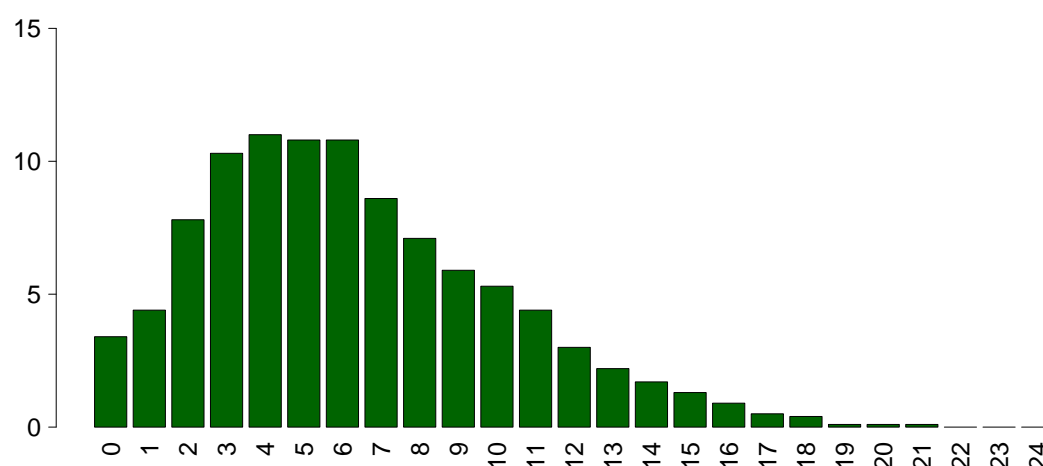
SAPS II (%)



SAPSII

Mean	43.5
SD	18.7
Median	42
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 2012**Characteristics during the stay** - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Complications during the stay	N	%
No	11708	61.8
Yes	7241	38.2
Missing	0	

Failures during the stay	N	%
No	15959	84.2
Yes	2990	15.8
A: Respiratory failure	899	4.7
B: Cardiovascular failure	1551	8.2
C: Neurological failure	279	1.5
D: Hepatic failure	101	0.5
E: Renal failure (AKIN)	976	5.2
F: Acute skin failure	7	0.0
G: Metabolic failure	255	1.3
H: Coagulation failure	138	0.7
Missing	0	

Failures during the stay (top 10)	N	%
B	908	4.8
A	492	2.6
E	421	2.2
BE	212	1.1
AB	147	0.8
G	139	0.7
C	104	0.5
ABE	61	0.3
AE	60	0.3
D	47	0.2
Missing	0	

Respiratory failure occurred	N	%
None	18050	95.3
Intubation for airway maint.	223	1.2
Hypoxic failure	615	3.2
Hypercapnic failure	236	1.2
Missing	0	

Cardiovascular failure occurred	N	%
None	17398	91.8
Cardiogenic shock	516	2.7
Hypovolemic shock	81	0.4
Haemorrhagic/hypovolemic shock	102	0.5
Septic shock	739	3.9
Anaphylactic shock	1	0.0
Neurogenic shock	117	0.6
Other shock	90	0.5
Missing	0	

Neurological failure occurred	N	%
None	18670	98.5
Cerebral coma	146	0.8
Metabolic coma	79	0.4
Postanoxic coma	60	0.3
Missing	0	

Renal failure occurred (AKIN)	N	%
None	17973	94.8
Mild	114	0.6
Moderate	143	0.8
Severe	719	3.8
Missing	0	

Complications during the stay	N	%
Respiratory	1496	7.9
Pleural effusion	531	2.8
Atelectasis	298	1.6
ARDS	230	1.2
ALI (Acute Lung Injury)	204	1.1
Pneumothorax/Pneumomediastinum	173	0.9
Cardiovascular	1982	10.5
Acute severe arrhythmia: tachycardias	794	4.2
Cardiac arrest	519	2.7
Left heart failure w/o pulm. edema	220	1.2
Pulmonary edema	212	1.1
Acute severe arrhythmia: bradycardias	187	1.0
Neurological	1264	6.7
Drowsiness/agitation/delirium	509	2.7
Seizures	322	1.7
Brain edema	191	1.0
Intracranial hypertension	134	0.7
New ischaemic stroke	93	0.5
Gastrointestinal and hepatic	516	2.7
Gastrointestinal bleeding: upper tract	131	0.7
Gastrointestinal bleeding: lower tract	72	0.4
Liver Dysfunction Syndrome	75	0.4
Paralytic Ileus	61	0.3
Acute on chronic liver disease	33	0.2
Other	544	2.9
Metabolic disorder	255	1.3
Nephrourologic disease	169	0.9
Other disease	123	0.6
Other skin and/or soft tissue pathology	27	0.1
-	0	0.0
-	0	0.0
Delayed spleen rupture	1	0.0
Infections	2395	12.6
Pneumonia	1007	5.3
L.R.T.I. other than pneumonia	496	2.6
NON-surgical urinary tract infection	456	2.4
Primary bacteraemia of unknown origin	281	1.5
Catheter-related bacteremia (CR-BSI)	250	1.3
Upper respiratory tract infection	111	0.6
Clinical sepsis	67	0.4
Catheter-related local infection	34	0.2
Cholecystitis/cholangitis	38	0.2
F.U.O. fever of unknown origin	36	0.2
Missing	0	

National report for general ICUs - Year 2012**Characteristics during the stay** - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Infections	N	%
None	10994	58.0
Only on admission	5560	29.3
On admission and during ICU stay	834	4.4
Only during ICU stay	1561	8.2
Missing	0	

Maximum severity of infection	N	%
None	10994	58.1
Infection with or without SIRS	3090	16.3
SEVERE SEPSIS	2509	13.3
SEPTIC SHOCK	2328	12.3
Missing	28	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	SEVERE SEPSIS	SEPTIC SHOCK
Admission	None	10994 (87.8%)	802 (6.4%)	517 (4.1%)	215 (1.7%)	12528
	Infection with or without SIRS	-	2288 (83.8%)	292 (10.7%)	150 (5.5%)	2730
	SEVERE SEPSIS	-	-	1700 (86.6%)	263 (13.4%)	1963
	SEPTIC SHOCK	-	-	-	1700 (100.0%)	1700
	TOT	10994	3090	2509	2328	18921

Ventil. Associat. Pneumonia (VAP)	N	%
No	18056	95.3
Yes	893	4.7
Missing	0	

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

Estimate	8.6
CI (95%)	8.1-9.2

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

Estimate	6.9%
CI (95%)	6.4-7.4

Catheter Bacteraemia (CR-BSI)	N	%
No	18699	98.7
Yes	250	1.3
Missing	0	

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	1.9%
CI (95%)	1.7-2.2

National report for general ICUs - Year 2012
Process indicators - Adult non 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	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	18314	96.6										
Invasive ventilation	13590	71.7	7535	39.8	3417	18	4	2-10	0	0	0-0	0
Non invasive ventilation	4566	24.1	985	5.2	806	4.3	2	1-4	0	0	0-2	0
Tracheostomy	3385	17.9	702	3.7	2744	14.5	11	6-20	0	8	5-12	0
iNO (inhaled nitric oxide)	57	0.3	1	0	12	0.1	3	2-6	0	2	0-4	0
Central Venous Catheter	15041	79.4	4715	24.9	11190	59.1	6	3-13	1	0	0-0	0
Arterial Catheter	14135	74.6	3516	18.6	4209	22.2	5	3-11	1	0	0-0	0
Vasoactive drugs	7645	40.3	2486	13.1	1776	9.4	3	1-6	1	0	0-0	0
Antiarrhythmics	2269	12.0	640	3.4	1116	5.9	4	2-9	1	1	0-2	0
IABP	231	1.2	164	0.9	48	0.3	3	2-4	0	0	0-0	0
Invasive monitoring of C.O.	1007	5.3	109	0.6	206	1.1	5	3-8	0	0	0-1	0
Continuous monitoring of ScVO2	125	0.7	24	0.1	33	0.2	4	3-8	0	0	0-1	0
Temporary pacing	140	0.7	58	0.3	49	0.3	2	1-5	0	0	0-1	0
Ventricular assistance	7	0.0	3	0	4	0	5	4-12	0	6	2-10	0
DC-shock	615	3.2								0	0-1	0
CPR	777	4.1								0	0-2	0
Massive blood transfusion	258	1.4								0	0-1	0
ICP monitoring without liquor-drainage	145	0.8	27	0.1	19	0.1	6	3-10	0	0	0-0	0
ICP monitoring with liquor-drainage	65	0.3	22	0.1	26	0.1	8	6-14	0	0	0-2	0
External ventricular drainage without ICP	16	0.1	7	0	11	0.1	5	4-11	0	1	0-5	0
Haemofiltration	1131	6.0	132	0.7	282	1.5	4	2-9	0	1	0-3	0
Haemodialysis	626	3.3	134	0.7	242	1.3	3	2-9	0	1	0-3	0
ECMO	66	0.3	26	0.1	17	0.1	8	5-13	0	0	0-3	0
Hepatic clearance techniques	3	0.0										
Clearance techniques during sepsis	114	0.6	4	0	20	0.1	2	1-4	0	2	0-7	0
IAP (intra-abdominal pressure)	193	1.0										
Hypothermia	652	3.4										
Enteral nutrition	9827	51.9	1575	8.3	5879	31	7	3-14	1	1	1-2	0
Parenteral nutrition	5343	28.2	885	4.7	2477	13.1	5	3-10	1	1	0-2	0
SDD (Topical, Topical and systemic)	321	1.7										
Patient restraint	984	5.2										
Peridural catheter	58	0.3	12	0.1	30	0.2	4	2-7	0	1	0-2	0
Electrical cardioversion	165	0.9								1	0-3	0
Vacuum therapy	20	0.1										
Antibiotics	13508	71.3										
Antibiotics for surgical prophylaxis	513	2.7	254	1.3	286	1.5	4	2-7	0	0	0-3	0
Antibiotics for medical prophylaxis	6145	32.4	1848	9.8	3633	19.2	4	2-8	0	0	0-0	0
Empirical antibiotic therapy	5750	30.3	2138	11.3	2814	14.9	5	3-9	1	0	0-0	0
Targeted antibiotic therapy	3792	20.0	774	4.1	2404	12.7	8	4-15	1	4	2-9	0

National report for general ICUs - Year 2012**Process indicators** - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

			Length (days)				
Invasive ventilation (N=13590)	N	%	Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	7431	54.1	9.4	13.3	5	2-11	0
For airway maintenance	5287	38.5	7.3	9.5	4	2-9	0
In weaning	171	1.2	0.6	0.5	1	0-1	0
Not evaluable	839	6.1	8.1	11.5	4	2-9	138
Reintubation within 48 hours	300	2.2	7.9	10.1	5	2.0-9.0	0

Non invasive ventilation (N=4566)	N	%
Non invasive ventilation only	2385	52.2
Non invasive ventilation failed	944	20.7
For weaning	1103	24.2
Other	134	2.9
Missing	0	

Tracheostomy (N=3385)	N	%
Surgical	641	18.9
Percutwist	463	13.7
Ciaglia	430	12.7
Monodil. Ciaglia	1024	30.3
Fantoni	210	6.2
Griggs	407	12.0
Other Kind	210	6.2
Missing	0	

Tracheostomy - Days after the beginning of inv. vent.

N	3221
Mean	7.6
SD	9.4
Median	6
Q1-Q3	2-11

Invasive monitoring of C.O. (N=1007)	N	%
Swan Ganz	224	22.2
PICCO	601	59.7
LIDCO	2	0.2
Vigileo-PRAM	164	16.3
Other	14	1.4
Missing	2	

SDD (N=321)	N	%
Topical	181	56.4
Topical and systemic	140	43.6
Missing	0	

Antibiotic therapy

Pts. infected in ICU only (N=1561)	N	%
Only empirical	414	27.5
Only targeted	734	48.7
Targeted after empirical	275	18.3
Other	83	5.5
Missing	55	

Surgical interventions	N	%
No	18048	95.2
Yes	901	4.8
Missing	0	

Number of surgical interventions	N	%
0	18048	95.2
1	766	4.0
2	111	0.6
3	10	0.1
>3	14	0.1
Missing	0	

Surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	10.2	11.5	6	3-12	0

Surgical interventions (top 10)	N	%
Orthopaedic surgery	288	1.5
Gastrointestinal surgery	203	1.1
ENT surgery	138	0.7
Neurosurgery	114	0.6
Thoracic surgery	60	0.3
Pancreatic surgery	34	0.2
Nephro/Urological surgery	42	0.2
Maxillo-Facial surgery	44	0.2
Biliary tract surgery	35	0.2
Other surgery	42	0.2
Missing	0	

Non surgical interventions	N	%
No	18379	97.0
Yes	570	3.0
Missing	0	

Non surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	12.2	12.4	8	3-16	8

Non surgical interventions	N	%
Interventional endoscopy	385	2.0
Interventional cardiology	127	0.7
Interventional radiology	101	0.5
Interventional neuroradiology	24	0.1
Missing	0	

National report for general ICUs - Year 2012**Outcome indicators** - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

ICU outcome	N	%
Dead	4440	23.4
Transferred to same hospital	11652	61.5
Transferred to other hospital	2432	12.8
Discharged home	318	1.7
Disch. terminally ill	107	0.6
Missing	0	

Transferred to (N=14084)	N	%
Ward	10121	71.9
Other ICU	1486	10.6
High dependency care unit	1578	11.2
Rehabilitation	650	4.6
Day hospital or Long-term care	249	1.8
Missing	0	

Reason of transfer to Other ICU (N=1521)	N	%
Specialist expertise	693	45.6
Step-up care	99	6.5
Logistical/organizational reasons	698	45.9
Step-down care	31	2.0
Missing	0	

Transferred to Same hospital (N=11652)	N	%
Ward	9351	80.3
Other ICU	719	6.2
High dependency care unit	1401	12.0
Rehabilitation	109	0.9
Day hospital or Long-term care	72	0.6
Missing	0	

Transferred to Other hospital (N=2432)	N	%
Ward	770	31.7
Other ICU	767	31.5
High dependency care unit	177	7.3
Rehabilitation	541	22.2
Day hospital or Long-term care	177	7.3
Missing	0	

ICU mortality	N	%
Alive	14402	76.0
Dead	4547	24.0
Missing	0	

Timing of ICU mortality (N=4547)	N	%
Daytime (08:00AM - 07:59PM)	3129	68.8
Nighttime (08:00PM - 07:59AM)	1418	31.2
Weekdays (Monday - Friday)	3427	75.4
Weekend (Saturday - Sunday)	1120	24.6
Missing	0	

Brain death assessment (N=4547)	N	%
Yes, with organ donation	293	6.6
Yes, without organ donation	208	4.7
No	3939	88.7
Missing	107	

Organ/Tissue removal (N=293)	N	%
No removal	11	3.8
Only organ removal	145	49.5
Only tissue removal	48	16.4
Organ and tissue removal	89	30.4
Missing	0	

Hospital mortality	N	%
Dead	5906	31.2
Transf. to other acute-care hospital	2298	12.1
Transf. to other type of hosp. stay	3018	15.9
Nursing home	427	2.3
Voluntary discharge	204	1.1
Discharged home	7095	37.4
Missing	1	

To other type of H stay (N=3018)	N	%
Rehabilitation in the same institute	419	13.9
Rehabilitation in other institute	1754	58.1
DH/long-term care, same inst.	320	10.6
DH/long-term care, other inst.	525	17.4
Missing	0	

Disch. terminally ill (N=13042)	N	%
Yes	254	1.9
No	12787	98.1
Missing	1	

Hospital mortality	N	%
Alive	12794	67.5
Dead	6155	32.5
Missing	0	

Timing of hosp. mortality (N=6155)	N	%
In ICU	4547	73.9
Within 24 hours after ICU	79	1.3
Within 48 hours after ICU	206	3.3
Within 72 hours after ICU	322	5.2
Within 96 hours after ICU	414	6.7
After more than 96 hours after ICU	1194	19.4
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=1608)		
Mean		15.9
SD		20.5
Median		9
Q1-Q3		3-20
Missing		0

National report for general ICUs - Year 2012**Outcome indicators** - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	12691	67.0
Dead	6258	33.0
Missing	0	

ICU stay (days)		
	Mean	9.6
	SD	12.5
	Median	5
	Q1-Q3	3-11
	Missing	0

ICU stay (days)		
Alive (N=14402)		
	Mean	9.3
	SD	12.0
	Median	5
	Q1-Q3	3-11
	Missing	0

ICU stay (days)		
Dead (N=4547)		
	Mean	10.3
	SD	14.0
	Median	6
	Q1-Q3	3-12
	Missing	0

Stay after ICU (days)		
Alive (N=14402)		
	Mean	13.0
	SD	16.9
	Median	9
	Q1-Q3	2-17
	Missing	0

Hospital stay (days)		
	Mean	22.2
	SD	22.6
	Median	16
	Q1-Q3	8-29
	Missing	0

Hospital stay (days)		
Alive (N=12794)		
	Mean	23.9
	SD	22.5
	Median	18
	Q1-Q3	10-31
	Missing	0

Hospital stay (days)		
Dead (N=6155)		
	Mean	18.6
	SD	22.4
	Median	11
	Q1-Q3	5-24
	Missing	0

National report for general ICUs - Year 2012

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

Patients (N): 7064

Sex	N	%
Male	4214	59.7
Female	2850	40.3
Missing	0	

Age (years)	N	%
17-45	525	7.4
46-65	1848	26.2
66-75	2203	31.2
>75	2488	35.2
Missing	0	
Mean	68.7	
SD	13.8	
Median	71	
Q1-Q3	62-78	
Min-Max	17-100	

Body mass Index (BMI)	N	%
Underweight	398	5.6
Normal	3213	45.5
Overweight	2183	30.9
Obese	1270	18.0
Missing	0	

Pregnancy status	N	%
Females (N=2850)		
Not fertile	1518	53.3
Not pregnant/Unknown	1306	45.8
Currently pregnant	5	0.2
Post partum	21	0.7
Missing	0	

Comorbidities	N	%
No	619	8.8
Yes	6445	91.2
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	4043	57.2
Any tumour without metastasis	1881	26.6
Moderate COPD	1258	17.8
Arrhythmia	1151	16.3
Myocardial infarction	1140	16.1
Peripheral vascular disease	947	13.4
Diabetes Type II without insulin tr.	924	13.1
NYHA class II-III	794	11.2
Metastatic cancer	746	10.6
Cerebrovascular disease	668	9.5
Missing	0	

Stay before ICU (days)	Mean	SD	Median	Q1-Q3	Missing
	5.6	9.9	2	1-6	0

Source of admission	N	%
Same hospital	6936	98.2
Other hospital	128	1.8
Long-term chronic care hospital	0	0.0
Directly from the community (e.g., ambulance, home, ...)	0	0.0
Missing	0	

Ward of admission	N	%
Hospital (N=7064)		
Medical ward	147	2.1
Surgical ward	6764	95.8
Emergency room	46	0.7
Other ICU	81	1.1
High dependency care unit	26	0.4
Missing	0	

Reason for transfer from	N	%
Other ICU (N=81)		
Specialist expertise	34	42.0
Step-up care	15	18.5
Logistical/organizational reasons	26	32.1
Step-down care	6	7.4
Missing	0	

Ward of admission	N	%
Same hospital (N=6936)		
Medical ward	141	2.0
Surgical ward	6690	96.5
Emergency room	39	0.6
Other ICU	42	0.6
High dependency care unit	24	0.3
Missing	0	

Ward of admission	N	%
Other hospital (N=128)		
Medical ward	6	4.7
Surgical ward	74	57.8
Emergency room	7	5.5
Other ICU	39	30.5
High dependency care unit	2	1.6
Missing	0	

Scheduled admission	N	%
No	1581	22.4
Yes	5483	77.6
Missing	0	

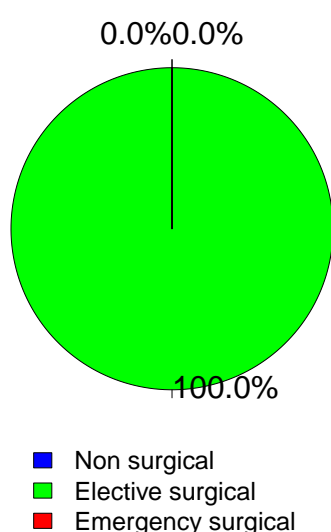
National report for general ICUs - Year 2012

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

Trauma	N	%
No	6649	94.1
Yes	415	5.9
Multiple trauma	53	0.8
Missing	0	

Surgical status	N	%
Non surgical	0	0.0
Elective surgical	7064	100.0
Emergency surgical	0	0.0
Missing	0	

Surgical status



Source of admission	N	%
Surgical pts. (N=7064)		
Operating theatre of surgical ward	6263	88.7
Operating theatre of emergency room	8	0.1
Surgical ward	501	7.1
Other	292	4.1
Missing	0	

Surgical interventions (top 10)	N	%
Elective surgical (N=7064)		
Gastrointestinal surgery	2147	30.4
Nephro/Urological surgery	877	12.4
Orthopaedic surgery	870	12.3
Thoracic surgery	475	6.7
Neurosurgery	424	6.0
Abdominal vascular surgery	409	5.8
ENT surgery	367	5.2
Peripheral vascular surgery	362	5.1
Pancreatic surgery	345	4.9
Gynaecological surgery	299	4.2
Missing	0	

Timing	N	%
Elective surgical (N=7064)		
From -7 to -3 days	180	2.5
From -2 to -1 days	320	4.5
On ICU admission day	7016	99.3
The day after ICU admission	155	2.2
Missing	9	

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	6916	97.9
Elective	93	1.3
Emergency	55	0.8
Missing	0	

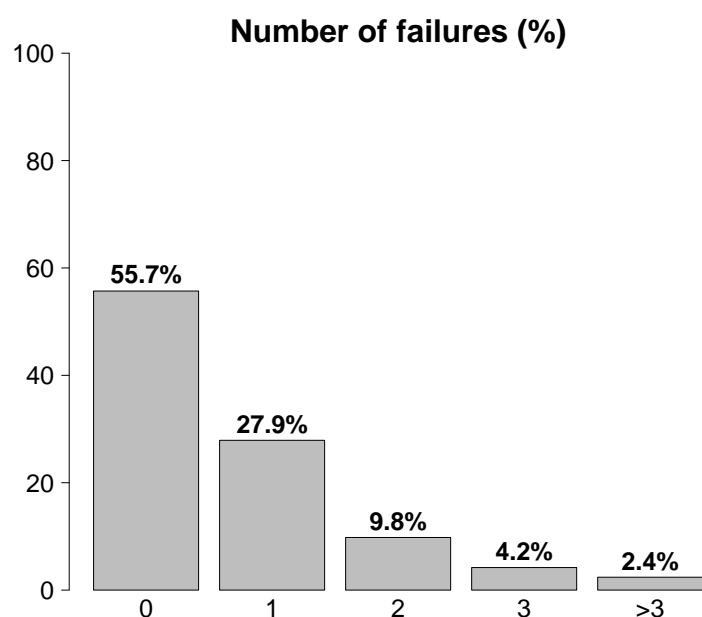
Non surgical interventions	N	%
Elective (N=93)		
Interventional radiology	21	22.6
Interventional endoscopy	20	21.5
Interventional cardiology	5	5.4
Interventional neuroradiology	5	5.4
Missing	42	

Surgical interventions	N	%
Emergency (N=55)		
Interventional radiology	22	40.0
Interventional endoscopy	14	25.5
Interventional cardiology	10	18.2
Interventional neuroradiology	3	5.5
Missing	6	

National report for general ICUs - Year 2012

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

Reason for admission	N	%
Monitoring/Weaning	5374	76.1
Post surgical weaning	2954	41.8
Surgical monitoring	2409	34.1
Post interventional weaning	3	0.0
Interventional monitoring	3	0.0
Non surgical monitoring	0	0.0
Missing	5	
Admission for procedures/treatments	0	0.0
Intensive Treatment	1690	23.9
Only ventilatory support	892	12.6
Only cardiovascular support	275	3.9
Ventilatory and cardiovascular support	523	7.4
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	3936	55.7
Yes	3128	44.3
A: Respiratory failure	1415	20.0
B: Cardiovascular failure	798	11.3
C: Neurological failure	104	1.5
D: Hepatic failure	28	0.4
E: Renal failure	1833	25.9
F: Acute skin failure	3	0.0
G: Metabolic failure	696	9.9
H: Coagulation failure	76	1.1
Missing	0	

Failures on admission (top 10)	N	%
E	1054	14.9
A	590	8.4
AB	198	2.8
EG	181	2.6
AE	143	2.0
B	143	2.0
G	144	2.0
ABEG	120	1.7
ABE	102	1.4
AEG	62	0.9
Missing	0	

Respiratory failure	N	%
None	5649	80.0
Only hypoxic failure	445	6.3
Only hypercapnic failure	79	1.1
Hypoxic-hypercapnic failure	106	1.5
Intubation for airway maint.	785	11.1
Missing	0	

Cardiovascular failure	N	%
None	6266	88.7
Without shock	233	3.3
Cardiogenic shock	101	1.4
Septic shock	81	1.1
Haemorrhagic/hypovolemic shock	239	3.4
Hypovolemic shock	83	1.2
Anaphylactic shock	5	0.1
Neurogenic shock	8	0.1
Other shock	29	0.4
Mixed shock	19	0.3
Missing	0	

Neurologic failure	N	%
None	5187	98.0
Cerebral coma	54	1.0
Metabolic coma	21	0.4
Postanoxic coma	27	0.5
Toxic coma	2	0.0
Missing or not evaluable	1773	

Renal failure (AKIN)	N	%
None	5231	74.1
Mild	1245	17.6
Moderate	345	4.9
Severe	243	3.4
Missing	0	

Metabolic failure	N	%
None	6368	90.1
pH \leq 7.3, PaCO ₂ $<$ 45 mmHg	295	4.2
Base deficit \geq 5 mmol/L, lactate $>$ 1.5x	401	5.7
Missing	0	

National report for general ICUs - Year 2012**Characteristics on admission** - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

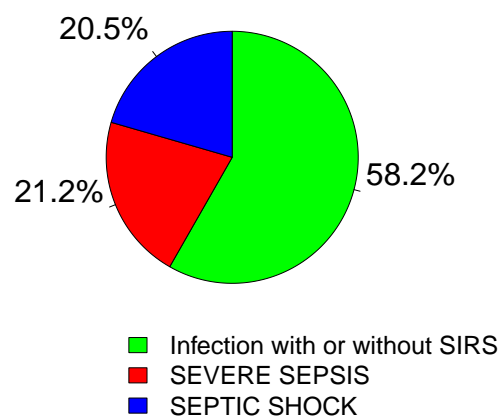
Clinical conditions on admission	N	%
Respiratory	947	13.4
Lung cancer	285	4.0
Upper respiratory tract disease	150	2.1
Pleural effusion	145	2.1
Atelectasis	119	1.7
Acute exacerbation of COPD	77	1.1
Cardiovascular	1139	16.1
Non-ruptured aneurysm	347	4.9
Peripheral vascular disease	327	4.6
Acute severe arrhythmia: tachycardias	104	1.5
Left heart failure with pulmonary edema	68	1.0
Left heart failure without pulm. edema	67	0.9
Neurological	480	6.8
Brain tumour	279	3.9
Cerebral artery stroke	46	0.7
Cerebral Aneurysm	42	0.6
Seizures	27	0.4
Spontaneous Subarachnoid haemorrhage	18	0.3
Gastrointestinal and hepatic	2366	33.5
Digestive tract malignancy	1448	20.5
Pancreatic malignancy	299	4.2
Hepatic malignancy	202	2.9
Acute bile-duct disease	157	2.2
Intestinal occlusion	104	1.5
Trauma (anatomical districts)	415	5.9
Pelvis/bone/joint & muscle	376	5.3
Chest	45	0.6
Head	37	0.5
Spine	28	0.4
Abdomen	6	0.1
Major vessels injury	3	0.0
Miscellaneous	3	0.0
Other	2582	36.6
Nephrourologic disease	768	10.9
Other disease	509	7.2
Orthopaedic disease	419	5.9
ENT/maxillofacial disease	401	5.7
Gynaecological disease	259	3.7
Post transplantation	57	0.8
Liver transplantation	36	0.5
Renal transplantation	14	0.2
Infections	443	6.3
Pneumonia	117	1.7
Post-surgical peritonitis	50	0.7
Cholecystitis/cholangitis	33	0.5
NON-surgical secondary peritonitis	36	0.5
Post-surgical skin/soft tissue infection	31	0.4
Clinical sepsis	18	0.3
L.R.T.I. other than pneumonia	18	0.3
NON-surgical skin/soft tissue infection	18	0.3
Upper respiratory tract infection	19	0.3
NON-surgical urinary tract infection	24	0.3
Missing	0	

Trauma (anatomical districts)	N	%
Head	37	0.5
Maxillofacial fracture	24	0.3
Traumatic Subdural haemathoma	8	0.1
Skull fracture	7	0.1
Cerebral contusion/laceration	3	0.0
Traumatic diffuse injury without oedema	2	0.0
Spine	28	0.4
Vertebral fracture, without deficit	22	0.3
Cervical injury, incomplete deficit	1	0.0
Tetraplegia	1	0.0
Chest	45	0.6
Other injuries of the chest	23	0.3
Traum. haemothorax/pneumothorax	14	0.2
Severe lung contusion/laceration	9	0.1
Abdomen	6	0.1
-	0	0.0
Bowel transection/perforation	1	0.0
-	0	0.0
Pelvis/bone/joint & muscle	376	5.3
Long bones fracture	363	5.1
Multiple fracture of the pelvis	24	0.3
Very severe or open fracture of the pelvis	6	0.1
Major vessels injury	3	0.0
Neck vessels: dissection/transection	1	0.0
Major thoracic vessels: transection	1	0.0
Aorta: rupture/dissection	1	0.0
Miscellaneous	3	0.0
Inhalation injury	1	0.0
Burns (>30% BSA)	2	0.0
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	6621	93.7
Infection with or without SIRS	258	3.7
SEVERE SEPSIS	94	1.3
SEPTIC SHOCK	91	1.3
Missing	0	

Infection severity on admission

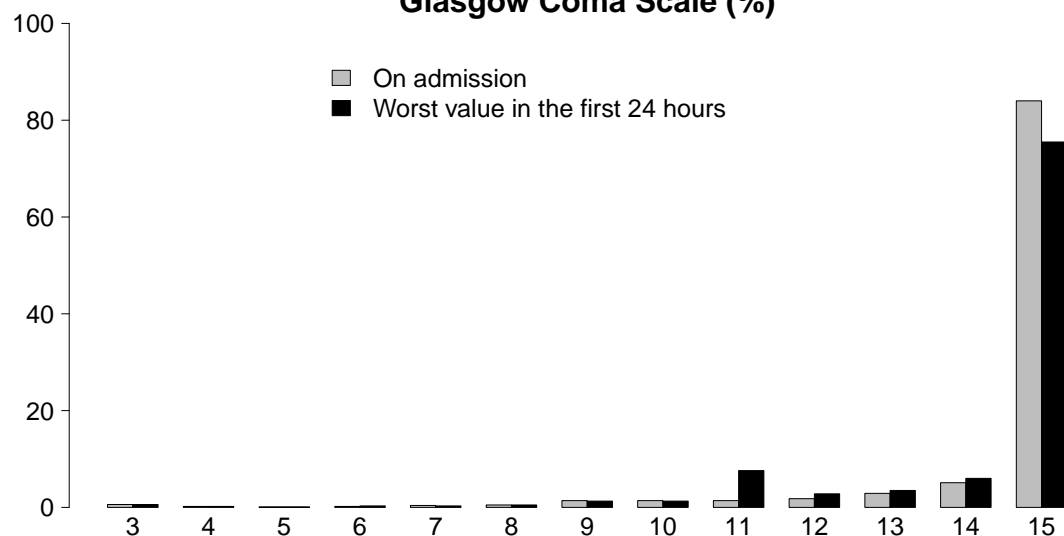
Patients infected (N=443)



National report for general ICUs - Year 2012

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

Glasgow Coma Scale (%)



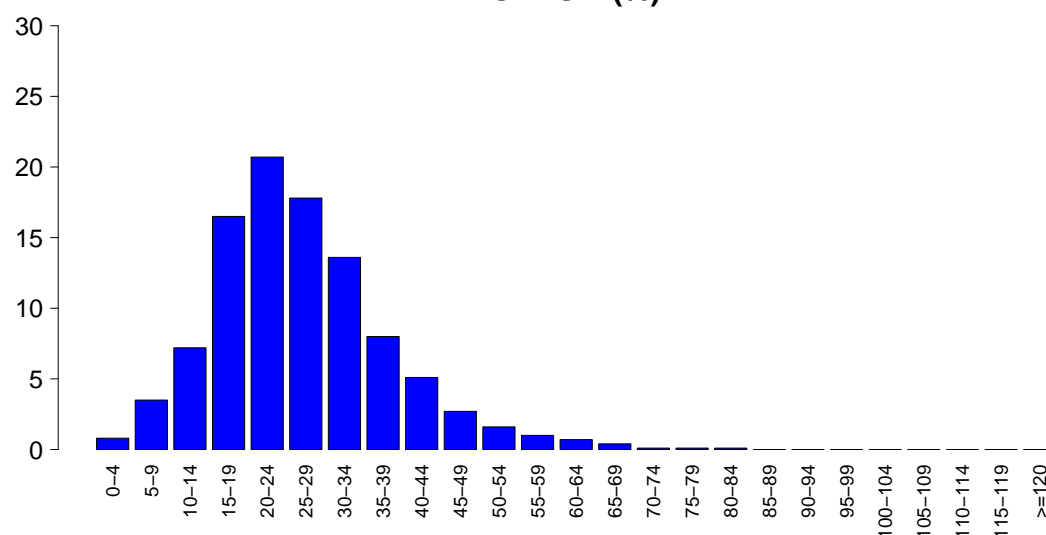
GCS (admission)

Median	15
Q1-Q3	15-15
Not evaluable	1773
Missing	0

GCS (first 24 hours)

Median	15
Q1-Q3	15-15
Not evaluable	632
Missing	0

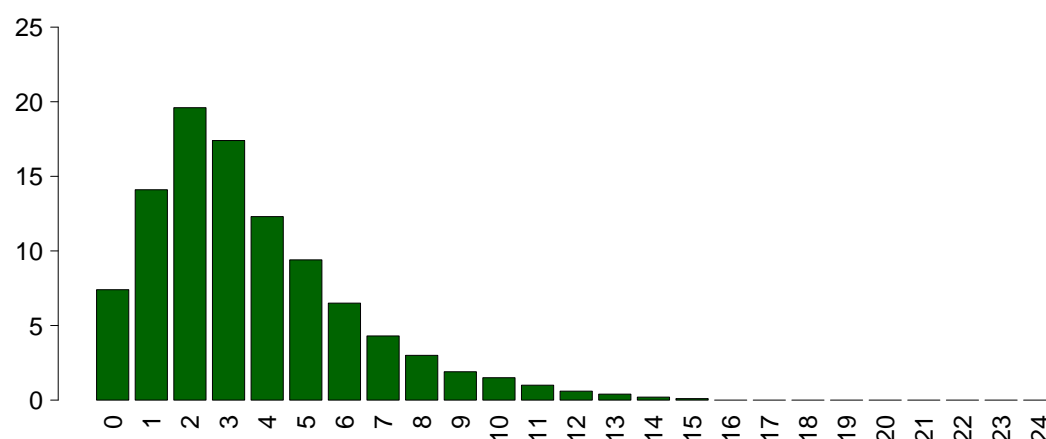
SAPS II (%)



SAPSII

Mean	26.5
SD	11.7
Median	25
Q1-Q3	18-32.2
Not evaluable	632
Missing	0

SOFA (%)



SOFA

Mean	3.6
SD	2.7
Median	3
Q1-Q3	2-5
Not evaluable	632
Missing	0

National report for general ICUs - Year 2012**Characteristics during the stay** - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Complications during the stay	N	%
No	5740	81.3
Yes	1324	18.7
Missing	0	

Failures during the stay	N	%
No	6508	92.1
Yes	556	7.9
A: Respiratory failure	242	3.4
B: Cardiovascular failure	263	3.7
C: Neurological failure	38	0.5
D: Hepatic failure	29	0.4
E: Renal failure (AKIN)	190	2.7
F: Acute skin failure	0	0.0
G: Metabolic failure	39	0.6
H: Coagulation failure	25	0.4
Missing	0	

Failures during the stay (top 10)	N	%
B	126	1.8
A	120	1.7
E	83	1.2
AB	49	0.7
BE	31	0.4
ABE	22	0.3
G	19	0.3
AC	13	0.2
AE	12	0.2
D	11	0.2
Missing	0	

Respiratory failure occurred	N	%
None	6822	96.6
Intubation for airway maint.	66	0.9
Hypoxic failure	168	2.4
Hypercapnic failure	55	0.8
Missing	0	

Cardiovascular failure occurred	N	%
None	6801	96.3
Cardiogenic shock	73	1.0
Hypovolemic shock	33	0.5
Haemorrhagic/hypovolemic shock	55	0.8
Septic shock	101	1.4
Anaphylactic shock	1	0.0
Neurogenic shock	3	0.0
Other shock	16	0.2
Missing	0	

Neurological failure occurred	N	%
None	7026	99.5
Cerebral coma	23	0.3
Metabolic coma	13	0.2
Postanoxic coma	4	0.1
Missing	0	

Renal failure occurred (AKIN)	N	%
None	6874	97.3
Mild	46	0.7
Moderate	39	0.6
Severe	105	1.5
Missing	0	

Complications during the stay	N	%
Respiratory	277	3.9
Pleural effusion	117	1.7
Atelectasis	84	1.2
ALI (Acute Lung Injury)	35	0.5
ARDS	26	0.4
Pneumothorax/Pneumomediastinum	28	0.4
Cardiovascular	411	5.8
Acute severe arrhythmia: tachycardias	206	2.9
Cardiac arrest	46	0.7
Acute ischaemia	44	0.6
Left heart failure w/o pulm. edema	38	0.5
Acute severe arrhythmia: bradycardias	28	0.4
Neurological	197	2.8
Drowsiness/agitation/delirium	122	1.7
Seizures	30	0.4
New ischaemic stroke	20	0.3
Brain edema	16	0.2
Post-surgical intracranial bleeding	15	0.2
Gastrointestinal and hepatic	188	2.7
Anastomotic dehiscence	32	0.5
Intrabdominal bleeding	36	0.5
Bowel ischaemia	22	0.3
Gastrointestinal bleeding: upper tract	19	0.3
Gastrointestinal perforation	19	0.3
Other	135	1.9
Other disease	47	0.7
Metabolic disorder	39	0.6
Nephrourologic disease	40	0.6
Graft vascular thrombosis	5	0.1
Extremity compartment syndrome (severe)	5	0.1
Iatrogenic major vessels injury	7	0.1
Other skin and/or soft tissue pathology	6	0.1
Infections	282	4.0
Pneumonia	94	1.3
L.R.T.I. other than pneumonia	52	0.7
Post-surgical peritonitis	36	0.5
Primary bacteraemia of unknown origin	26	0.4
Catheter-related bacteremia (CR-BSI)	18	0.3
Clinical sepsis	11	0.2
F.U.O. fever of unknown origin	15	0.2
Post-surgical skin/soft tissue infection	13	0.2
NON-surgical urinary tract infection	16	0.2
Cholecystitis/cholangitis	6	0.1
Missing	0	

National report for general ICUs - Year 2012

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

Infections	N	%
None	6375	90.2
Only on admission	407	5.8
On admission and during ICU stay	36	0.5
Only during ICU stay	246	3.5
Missing	0	

Maximum severity of infection	N	%
None	6375	90.4
Infection with or without SIRS	319	4.5
SEVERE SEPSIS	169	2.4
SEPTIC SHOCK	186	2.6
Missing	15	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	SEVERE SEPSIS	SEPTIC SHOCK
Admission	None	6375 (96.5%)	89 (1.3%)	76 (1.2%)	66 (1.0%)	6606
	Infection with or without SIRS	-	230 (89.1%)	18 (7.0%)	10 (3.9%)	258
	SEVERE SEPSIS	-	-	75 (79.8%)	19 (20.2%)	94
	SEPTIC SHOCK	-	-	-	91 (100.0%)	91
	TOT	6375	319	169	186	7049

Ventil. Associat. Pneumonia (VAP)	N	%
No	7011	99.2
Yes	53	0.8
Missing	0	

Incidence of VAP

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

Estimate	6.5
CI (95%)	4.9-8.5

Incidence of VAP

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

Estimate	5.2%
CI (95%)	3.9-6.8

Catheter Bacteraemia (CR-BSI)	N	%
No	7046	99.7
Yes	18	0.3
Missing	0	

Incidence of CR-BSI

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

Estimate	0.8
CI (95%)	0.5-1.3

Incidence of CR-BSI

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

Estimate	1.0%
CI (95%)	0.6-1.6

National report for general ICUs - Year 2012
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)	6662	94.3										
Invasive ventilation	4803	68.0	4120	58.3	222	3.1	1	0-1	0	0	0-0	0
Non invasive ventilation	769	10.9	117	1.7	197	2.8	2	1-3	0	1	0-2	0
Tracheostomy	349	4.9	188	2.7	298	4.2	4	2-13	0	9	5-14	0
iNO (inhaled nitric oxide)	6	0.1	1	0	0	0	2	2-3	0	3	3-3	0
Central Venous Catheter	4581	64.8	3462	49	4063	57.5	3	2-4	0	0	0-0	0
Arterial Catheter	5212	73.8	3994	56.5	800	11.3	2	2-4	0	0	0-0	0
Vasoactive drugs	1273	18.0	625	8.8	163	2.3	2	1-3	0	0	0-1	0
Antiarrhythmics	458	6.5	133	1.9	240	3.4	2	1-4	0	1	0-2	0
IABP	10	0.1	2	0	1	0	1	1-4	0	1	0-3	0
Invasive monitoring of C.O.	206	2.9	97	1.4	16	0.2	2	1-5	0	1	0-1	0
Continuous monitoring of ScVO ₂	20	0.3	8	0.1	3	0	5	3-8	0	1	0-1	0
Temporary pacing	13	0.2	7	0.1	5	0.1	2	1-4	0	2	0-3	0
Ventricular assistance	0	0.0										
DC-shock	41	0.6								1	0-2	0
CPR	58	0.8								1	0-7	0
Massive blood transfusion	177	2.5								0	0-0	0
ICP monitoring without liquor-drainage	6	0.1	5	0.1	2	0	4	3-4	0	1	1-1	0
ICP monitoring with liquor-drainage	27	0.4	23	0.3	17	0.2	3	2-4	0	0	0-0	0
External ventricular drainage without ICP	18	0.3	17	0.2	15	0.2	2	1-4	0	1	1-1	0
Haemofiltration	101	1.4	10	0.1	28	0.4	4	2-8	0	2	1-4	0
Haemodialysis	111	1.6	31	0.4	52	0.7	2	1-6	0	1	1-3	0
ECMO	2	0.0	0	0	0	0	8	6-11	0	2	1-3	0
Hepatic clearance techniques	3	0.0										
Clearance techniques during sepsis	10	0.1	2	0	0	0	3	1-3	0	2	2-4	0
IAP (intra-abdominal pressure)	56	0.8										
Hypothermia	12	0.2										
Enteral nutrition	973	13.8	138	2	680	9.6	3	2-8	0	2	1-4	0
Parenteral nutrition	1965	27.8	292	4.1	1538	21.8	2	1-5	0	1	0-1	0
SDD (Topical, Topical and systemic)	48	0.7										
Patient restraint	150	2.1										
Peridural catheter	778	11.0	720	10.2	531	7.5	2	2-3	0	0	0-0	0
Electrical cardioversion	17	0.2								1	1-2	0
Vacuum therapy	7	0.1										
Antibiotics	5929	83.9										
Antibiotics for surgical prophylaxis	5384	76.2	4368	61.8	3325	47.1	2	1-3	0	0	0-0	0
Antibiotics for medical prophylaxis	181	2.6	77	1.1	124	1.8	3	2-6	0	1	0-2	0
Empirical antibiotic therapy	489	6.9	176	2.5	296	4.2	4	2-8	0	1	0-3	0
Targeted antibiotic therapy	291	4.1	80	1.1	197	2.8	6	3-13	0	5	3-10	0

National report for general ICUs - Year 2012**Process indicators** - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTi model

Invasive ventilation (N=4803)	N	%	Length (days)				
			Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	586	12.1	5.6	9.7	2	1-5	0
For airway maintenance	786	16.2	3.9	8.2	1	1-3	0
In weaning	2633	54.4	0.5	0.5	0	0-1	0
Not evaluable	838	17.3	3.2	5.9	2	1-3	43
Reintubation within 48 hours	75	1.5	7.2	11.9	3	1.0-6.0	0

Non invasive ventilation (N=769)	N	%
Non invasive ventilation only	306	39.8
Non invasive ventilation failed	49	6.4
For weaning	360	46.8
Other	54	7.0
Missing	0	

Tracheostomy (N=349)	N	%
Surgical	202	57.9
Percutwist	24	6.9
Ciaglia	28	8.0
Monodil. Ciaglia	55	15.8
Fantoni	8	2.3
Griggs	19	5.4
Other Kind	13	3.7
Missing	0	

Tracheostomy - Days after the beginning of inv. vent.

N	312
Mean	4.9
SD	7.2
Median	0
Q1-Q3	0-8

Invasive monitoring of C.O. (N=206)	N	%
Swan Ganz	30	14.6
PICCO	92	44.7
LIDCO	0	0.0
Vigileo-PRAM	82	39.8
Other	2	1.0
Missing	0	

SDD (N=48)	N	%
Topical	22	45.8
Topical and systemic	26	54.2
Missing	0	

Antibiotic therapy

Pts. infected in ICU only (N=246)	N	%
Only empirical	117	49.2
Only targeted	68	28.6
Targeted after empirical	37	15.5
Other	16	6.7
Missing	8	

Surgical interventions	N	%
No	6914	97.9
Yes	150	2.1
Missing	0	

Number of surgical interventions	N	%
0	6914	97.9
1	122	1.7
2	20	0.3
3	4	0.1
>3	4	0.1
Missing	0	

Surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	7.4	7.1	5	2-9.8	0

Surgical interventions (top 10)	N	%
Gastrointestinal surgery	78	1.1
Nephro/Urological surgery	12	0.2
ENT surgery	12	0.2
Peripheral vascular surgery	11	0.2
Other surgery	15	0.2
Pancreatic surgery	7	0.1
Hepatic surgery	5	0.1
Maxillo-Facial surgery	10	0.1
Orthopaedic surgery	10	0.1
Thoracic surgery	8	0.1
Missing	0	

Non surgical interventions	N	%
No	7017	99.3
Yes	47	0.7
Missing	0	

Non surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	11.8	13.8	7	3-13	0

Non surgical interventions	N	%
Interventional endoscopy	29	0.4
Interventional radiology	17	0.2
Interventional cardiology	7	0.1
Interventional neuroradiology	3	0.0
Missing	0	

National report for general ICUs - Year 2012**Outcome indicators** - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

ICU outcome	N	%
Dead	285	4.0
Transferred to same hospital	6628	93.8
Transferred to other hospital	129	1.8
Discharged home	18	0.3
Disch. terminally ill	4	0.1
Missing	0	

Transferred to (N=6757)	N	%
Ward	6372	94.3
Other ICU	98	1.5
High dependency care unit	242	3.6
Rehabilitation	36	0.5
Day hospital or Long-term care	9	0.1
Missing	0	

Reason of transfer to Other ICU (N=98)	N	%
Specialist expertise	50	51.0
Step-up care	2	2.0
Logistical/organizational reasons	45	45.9
Step-down care	1	1.0
Missing	0	

Transferred to Same hospital (N=6628)	N	%
Ward	6316	95.3
Other ICU	68	1.0
High dependency care unit	235	3.5
Rehabilitation	7	0.1
Day hospital or Long-term care	2	0.0
Missing	0	

Transferred to Other hospital (N=129)	N	%
Ward	56	43.4
Other ICU	30	23.3
High dependency care unit	7	5.4
Rehabilitation	29	22.5
Day hospital or Long-term care	7	5.4
Missing	0	

ICU mortality	N	%
Alive	6775	95.9
Dead	289	4.1
Missing	0	

Timing of ICU mortality (N=289)	N	%
Daytime (08:00AM - 07:59PM)	177	61.2
Nighttime (08:00PM - 07:59AM)	112	38.8
Weekdays (Monday - Friday)	208	72.0
Weekend (Saturday - Sunday)	81	28.0
Missing	0	

Brain death assessment (N=289)	N	%
Yes, with organ donation	1	0.4
Yes, without organ donation	8	2.8
No	276	96.8
Missing	4	

Organ/Tissue removal (N=1)	N	%
No removal	0	0.0
Only organ removal	1	100.0
Only tissue removal	0	0.0
Organ and tissue removal	0	0.0
Missing	0	

Hospital mortality	N	%
Dead	640	9.1
Transf. to other acute-care hospital	200	2.8
Transf. to other type of hosp. stay	610	8.6
Nursing home	118	1.7
Voluntary discharge	33	0.5
Discharged home	5463	77.3
Missing	0	

To other type of H stay (N=610)	N	%
Rehabilitation in the same institute	121	19.8
Rehabilitation in other institute	329	53.9
DH/long-term care, same inst.	56	9.2
DH/long-term care, other inst.	104	17.0
Missing	0	

Disch. terminally ill (N=6424)	N	%
Yes	75	1.2
No	6349	98.8
Missing	0	

Hospital mortality	N	%
Alive	6350	89.9
Dead	714	10.1
Missing	0	

Timing of hosp. mortality (N=714)	N	%
In ICU	289	40.5
Within 24 hours after ICU	16	2.2
Within 48 hours after ICU	28	3.9
Within 72 hours after ICU	45	6.3
Within 96 hours after ICU	58	8.1
After more than 96 hours after ICU	367	51.4
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=425)		
Mean	22.0	
SD	24.8	
Median	15	
Q1-Q3	7-28	
Missing	0	

National report for general ICUs - Year 2012**Outcome indicators** - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	6346	89.8
Dead	718	10.2
Missing	0	

ICU stay (days)		
	Mean	3.6
	SD	7.5
	Median	2
	Q1-Q3	1-3
	Missing	0

ICU stay (days)		
Alive (N=6775)		
	Mean	3.2
	SD	6.8
	Median	2
	Q1-Q3	1-3
	Missing	0

ICU stay (days)		
Dead (N=289)		
	Mean	12.2
	SD	14.3
	Median	8
	Q1-Q3	3-16
	Missing	0

Stay after ICU (days)		
Alive (N=6775)		
	Mean	14.0
	SD	17.3
	Median	9
	Q1-Q3	5-16
	Missing	0

Hospital stay (days)		
	Mean	22.9
	SD	22.3
	Median	16
	Q1-Q3	10-28
	Missing	0

Hospital stay (days)		
Alive (N=6350)		
	Mean	22.0
	SD	21.1
	Median	16
	Q1-Q3	10-27
	Missing	0

Hospital stay (days)		
Dead (N=714)		
	Mean	30.8
	SD	30.1
	Median	23
	Q1-Q3	13-38.8
	Missing	0

National report for general ICUs - Year 2012**Characteristics on admission** - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model**Patients (N): 8225**

Sex	N	%
Male	4812	58.5
Female	3413	41.5
Missing	0	

Age (years)	N	%
17-45	1372	16.7
46-65	2020	24.6
66-75	1789	21.8
>75	3044	37.0
Missing	0	
Mean	65.4	
SD	18.5	
Median	70	
Q1-Q3	54-80	
Min-Max	17-102	

Body mass Index (BMI)	N	%
Underweight	438	5.3
Normal	3991	48.5
Overweight	2599	31.6
Obese	1197	14.6
Missing	0	

Pregnancy status	N	%
Females (N=3413)		
Not fertile	1865	54.6
Not pregnant/Unknown	1312	38.4
Currently pregnant	16	0.5
Post partum	220	6.4
Missing	0	

Comorbidities	N	%
No	1898	23.1
Yes	6327	76.9
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	3826	46.5
Arrhythmia	1319	16.0
Moderate COPD	1028	12.5
Any tumour without metastasis	875	10.6
Myocardial infarction	868	10.6
Cerebrovascular disease	857	10.4
Peripheral vascular disease	814	9.9
Diabetes Type II without insulin tr.	783	9.5
NYHA class II-III	694	8.4
Moderate or severe renal disease	666	8.1
Missing	0	

Stay before ICU (days)	Mean	SD	Median	Q1-Q3	Missing
	3.9	10.1	1	0-3	0

Source of admission	N	%
Same hospital	7500	91.2
Other hospital	725	8.8
Long-term chronic care hospital	0	0.0
Directly from the community (e.g., ambulance, home, ...)	0	0.0
Missing	0	

Ward of admission	N	%
Hospital (N=8225)		
Medical ward	570	6.9
Surgical ward	5074	61.7
Emergency room	2111	25.7
Other ICU	341	4.1
High dependency care unit	129	1.6
Missing	0	

Reason for transfer from	N	%
Other ICU (N=341)		
Specialist expertise	119	34.9
Step-up care	90	26.4
Logistical/organizational reasons	114	33.4
Step-down care	18	5.3
Missing	0	

Ward of admission	N	%
Same hospital (N=7500)		
Medical ward	520	6.9
Surgical ward	4879	65.1
Emergency room	1853	24.7
Other ICU	135	1.8
High dependency care unit	113	1.5
Missing	0	

Ward of admission	N	%
Other hospital (N=725)		
Medical ward	50	6.9
Surgical ward	195	26.9
Emergency room	258	35.6
Other ICU	206	28.4
High dependency care unit	16	2.2
Missing	0	

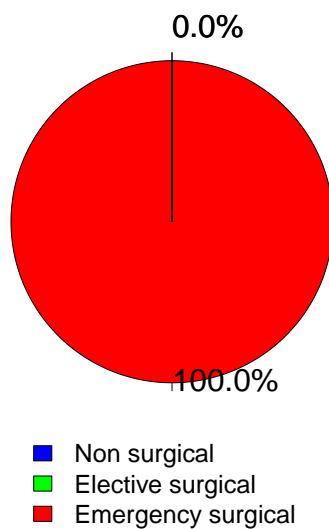
Scheduled admission	N	%
No	8203	99.7
Yes	22	0.3
Missing	0	

National report for general ICUs - Year 2012

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

Trauma	N	%
No	6414	78.0
Yes	1811	22.0
Multiple trauma	854	10.4
Missing	0	

Surgical status	N	%
Non surgical	0	0.0
Elective surgical	0	0.0
Emergency surgical	8225	100.0
Missing	0	

Surgical status

Source of admission	N	%
Surgical pts. (N=8225)		
Operating theatre of surgical ward	4567	55.5
Operating theatre of emergency room	1346	16.4
Surgical ward	507	6.2
Other	1805	21.9
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=8225)		
Gastrointestinal surgery	3649	44.4
Neurosurgery	1286	15.6
Orthopaedic surgery	780	9.5
Abdominal vascular surgery	438	5.3
Biliary tract surgery	357	4.3
Nephro/Urological surgery	341	4.1
Splenectomy	278	3.4
Peripheral vascular surgery	273	3.3
Thoracic surgery	220	2.7
Obstetric surgery	200	2.4
Missing	0	

Timing	N	%
Emergency surgical (N=8225)		
From -7 to -3 days	260	3.2
From -2 to -1 days	969	11.8
On ICU admission day	7147	86.9
The day after ICU admission	438	5.3
Missing	21	

Non surgical interventions	N	%
None	7680	93.4
Elective	80	1.0
Emergency	465	5.7
Missing	0	

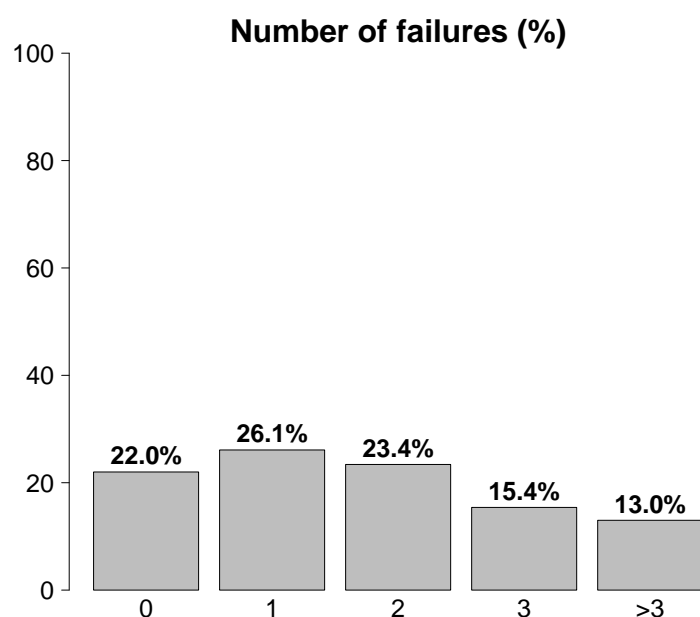
Non surgical interventions	N	%
Elective (N=80)		
Interventional endoscopy	30	37.5
Interventional radiology	11	13.8
Interventional neuroradiology	9	11.2
Interventional cardiology	6	7.5
Missing	24	

Surgical interventions	N	%
Emergency (N=465)		
Interventional radiology	198	42.6
Interventional neuroradiology	116	24.9
Interventional endoscopy	100	21.5
Interventional cardiology	15	3.2
Missing	36	

National report for general ICUs - Year 2012

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

Reason for admission	N	%
Monitoring/Weaning	2719	33.1
Post surgical weaning	1539	18.7
Surgical monitoring	1164	14.2
Post interventional weaning	3	0.0
Interventional monitoring	3	0.0
Non surgical monitoring	0	0.0
Missing	10	
Admission for procedures/treatments	8	0.1
Intensive Treatment	5498	66.8
Only ventilatory support	2420	29.4
Only cardiovascular support	466	5.7
Ventilatory and cardiovascular support	2612	31.8
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	1812	22.0
Yes	6413	78.0
A: Respiratory failure	5032	61.2
B: Cardiovascular failure	3078	37.4
C: Neurological failure	715	8.7
D: Hepatic failure	50	0.6
E: Renal failure	3140	38.2
F: Acute skin failure	4	0.0
G: Metabolic failure	2037	24.8
H: Coagulation failure	219	2.7
Missing	0	

Failures on admission (top 10)	N	%
A	1289	15.7
ABEG	774	9.4
AB	699	8.5
E	544	6.6
ABE	494	6.0
AE	395	4.8
AC	326	4.0
ABG	233	2.8
EG	196	2.4
AEG	176	2.1
Missing	0	

Respiratory failure	N	%
None	3193	38.8
Only hypoxic failure	1506	18.3
Only hypercapnic failure	96	1.2
Hypoxic-hypercapnic failure	249	3.0
Intubation for airway maint.	3181	38.7
Missing	0	

Cardiovascular failure	N	%
None	5147	62.6
Without shock	504	6.1
Cardiogenic shock	125	1.5
Septic shock	993	12.1
Haemorrhagic/hypovolemic shock	847	10.3
Hypovolemic shock	275	3.3
Anaphylactic shock	2	0.0
Neurogenic shock	89	1.1
Other shock	57	0.7
Mixed shock	186	2.3
Missing	0	

Neurologic failure	N	%
None	5176	87.9
Cerebral coma	566	9.6
Metabolic coma	96	1.6
Postanoxic coma	47	0.8
Toxic coma	6	0.1
Missing or not evaluable	2334	

Renal failure (AKIN)	N	%
None	5085	61.8
Mild	1667	20.3
Moderate	791	9.6
Severe	682	8.3
Missing	0	

Metabolic failure	N	%
None	6188	75.2
pH \leq 7.3, PaCO ₂ $<$ 45 mmHg	718	8.7
Base deficit \geq 5 mmol/L, lactate $>$ 1.5x	1319	16.0
Missing	0	

National report for general ICUs - Year 2012

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

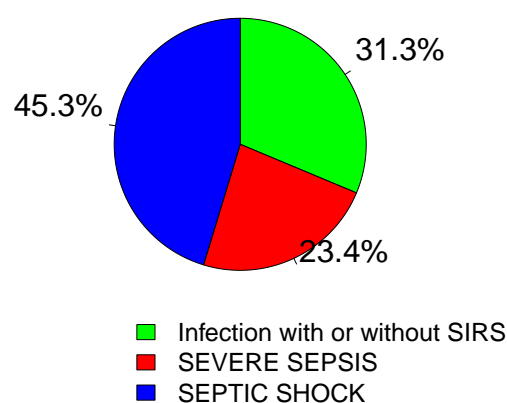
Clinical conditions on admission	N	%
Respiratory	923	11.2
Pleural effusion	269	3.3
Atelectasis	127	1.5
ALI (Acute Lung Injury)	119	1.4
Upper respiratory tract disease	103	1.3
Aspiration pneumonia	106	1.3
Cardiovascular	977	11.9
Ruptured or fissured aneurysm	323	3.9
Peripheral vascular disease	173	2.1
Acute severe arrhythmia: tachycardias	127	1.5
Left heart failure without pulm. edema	92	1.1
Left heart failure with pulmonary edema	66	0.8
Neurological	910	11.1
Spontaneous Intraparenchymal bleeding	380	4.6
Spontaneous Subarachnoid haemorrhage	208	2.5
Cerebral Aneurysm	172	2.1
Chronic Subdural haematoma	70	0.9
Cerebral artery stroke	65	0.8
Gastrointestinal and hepatic	3375	41.0
Gastrointestinal perforation	1080	13.1
Intestinal occlusion	880	10.7
Bowel ischaemia	401	4.9
Digestive tract malignancy	302	3.7
Intrabdominal bleeding (non traumatic)	281	3.4
Trauma (anatomical districts)	1811	22.0
Pelvis/bone/joint & muscle	841	10.2
Head	704	8.6
Chest	700	8.5
Abdomen	530	6.4
Spine	333	4.0
Major vessels injury	92	1.1
Miscellaneous	20	0.2
Other	1356	16.5
Metabolic disorder	392	4.8
Nephrourologic disease	269	3.3
Coagulation disorder	219	2.7
Other disease	182	2.2
Orthopaedic disease	90	1.1
Post transplantation	170	2.1
Liver transplantation	99	1.2
Renal transplantation	52	0.6
Infections	2509	30.5
NON-surgical secondary peritonitis	911	11.1
Post-surgical peritonitis	459	5.6
Pneumonia	272	3.3
Primary peritonitis	197	2.4
Cholecystitis/choolangitis	187	2.3
NON-surgical skin/soft tissue infection	136	1.7
NON-surgical urinary tract infection	123	1.5
L.R.T.I. other than pneumonia	70	0.9
Clinical sepsis	54	0.7
Primary bacteraemia of unknown origin	35	0.4
Missing	0	

Trauma (anatomical districts)	N	%
Head	704	8.6
Traumatic Subdural haemathoma	256	3.1
Maxillofacial fracture	197	2.4
Traumatic subarachnoid haemorrhage	156	1.9
Skull fracture	149	1.8
Cerebral contusion/laceration	119	1.4
Spine	333	4.0
Vertebral fracture, without deficit	260	3.2
Cervical injury, incomplete deficit	25	0.3
Paraplegia	21	0.3
Chest	700	8.5
Traum. haemothorax/pneumothorax	308	3.7
Other injuries of the chest	265	3.2
Severe lung contusion/laceration	232	2.8
Abdomen	530	6.4
Spleen: Massive rupture	173	2.1
Liver: Moderate-Severe laceration	117	1.4
Spleen: Moderate-Severe laceration	110	1.3
Pelvis/bone/joint & muscle	841	10.2
Long bones fracture	694	8.4
Multiple fracture of the pelvis	184	2.2
Very severe or open fracture of the pelvis	69	0.8
Major vessels injury	92	1.1
Proximal limbs vessels: transection	37	0.4
Neck vessels: dissection/transection	16	0.2
Major abdominal vessels: transection	17	0.2
Miscellaneous	20	0.2
Burns (>30% BSA)	13	0.2
Inhalation injury	8	0.1
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	5716	69.5
Infection with or without SIRS	785	9.5
SEVERE SEPSIS	587	7.1
SEPTIC SHOCK	1137	13.8
Missing	0	

Infection severity on admission

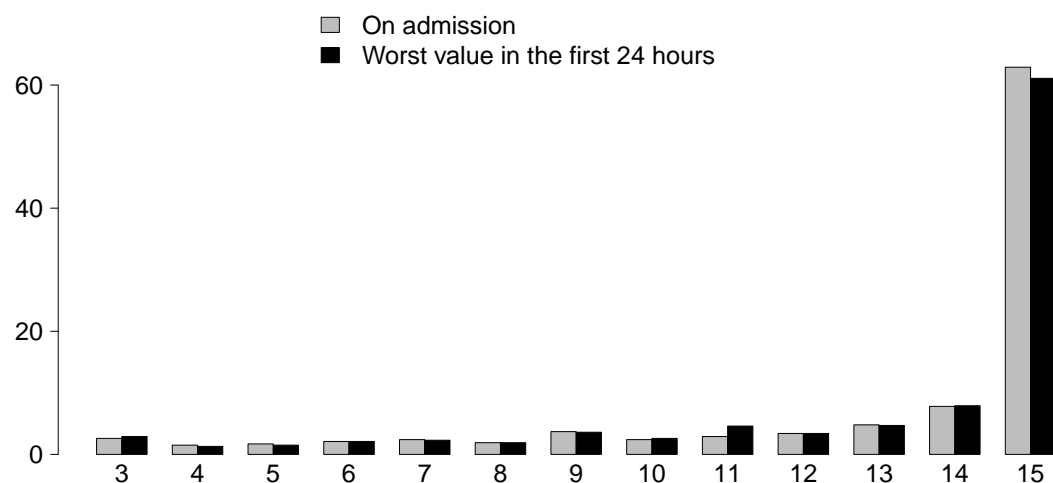
Patients infected (N=2509)



National report for general ICUs - Year 2012

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

Glasgow Coma Scale (%)



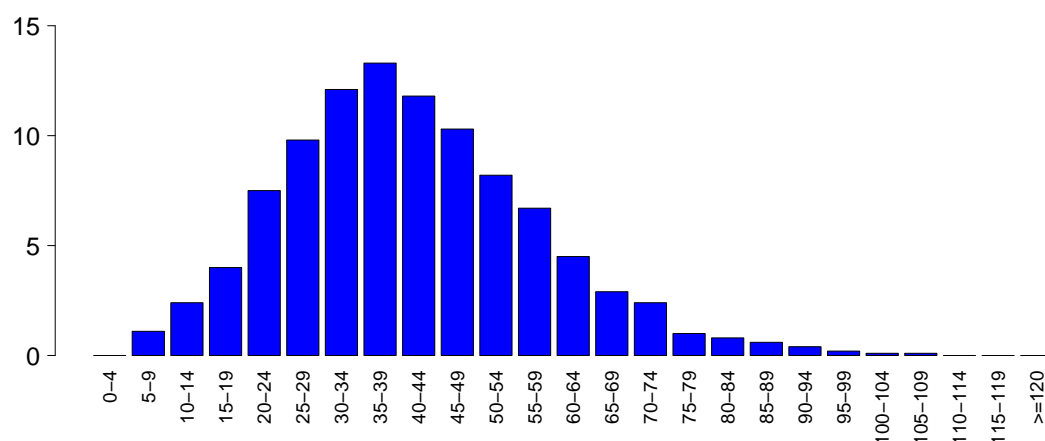
GCS (admission)

Median	15
Q1-Q3	13-15
Not evaluable	2334
Missing	0

GCS (first 24 hours)

Median	15
Q1-Q3	12-15
Not evaluable	1702
Missing	0

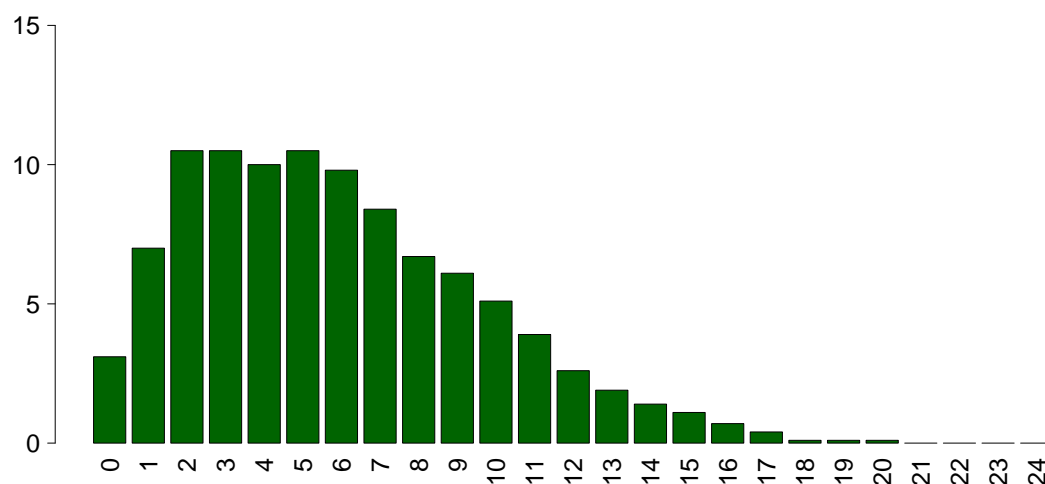
SAPS II (%)



SAPSII

Mean	41.1
SD	16.3
Median	39
Q1-Q3	30-51
Not evaluable	1702
Missing	0

SOFA (%)



SOFA

Mean	5.9
SD	3.8
Median	5
Q1-Q3	3-8
Not evaluable	1702
Missing	0

National report for general ICUs - Year 2012

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

Complications during the stay	N	%
No	5202	63.2
Yes	3023	36.8
Missing	0	

Failures during the stay	N	%
No	6964	84.7
Yes	1261	15.3
A: Respiratory failure	341	4.1
B: Cardiovascular failure	652	7.9
C: Neurological failure	78	0.9
D: Hepatic failure	52	0.6
E: Renal failure (AKIN)	524	6.4
F: Acute skin failure	2	0.0
G: Metabolic failure	118	1.4
H: Coagulation failure	70	0.9
Missing	0	

Failures during the stay (top 10)	N	%
B	350	4.3
E	248	3.0
A	167	2.0
BE	104	1.3
AB	63	0.8
G	63	0.8
ABE	40	0.5
D	21	0.3
AE	17	0.2
C	16	0.2
Missing	0	

Respiratory failure occurred	N	%
None	7884	95.9
Intubation for airway maint.	89	1.1
Hypoxic failure	236	2.9
Hypercapnic failure	54	0.7
Missing	0	

Cardiovascular failure occurred	N	%
None	7573	92.1
Cardiogenic shock	127	1.5
Hypovolemic shock	58	0.7
Haemorrhagic/hypovolemic shock	83	1.0
Septic shock	368	4.5
Anaphylactic shock	2	0.0
Neurogenic shock	22	0.3
Other shock	31	0.4
Missing	0	

Neurological failure occurred	N	%
None	8147	99.1
Cerebral coma	49	0.6
Metabolic coma	21	0.3
Postanoxic coma	8	0.1
Missing	0	

Renal failure occurred (AKIN)	N	%
None	7701	93.6
Mild	50	0.6
Moderate	95	1.2
Severe	379	4.6
Missing	0	

Complications during the stay	N	%
Respiratory	649	7.9
Pleural effusion	290	3.5
Atelectasis	166	2.0
ARDS	102	1.2
ALI (Acute Lung Injury)	93	1.1
Pneumothorax/Pneumomediastinum	61	0.7
Cardiovascular	718	8.7
Acute severe arrhythmia: tachycardias	336	4.1
Cardiac arrest	136	1.7
Left heart failure w/o pulm. edema	66	0.8
Deep venous thrombosis	49	0.6
Peripheral vascular disease	46	0.6
Neurological	470	5.7
Drowsiness/agitation/delirium	200	2.4
Brain edema	74	0.9
Seizures	77	0.9
Intracranial hypertension	69	0.8
Hydrocephalus	29	0.4
Gastrointestinal and hepatic	476	5.8
Gastrointestinal perforation	88	1.1
Bowel ischaemia	75	0.9
Anastomotic dehiscence	56	0.7
Gastrointestinal bleeding: upper tract	54	0.7
Paralytic Ileus	58	0.7
Other	269	3.3
Metabolic disorder	118	1.4
Nephrourologic disease	75	0.9
Other disease	51	0.6
Other skin and/or soft tissue pathology	28	0.3
Extremity compartment syndrome (severe)	19	0.2
Fat embolism	8	0.1
Severe graft dysfunction	7	0.1
Infections	1079	13.1
Pneumonia	437	5.3
L.R.T.I. other than pneumonia	170	2.1
Primary bacteraemia of unknown origin	119	1.4
Post-surgical peritonitis	109	1.3
Catheter-related bacteremia (CR-BSI)	91	1.1
NON-surgical urinary tract infection	94	1.1
Post-surgical skin/soft tissue infection	72	0.9
NON-surgical secondary peritonitis	40	0.5
Clinical sepsis	37	0.4
Upper respiratory tract infection	33	0.4
Missing	0	

National report for general ICUs - Year 2012

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

Infections			Maximum severity of infection		
	N	%		N	%
None	4957	60.3	None	4957	60.5
Only on admission	2189	26.6	Infection with or without SIRS	1047	12.8
On admission and during ICU stay	320	3.9	SEVERE SEPSIS	780	9.5
Only during ICU stay	759	9.2	SEPTIC SHOCK	1415	17.3
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	4957 (87.1%)	347 (6.1%)	239 (4.2%)	147 (2.6%)	5690
	Infection with or without SIRS	-	700 (89.2%)	50 (6.4%)	35 (4.5%)	785
	SEVERE SEPSIS	-	-	491 (83.6%)	96 (16.4%)	587
	SEPTIC SHOCK	-	-	-	1137 (100.0%)	1137
	TOT	4957	1047	780	1415	8199

Ventil. Associat. Pneumonia (VAP)	N	%
No	7845	95.4
Yes	379	4.6
Missing	1	

Incidence of VAP

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

Estimate	10.3
CI (95%)	9.3-11.4

Incidence of VAP

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

Estimate	8.2%
CI (95%)	7.4-9.1

Catheter Bacteraemia (CR-BSI)	N	%
No	8134	98.9
Yes	91	1.1
Missing	0	

Incidence of CR-BSI

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

Estimate	1.5
CI (95%)	1.2-1.8

Incidence of CR-BSI

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

Estimate	1.8%
CI (95%)	1.5-2.2

National report for general ICUs - Year 2012
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)	8089	98.3										
Invasive ventilation	7166	87.1	5717	69.5	933	11.3	2	1-7	1	0	0-0	0
Non invasive ventilation	939	11.4	65	0.8	171	2.1	2	1-4	0	2	0-4	0
Tracheostomy	1063	12.9	118	1.4	859	10.4	11	6-20	0	8	5-12	0
iNO (inhaled nitric oxide)	17	0.2	5	0.1	2	0	1	1-4	0	6	2-11	0
Central Venous Catheter	6884	83.7	3811	46.3	5594	68	5	2-11	1	0	0-0	0
Arterial Catheter	6607	80.3	3826	46.5	1684	20.5	4	2-10	1	0	0-0	0
Vasoactive drugs	3596	43.7	1822	22.2	573	7	3	1-5	1	0	0-0	0
Antiarrhythmics	806	9.8	180	2.2	368	4.5	3	1-8	0	1	0-2	0
IABP	2	0.0	1	0	0	0	7	4-10	0	0	0-0	0
Invasive monitoring of C.O.	634	7.7	149	1.8	83	1	4	2-8	0	0	0-1	0
Continuous monitoring of ScVO2	58	0.7	21	0.3	15	0.2	5	2-8	0	0	0-1	0
Temporary pacing	15	0.2	4	0	5	0.1	2	2-6	0	3	2-10	0
Ventricular assistance	0	0.0										
DC-shock	69	0.8								2	0-8	0
CPR	143	1.7								1	0-6	0
Massive blood transfusion	508	6.2								0	0-0	0
ICP monitoring without liquor-drainage	201	2.4	103	1.3	34	0.4	7	4-10	0	0	0-1	0
ICP monitoring with liquor-drainage	280	3.4	150	1.8	121	1.5	10	5-18	0	0	0-0	0
External ventricular drainage without ICP	83	1.0	60	0.7	37	0.4	6	3-12	0	0	0-2	0
Haemofiltration	429	5.2	37	0.4	93	1.1	4	2-10	1	2	1-4	0
Haemodialysis	216	2.6	29	0.4	92	1.1	4	1-9	0	2	1-6	0
ECMO	3	0.0	1	0	1	0	2	1-2	0	6	3-10	0
Hepatic clearance techniques	0	0.0										
Clearance techniques during sepsis	92	1.1	2	0	3	0	2	1-3	0	1	1-3	0
IAP (intra-abdominal pressure)	281	3.4										
Hypothermia	19	0.2										
Enteral nutrition	2730	33.2	234	2.8	1853	22.5	7	3-14	1	2	1-4	1
Parenteral nutrition	3729	45.3	511	6.2	2380	28.9	5	2-9	0	1	0-2	0
SDD (Topical, Topical and systemic)	120	1.5										
Patient restraint	370	4.5										
Peridural catheter	132	1.6	80	1	74	0.9	3	2-4	0	1	1-3	0
Electrical cardioversion	77	0.9								1	0-3	0
Vacuum therapy	79	1.0										
Antibiotics	7417	90.2										
Antibiotics for surgical prophylaxis	4615	56.1	3148	38.3	2768	33.7	3	2-5	0	0	0-0	0
Antibiotics for medical prophylaxis	521	6.3	199	2.4	295	3.6	4	2-8	0	0	0-1	0
Empirical antibiotic therapy	2598	31.6	1206	14.7	1529	18.6	5	3-8	0	0	0-2	0
Targeted antibiotic therapy	1229	14.9	157	1.9	772	9.4	8	5-15	1	6	3-10	0

National report for general ICUs - Year 2012**Process indicators** - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

			Length (days)				
Invasive ventilation (N=7166)	N	%	Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	1835	25.5	7.9	11.0	4	2-10	1
For airway maintenance	3143	43.7	6.8	9.1	3	1-9	0
In weaning	1218	16.9	0.6	0.5	1	0-1	0
Not evaluable	1000	13.9	4.7	7.9	2	1-5	34
Reintubation within 48 hours	158	2.2	6.4	6.3	4	2.0-10.0	0

Non invasive ventilation (N=939)	N	%
Non invasive ventilation only	199	21.2
Non invasive ventilation failed	61	6.5
For weaning	599	63.8
Other	80	8.5
Missing	0	

Tracheostomy (N=1063)	N	%
Surgical	223	21.0
Percutwist	162	15.2
Ciaglia	161	15.1
Monodil. Ciaglia	315	29.6
Fantoni	53	5.0
Griggs	99	9.3
Other Kind	50	4.7
Missing	0	

Tracheostomy - Days after the beginning of inv. vent.		
N	1049	
Mean	8.5	
SD	7.2	
Median	7	
Q1-Q3	4-12	

Invasive monitoring of C.O. (N=634)	N	%
Swan Ganz	144	22.7
PICCO	356	56.2
LIDCO	3	0.5
Vigileo-PRAM	123	19.4
Other	8	1.3
Missing	0	

SDD (N=120)	N	%
Topical	72	60.0
Topical and systemic	48	40.0
Missing	0	

Antibiotic therapy		
Pts. infected in ICU only (N=759)	N	%
Only empirical	226	30.9
Only targeted	311	42.5
Targeted after empirical	157	21.4
Other	38	5.2
Missing	27	

Surgical interventions		
No	7537	91.6
Yes	688	8.4
Missing	0	

Number of surgical interventions		
0	7537	91.6
1	505	6.1
2	121	1.5
3	42	0.5
>3	20	0.2
Missing	0	

Surgical interventions		
Days from admission		
Mean	9.4	
SD	9.6	
Median	6	
Q1-Q3	3-12	
Missing	0	

Surgical interventions (top 10)		
	N	%
Gastrointestinal surgery	408	5.0
Orthopaedic surgery	153	1.9
Neurosurgery	86	1.0
Other surgery	59	0.7
Pancreatic surgery	35	0.4
Maxillo-Facial surgery	30	0.4
ENT surgery	29	0.4
Nephro/Urological surgery	27	0.3
Thoracic surgery	23	0.3
Peripheral vascular surgery	23	0.3
Missing	0	

Non surgical interventions		
No	8061	98.0
Yes	164	2.0
Missing	0	

Non surgical interventions		
Days from admission		
Mean	13.1	
SD	13.2	
Median	9	
Q1-Q3	5-16	
Missing	3	

Non surgical interventions		
	N	%
Interventional radiology	79	1.0
Interventional endoscopy	83	1.0
Interventional neuroradiology	23	0.3
Interventional cardiology	16	0.2
Missing	0	

National report for general ICUs - Year 2012**Outcome indicators** - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

ICU outcome	N	%
Dead	1295	15.7
Transferred to same hospital	6319	76.8
Transferred to other hospital	560	6.8
Discharged home	18	0.2
Disch. terminally ill	33	0.4
Missing	0	

Transferred to (N=6879)	N	%
Ward	5638	82.0
Other ICU	393	5.7
High dependency care unit	665	9.7
Rehabilitation	153	2.2
Day hospital or Long-term care	30	0.4
Missing	0	

Reason of transfer to Other ICU (N=414)	N	%
Specialist expertise	91	22.0
Step-up care	28	6.8
Logistical/organizational reasons	277	66.9
Step-down care	18	4.3
Missing	0	

Transferred to Same hospital (N=6319)	N	%
Ward	5512	87.2
Other ICU	119	1.9
High dependency care unit	635	10.0
Rehabilitation	40	0.6
Day hospital or Long-term care	13	0.2
Missing	0	

Transferred to Other hospital (N=560)	N	%
Ward	126	22.5
Other ICU	274	48.9
High dependency care unit	30	5.4
Rehabilitation	113	20.2
Day hospital or Long-term care	17	3.0
Missing	0	

ICU mortality	N	%
Alive	6897	83.9
Dead	1328	16.1
Missing	0	

Timing of ICU mortality (N=1328)	N	%
Daytime (08:00AM - 07:59PM)	866	65.2
Nighttime (08:00PM - 07:59AM)	462	34.8
Weekdays (Monday - Friday)	956	72.0
Weekend (Saturday - Sunday)	372	28.0
Missing	0	

Brain death assessment (N=1328)	N	%
Yes, with organ donation	75	5.8
Yes, without organ donation	61	4.7
No	1159	89.5
Missing	33	

Organ/Tissue removal (N=75)	N	%
No removal	4	5.3
Only organ removal	39	52.0
Only tissue removal	19	25.3
Organ and tissue removal	13	17.3
Missing	0	

Hospital mortality	N	%
Dead	2015	24.5
Transf. to other acute-care hospital	689	8.4
Transf. to other type of hosp. stay	1281	15.6
Nursing home	172	2.1
Voluntary discharge	47	0.6
Discharged home	4021	48.9
Missing	0	

To other type of H stay (N=1281)	N	%
Rehabilitation in the same institute	221	17.3
Rehabilitation in other institute	732	57.2
DH/long-term care, same inst.	122	9.5
DH/long-term care, other inst.	205	16.0
Missing	1	

Disch. terminally ill (N=6210)	N	%
Yes	125	2.0
No	6085	98.0
Missing	0	

Hospital mortality	N	%
Alive	6087	74.0
Dead	2138	26.0
Missing	0	

Timing of hosp. mortality (N=2138)	N	%
In ICU	1328	62.1
Within 24 hours after ICU	36	1.7
Within 48 hours after ICU	79	3.7
Within 72 hours after ICU	126	5.9
Within 96 hours after ICU	169	7.9
After more than 96 hours after ICU	641	30.0
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=810)		
Mean		18.5
SD		21.6
Median		11
Q1-Q3		4.2-24.8
Missing		0

National report for general ICUs - Year 2012**Outcome indicators** - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	6063	73.7
Dead	2162	26.3
Missing	0	

ICU stay (days)		
	Mean	8.1
	SD	10.7
	Median	4
	Q1-Q3	2-10
	Missing	0

ICU stay (days)		
Alive (N=6897)		
	Mean	7.6
	SD	10.4
	Median	4
	Q1-Q3	2-9
	Missing	0

ICU stay (days)		
Dead (N=1328)		
	Mean	10.7
	SD	12.0
	Median	7
	Q1-Q3	3-15
	Missing	0

Stay after ICU (days)		
Alive (N=6897)		
	Mean	16.3
	SD	19.1
	Median	11
	Q1-Q3	6-21
	Missing	2

Hospital stay (days)		
	Mean	25.4
	SD	23.4
	Median	18
	Q1-Q3	11-33
	Missing	2

Hospital stay (days)		
Alive (N=6087)		
	Mean	26.7
	SD	23.5
	Median	20
	Q1-Q3	12-34
	Missing	2

Hospital stay (days)		
Dead (N=2138)		
	Mean	21.9
	SD	22.7
	Median	15
	Q1-Q3	7-29
	Missing	0

National report for general ICUs - Year 2012

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

Patients (N): 12812

Sex	N	%
Male	7406	57.8
Female	5406	42.2
Missing	0	

Age (years)	N	%
17-45	1587	12.4
46-65	3406	26.6
66-75	3326	26.0
>75	4493	35.1
Missing	0	
Mean	66.7	
SD	16.2	
Median	70	
Q1-Q3	58-79	
Min-Max	17-103	

Body mass Index (BMI)	N	%
Underweight	718	5.6
Normal	6076	47.4
Overweight	3987	31.1
Obese	2031	15.9
Missing	0	

Pregnancy status	N	%
Females (N=5406)		
Not fertile	2779	51.4
Not pregnant/Unknown	2457	45.4
Currently pregnant	23	0.4
Post partum	147	2.7
Missing	0	

Comorbidities	N	%
No	1970	15.4
Yes	10842	84.6
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	6525	50.9
Any tumour without metastasis	2245	17.5
Moderate COPD	1934	15.1
Arrhythmia	1882	14.7
Myocardial infarction	1715	13.4
Peripheral vascular disease	1449	11.3
Diabetes Type II without insulin tr.	1416	11.1
NYHA class II-III	1324	10.3
Cerebrovascular disease	1247	9.7
Metastatic cancer	952	7.4
Missing	0	

Stay before ICU (days)		
Mean	4.0	
SD	9.9	
Median	1	
Q1-Q3	0-3	
Missing	0	

Source of admission	N	%
Same hospital	12343	96.3
Other hospital	469	3.7
Long-term chronic care hospital	0	0.0
Directly from the community (e.g., ambulance, home, ...)	0	0.0
Missing	0	

Ward of admission	N	%
Hospital (N=12812)		
Medical ward	1213	9.5
Surgical ward	8691	67.8
Emergency room	2577	20.1
Other ICU	197	1.5
High dependency care unit	134	1.0
Missing	0	

Reason for transfer from	N	%
Other ICU (N=197)		
Specialist expertise	63	32.0
Step-up care	45	22.8
Logistical/organizational reasons	77	39.1
Step-down care	12	6.1
Missing	0	

Ward of admission	N	%
Same hospital (N=12343)		
Medical ward	1118	9.1
Surgical ward	8632	69.9
Emergency room	2359	19.1
Other ICU	108	0.9
High dependency care unit	126	1.0
Missing	0	

Ward of admission	N	%
Other hospital (N=469)		
Medical ward	95	20.3
Surgical ward	59	12.6
Emergency room	218	46.5
Other ICU	89	19.0
High dependency care unit	8	1.7
Missing	0	

Scheduled admission	N	%
No	7182	56.1
Yes	5630	43.9
Missing	0	

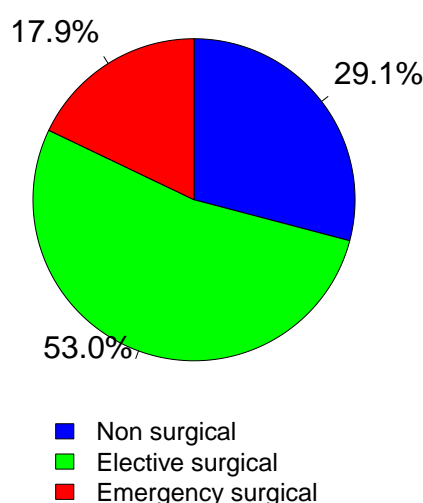
National report for general ICUs - Year 2012

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

Trauma	N	%
No	11712	91.4
Yes	1100	8.6
Multiple trauma	241	1.9
Missing	0	

Surgical status	N	%
Non surgical	3729	29.1
Elective surgical	6794	53.0
Emergency surgical	2289	17.9
Missing	0	

Surgical status



Source of admission	N	%
Surgical pts. (N=9083)		
Operating theatre of surgical ward	8165	89.9
Operating theatre of emergency room	300	3.3
Surgical ward	196	2.2
Other	422	4.6
Missing	0	

Surgical interventions (top 10)	N	%
Elective surgical (N=6794)		
Gastrointestinal surgery	1605	23.6
Nephro/Urological surgery	1016	15.0
Orthopaedic surgery	823	12.1
Neurosurgery	585	8.6
ENT surgery	432	6.4
Abdominal vascular surgery	416	6.1
Gynaecological surgery	400	5.9
Thoracic surgery	372	5.5
Pancreatic surgery	328	4.8
Peripheral vascular surgery	281	4.1
Missing	0	

Timing	N	%
Elective surgical (N=6794)		
From -7 to -3 days	27	0.4
From -2 to -1 days	93	1.4
On ICU admission day	7008	103.1
The day after ICU admission	6	0.1
Missing	6	

Surgical interventions (top 10)	N	%
Emergency surgical (N=2289)		
Gastrointestinal surgery	996	43.5
Orthopaedic surgery	254	11.1
Abdominal vascular surgery	144	6.3
Neurosurgery	136	5.9
Peripheral vascular surgery	116	5.1
Obstetric surgery	114	5.0
Biliary tract surgery	111	4.8
Nephro/Urological surgery	94	4.1
ENT surgery	69	3.0
Gynaecological surgery	61	2.7
Missing	0	

Timing	N	%
Emergency surgical (N=2289)		
From -7 to -3 days	21	0.9
From -2 to -1 days	199	8.7
On ICU admission day	2130	93.1
The day after ICU admission	17	0.7
Missing	6	

Non surgical interventions	N	%
None	12137	94.7
Elective	220	1.7
Emergency	455	3.6
Missing	0	

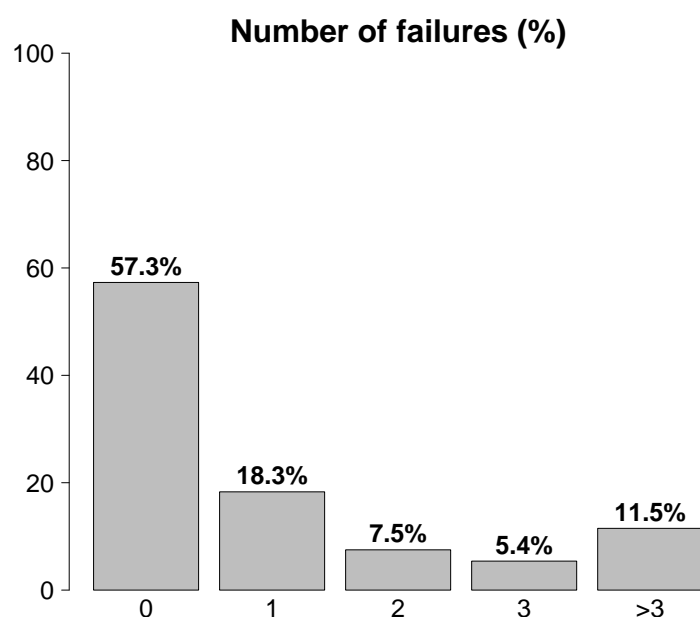
Non surgical interventions	N	%
Elective (N=220)		
Interventional radiology	58	26.4
Interventional neuroradiology	43	19.5
Interventional endoscopy	40	18.2
Interventional cardiology	28	12.7
Missing	51	

Surgical interventions	N	%
Emergency (N=455)		
Interventional cardiology	188	41.3
Interventional endoscopy	126	27.7
Interventional radiology	95	20.9
Interventional neuroradiology	35	7.7
Missing	11	

National report for general ICUs - Year 2012

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

Reason for admission	N	%
Monitoring/Weaning	9029	70.5
Post surgical weaning	3817	29.9
Surgical monitoring	4027	31.6
Post interventional weaning	60	0.5
Interventional monitoring	194	1.5
Non surgical monitoring	875	6.9
Missing	56	
Admission for procedures/treatments	19	0.1
Intensive Treatment	3764	29.4
Only ventilatory support	1556	12.1
Only cardiovascular support	345	2.7
Ventilatory and cardiovascular support	1863	14.5
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	7343	57.3
Yes	5469	42.7
A: Respiratory failure	3419	26.7
B: Cardiovascular failure	2208	17.2
C: Neurological failure	1237	9.7
D: Hepatic failure	113	0.9
E: Renal failure	3429	26.8
F: Acute skin failure	8	0.1
G: Metabolic failure	2304	18.0
H: Coagulation failure	200	1.6
Missing	0	

Failures on admission (top 10)	N	%
E	1120	8.7
A	784	6.1
ABEG	604	4.7
ABCEG	481	3.8
AC	223	1.7
EG	224	1.7
G	207	1.6
AB	171	1.3
AE	169	1.3
AEG	142	1.1
Missing	0	

Respiratory failure	N	%
None	9393	73.3
Only hypoxic failure	1122	8.8
Only hypercapnic failure	155	1.2
Hypoxic-hypercapnic failure	358	2.8
Intubation for airway maint.	1784	13.9
Missing	0	

Cardiovascular failure	N	%
None	10604	82.8
Without shock	233	1.8
Cardiogenic shock	770	6.0
Septic shock	365	2.8
Haemorrhagic/hypovolemic shock	412	3.2
Hypovolemic shock	117	0.9
Anaphylactic shock	14	0.1
Neurogenic shock	66	0.5
Other shock	76	0.6
Mixed shock	155	1.2
Missing	0	

Neurologic failure	N	%
None	9265	88.2
Cerebral coma	469	4.5
Metabolic coma	252	2.4
Postanoxic coma	470	4.5
Toxic coma	46	0.4
Missing or not evaluable	2310	

Renal failure (AKIN)	N	%
None	9383	73.2
Mild	1542	12.0
Moderate	650	5.1
Severe	1237	9.7
Missing	0	

Metabolic failure	N	%
None	10508	82.0
pH ≤ 7.3, PaCO ₂ < 45 mmHg	824	6.4
Base deficit ≥ 5 mmol/L, lactate > 1.5x	1480	11.6
Missing	0	

National report for general ICUs - Year 2012

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

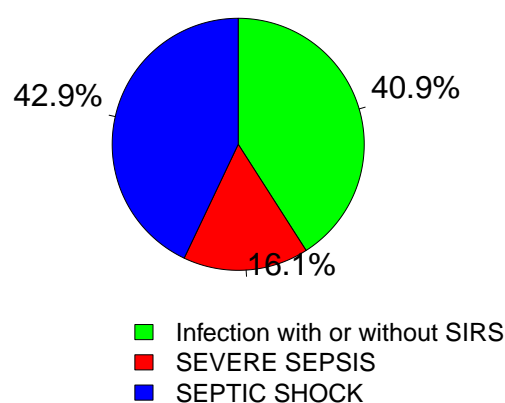
Clinical conditions on admission	N	%
Respiratory	1701	13.3
Lung cancer	345	2.7
Acute exacerbation of COPD	295	2.3
Upper respiratory tract disease	228	1.8
Pleural effusion	220	1.7
Pulmonary embolism	122	1.0
Cardiovascular	2687	21.0
Cardiac arrest	544	4.2
Non-ruptured aneurysm	425	3.3
Peripheral vascular disease	392	3.1
Left heart failure with pulmonary edema	329	2.6
Left heart failure without pulm. edema	253	2.0
Neurological	1405	11.0
Brain tumour	472	3.7
Spontaneous Intraparenchymal bleeding	198	1.5
Seizures	181	1.4
Cerebral artery stroke	137	1.1
Spontaneous Subarachnoid haemorrhage	133	1.0
Gastrointestinal and hepatic	3315	25.9
Digestive tract malignancy	1302	10.2
Intestinal occlusion	422	3.3
Pancreatic malignancy	329	2.6
Gastrointestinal perforation	276	2.2
Acute bile-duct disease	265	2.1
Trauma (anatomical districts)	1100	8.6
Pelvis/bone/joint & muscle	608	4.7
Head	325	2.5
Chest	218	1.7
Abdomen	149	1.2
Spine	124	1.0
Major vessels injury	38	0.3
Miscellaneous	25	0.2
Other	4321	33.7
Nephrourologic disease	1126	8.8
Other disease	793	6.2
Metabolic disorder	571	4.5
Orthopaedic disease	518	4.0
ENT/maxillofacial disease	492	3.8
Post transplantation	95	0.7
Renal transplantation	54	0.4
Liver transplantation	26	0.2
Infections	1055	8.2
Pneumonia	308	2.4
NON-surgical secondary peritonitis	154	1.2
Cholecystitis/cholangitis	78	0.6
Post-surgical peritonitis	72	0.6
NON-surgical urinary tract infection	79	0.6
Clinical sepsis	66	0.5
Primary bacteraemia of unknown origin	47	0.4
Primary peritonitis	53	0.4
NON-surgical skin/soft tissue infection	53	0.4
L.R.T.I. other than pneumonia	33	0.3
Missing	0	

Trauma (anatomical districts)	N	%
Head	325	2.5
Traumatic subarachnoid haemorrhage	100	0.8
Maxillofacial fracture	97	0.8
Traumatic Subdural haemathoma	93	0.7
Skull fracture	80	0.6
Cerebral contusion/laceration	64	0.5
Spine	124	1.0
Vertebral fracture, without deficit	104	0.8
Paraplegia	8	0.1
Cervical injury, incomplete deficit	6	0.0
Chest	218	1.7
Traum. haemothorax/pneumothorax	107	0.8
Other injuries of the chest	80	0.6
Severe lung contusion/laceration	65	0.5
Abdomen	149	1.2
Spleen: Moderate-Severe laceration	37	0.3
Spleen: Massive rupture	39	0.3
Minor injuries of the abdomen	33	0.3
Pelvis/bone/joint & muscle	608	4.7
Long bones fracture	542	4.2
Multiple fracture of the pelvis	74	0.6
Very severe or open fracture of the pelvis	19	0.1
Major vessels injury	38	0.3
Neck vessels: dissection/transection	10	0.1
Major thoracic vessels: transection	7	0.1
Major abdominal vessels: transection	10	0.1
Miscellaneous	25	0.2
Burns (>30% BSA)	21	0.2
Inhalation injury	5	0.0
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	11757	91.8
Infection with or without SIRS	429	3.4
SEVERE SEPSIS	169	1.3
SEPTIC SHOCK	450	3.5
Missing	7	

Infection severity on admission

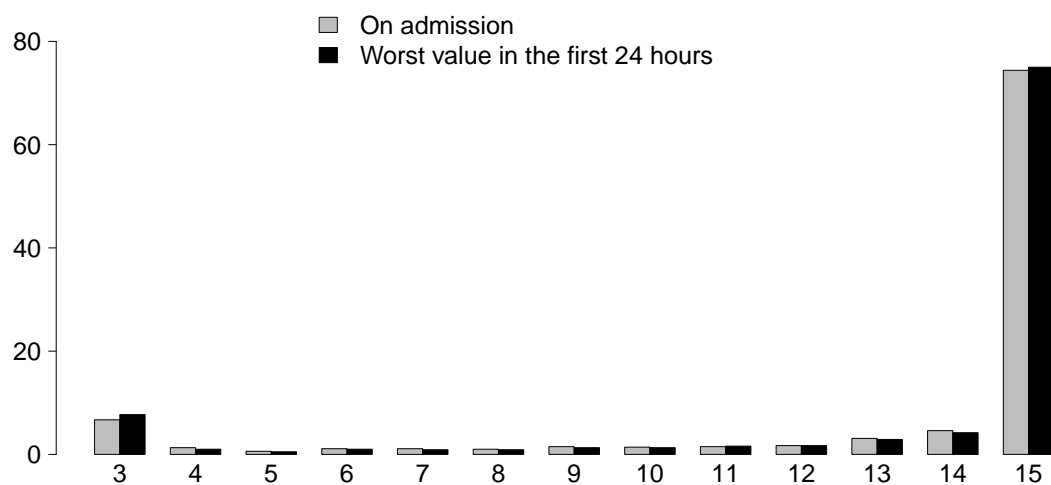
Patients infected (N=1048)



National report for general ICUs - Year 2012

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

Glasgow Coma Scale (%)



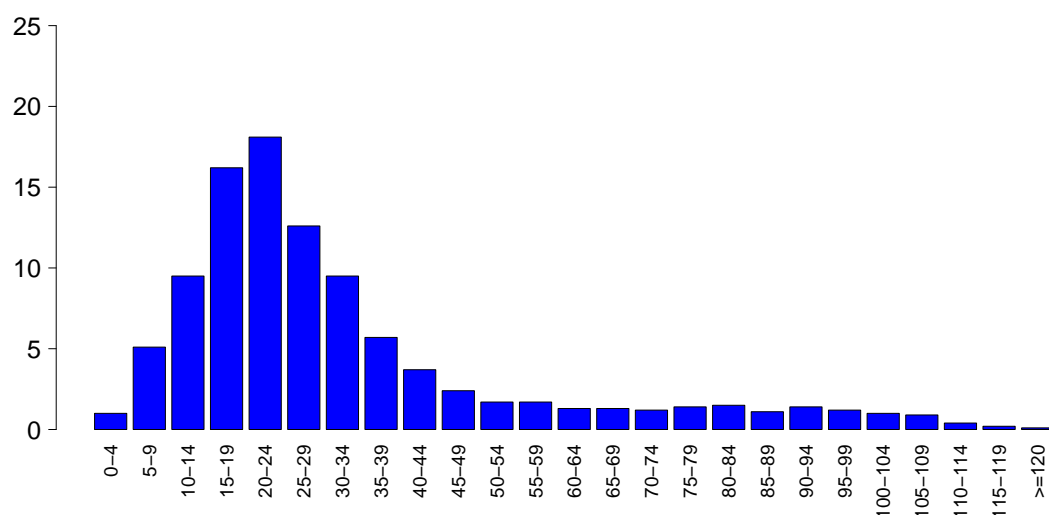
GCS (admission)

Median	15
Q1-Q3	14-15
Not evaluable	2310
Missing	0

GCS (first 24 hours)

Median	15
Q1-Q3	14-15
Not evaluable	1515
Missing	0

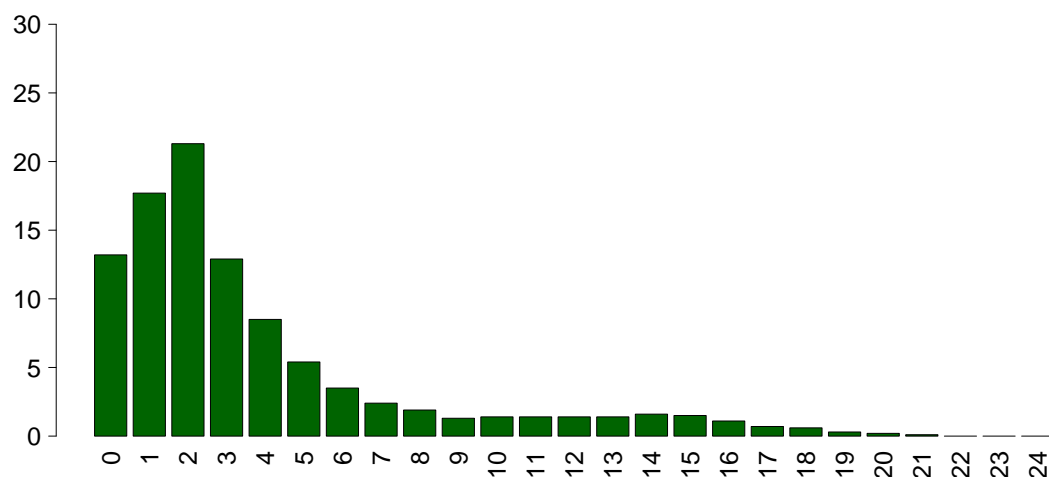
SAPS II (%)



SAPSII

Mean	32.3
SD	23.6
Median	25
Q1-Q3	18-37
Not evaluable	1515
Missing	0

SOFA (%)



SOFA

Mean	3.9
SD	4.2
Median	2
Q1-Q3	1-5
Not evaluable	1515
Missing	0

National report for general ICUs - Year 2012

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

Complications during the stay	N	%
No	11267	87.9
Yes	1545	12.1
Missing	0	

Failures during the stay	N	%
No	12301	96.0
Yes	511	4.0
A: Respiratory failure	101	0.8
B: Cardiovascular failure	275	2.1
C: Neurological failure	56	0.4
D: Hepatic failure	20	0.2
E: Renal failure (AKIN)	140	1.1
F: Acute skin failure	0	0.0
G: Metabolic failure	74	0.6
H: Coagulation failure	30	0.2
Missing	0	

Failures during the stay (top 10)	N	%
B	187	1.5
A	47	0.4
E	51	0.4
G	50	0.4
BE	26	0.2
C	24	0.2
AB	16	0.1
ABE	13	0.1
BG	8	0.1
D	12	0.1
Missing	0	

Respiratory failure occurred	N	%
None	12711	99.2
Intubation for airway maint.	45	0.4
Hypoxic failure	55	0.4
Hypercapnic failure	20	0.2
Missing	0	

Cardiovascular failure occurred	N	%
None	12537	97.9
Cardiogenic shock	158	1.2
Hypovolemic shock	18	0.1
Haemorrhagic/hypovolemic shock	46	0.4
Septic shock	45	0.4
Anaphylactic shock	1	0.0
Neurogenic shock	11	0.1
Other shock	13	0.1
Missing	0	

Neurological failure occurred	N	%
None	12756	99.6
Cerebral coma	23	0.2
Metabolic coma	17	0.1
Postanoxic coma	16	0.1
Missing	0	

Renal failure occurred (AKIN)	N	%
None	12672	98.9
Mild	21	0.2
Moderate	12	0.1
Severe	107	0.8
Missing	0	

Complications during the stay	N	%
Respiratory	124	1.0
ARDS	38	0.3
ALI (Acute Lung Injury)	13	0.1
Aspiration pneumonia	7	0.1
Acute asthma/bronchospasm	11	0.1
Atelectasis	8	0.1
Cardiovascular	896	7.0
Cardiac arrest	658	5.1
Acute severe arrhythmia: bradycardias	129	1.0
Acute severe arrhythmia: tachycardias	104	0.8
Left heart failure w/o pulm. edema	45	0.4
Pulmonary edema	45	0.4
Neurological	153	1.2
Drowsiness/agitation/delirium	59	0.5
Brain edema	29	0.2
Intracranial hypertension	30	0.2
Seizures	20	0.2
Non-surgical intracranial bleeding	16	0.1
Gastrointestinal and hepatic	111	0.9
Gastrointestinal bleeding: upper tract	25	0.2
Bowel ischaemia	18	0.1
Gastrointestinal bleeding: lower tract	11	0.1
Intrabdominal bleeding	17	0.1
Liver Dysfunction Syndrome	14	0.1
Other	134	1.0
Metabolic disorder	74	0.6
Other disease	34	0.3
Nephrourologic disease	27	0.2
-	0	0.0
Delayed liver rupture	1	0.0
-	0	0.0
Fat embolism	1	0.0
Infections	20	0.2
-	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
Cholecystitis/cholangitis	3	0.0
Clinical sepsis	3	0.0
Missing	0	

National report for general ICUs - Year 2012

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

Infections		N	%	Maximum severity of infection		N	%
None		11749	91.7	None		11749	91.8
Only on admission		1043	8.1	Infection with or without SIRS		412	3.2
On admission and during ICU stay		12	0.1	SEVERE SEPSIS		168	1.3
Only during ICU stay		8	0.1	SEPTIC SHOCK		476	3.7
Missing		0		Missing		7	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	SEVERE SEPSIS	SEPTIC SHOCK
Admission	None	11749 (99.9%)	1 (0.0%)	1 (0.0%)	6 (0.1%)	11757
	Infection with or without SIRS	-	411 (95.8%)	14 (3.3%)	4 (0.9%)	429
	SEVERE SEPSIS	-	-	153 (90.5%)	16 (9.5%)	169
	SEPTIC SHOCK	-	-	-	450 (100.0%)	450
	TOT	11749	412	168	476	12805

National report for general ICUs - Year 2012
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)	11133	86.9								
Invasive ventilation	7576	59.1	6038	47.1	1459	11.4				
Non invasive ventilation	758	5.9	246	1.9	279	2.2				
Tracheostomy	217	1.7	200	1.6	204	1.6				
iNO (inhaled nitric oxide)	1	0.0	0	0	0	0				
Central Venous Catheter	5886	45.9	4089	31.9	4902	38.3				
Arterial Catheter	7500	58.5	5129	40	1901	14.8				
Vasoactive drugs	2424	18.9	1260	9.8	1042	8.1				
Antiarrhythmics	472	3.7	223	1.7	294	2.3				
IABP	49	0.4	30	0.2	29	0.2				
Invasive monitoring of C.O.	126	1.0	42	0.3	53	0.4				
Continuous monitoring of ScVO2	22	0.2	11	0.1	11	0.1				
Temporary pacing	48	0.4	32	0.2	29	0.2				
Ventricular assistance	1	0.0	0	0	1	0				
DC-shock	296	2.3								
CPR	660	5.2								
Massive blood transfusion	273	2.1								
ICP monitoring without liquor-drainage	15	0.1	6	0	10	0.1				
ICP monitoring with liquor-drainage	30	0.2	26	0.2	21	0.2				
External ventricular drainage without ICP	13	0.1	11	0.1	11	0.1				
Haemofiltration	78	0.6	11	0.1	26	0.2				
Haemodialysis	78	0.6	25	0.2	44	0.3				
ECMO	14	0.1	6	0	10	0.1				
Hepatic clearance techniques	0	0.0								
Clearance techniques during sepsis	7	0.1	0	0	4	0				
IAP (intra-abdominal pressure)	38	0.3								
Hypothermia	46	0.4								
Enteral nutrition	201	1.6	70	0.5	156	1.2				
Parenteral nutrition	778	6.1	227	1.8	687	5.4				
SDD (Topical, Topical and systemic)	31	0.2								
Patient restraint	199	1.6								
Peridural catheter	797	6.2	761	5.9	756	5.9				
Electrical cardioversion	14	0.1								
Vacuum therapy	2	0.0								
Antibiotics	8334	65								
Antibiotics for surgical prophylaxis	6547	51.1	5514	43	4813	37.6				
Antibiotics for medical prophylaxis	851	6.6	359	2.8	624	4.9				
Empirical antibiotic therapy	861	6.7	485	3.8	591	4.6				
Targeted antibiotic therapy	125	1.0	97	0.8	100	0.8				

National report for general ICUs - Year 2012**Process indicators** - Adult patients with LOS<24 hours evaluated in the GiViTI model

Invasive ventilation (N=7576)	N	%
Due to pulmonary failure	1293	16.8
For airway maintenance	1774	23.1
In weaning	3940	51.3
Not evaluable	672	8.8
Reintubation within 48 hours	3	0.0

Non invasive ventilation (N=758)	N	%
Non invasive ventilation only	593	78.2
Non invasive ventilation failed	63	8.3
For weaning	100	13.2
Other	2	0.3
Missing	0	

Tracheostomy (N=217)	N	%
Surgical	173	79.7
Percutwist	6	2.8
Ciaglia	11	5.1
Monodil. Ciaglia	12	5.5
Fantoni	4	1.8
Griggs	3	1.4
Other Kind	8	3.7
Missing	0	

Invasive monitoring of C.O. (N=126)	N	%
Swan Ganz	33	26.2
PICCO	64	50.8
LIDCO	0	0.0
Vigileo-PRAM	28	22.2
Other	1	0.8
Missing	0	

SDD (N=31)	N	%
Topical	9	29.0
Topical and systemic	22	71.0
Missing	0	

Antibiotic therapy

Pts. infected in ICU only (N=8)	N	%
Only empirical	4	100.0
Only targeted	0	0.0
Targeted after empirical	0	0.0
Other	0	0.0
Missing	4	

National report for general ICUs - Year 2012**Outcome indicators** - Adult patients with LOS<24 hours evaluated in the GiViTI model

ICU outcome	N	%
Dead	2158	16.8
Transferred to same hospital	9995	78.0
Transferred to other hospital	529	4.1
Discharged home	90	0.7
Disch. terminally ill	40	0.3
Missing	0	

Transferred to (N=10524)	N	%
Ward	9395	89.3
Other ICU	578	5.5
High dependency care unit	515	4.9
Rehabilitation	27	0.3
Day hospital or Long-term care	9	0.1
Missing	0	

Reason of transfer to Other ICU (N=596)	N	%
Specialist expertise	315	52.9
Step-up care	110	18.5
Logistical/organizational reasons	167	28.0
Step-down care	4	0.7
Missing	0	

Transferred to Same hospital (N=9995)	N	%
Ward	9251	92.6
Other ICU	244	2.4
High dependency care unit	487	4.9
Rehabilitation	10	0.1
Day hospital or Long-term care	3	0.0
Missing	0	

Transferred to Other hospital (N=529)	N	%
Ward	144	27.2
Other ICU	334	63.1
High dependency care unit	28	5.3
Rehabilitation	17	3.2
Day hospital or Long-term care	6	1.1
Missing	0	

ICU mortality	N	%
Alive	10614	82.8
Dead	2198	17.2
Missing	0	

Timing of ICU mortality (N=2198)	N	%
Daytime (08:00AM - 07:59PM)	1297	59.0
Nighttime (08:00PM - 07:59AM)	901	41.0
Weekdays (Monday - Friday)	1644	74.8
Weekend (Saturday - Sunday)	554	25.2
Missing	0	

Brain death assessment (N=2198)	N	%
Yes, with organ donation	96	4.4
Yes, without organ donation	98	4.5
No	1964	91.0
Missing	40	

Organ/Tissue removal (N=96)	N	%
No removal	2	2.1
Only organ removal	46	47.9
Only tissue removal	25	26.0
Organ and tissue removal	23	24.0
Missing	0	

Hospital mortality	N	%
Dead	2637	20.6
Transf. to other acute-care hospital	733	5.7
Transf. to other type of hosp. stay	813	6.3
Nursing home	145	1.1
Voluntary discharge	95	0.7
Discharged home	8389	65.5
Missing	0	

To other type of H stay (N=813)	N	%
Rehabilitation in the same institute	180	22.1
Rehabilitation in other institute	431	53.0
DH/long-term care, same inst.	84	10.3
DH/long-term care, other inst.	118	14.5
Missing	0	

Disch. terminally ill (N=10175)	N	%
Yes	115	1.1
No	10060	98.9
Missing	0	

Hospital mortality	N	%
Alive	10060	78.5
Dead	2752	21.5
Missing	0	

Timing of hosp. mortality (N=2752)	N	%
In ICU	2198	79.9
Within 24 hours after ICU	36	1.3
Within 48 hours after ICU	70	2.5
Within 72 hours after ICU	100	3.6
Within 96 hours after ICU	116	4.2
After more than 96 hours after ICU	438	15.9
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=554)		
Mean		18.6
SD		25.5
Median		10
Q1-Q3		4-24
Missing		0

National report for general ICUs - Year 2012**Outcome indicators** - Adult patients with LOS<24 hours evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	10025	78.2
Dead	2787	21.8
Missing	0	

Stay after ICU (days)		
Alive (N=10614)		
Mean		11.4
SD		13.9
Median		8
Q1-Q3		5-14
Missing		1

Hospital stay (days)		
Mean		14.0
SD		17.0
Median		10
Q1-Q3		4-18
Missing		1

Hospital stay (days)		
Alive (N=10060)		
Mean		15.5
SD		16.1
Median		11
Q1-Q3		7-19
Missing		1

Hospital stay (days)		
Dead (N=2752)		
Mean		8.6
SD		18.8
Median		1
Q1-Q3		0-8
Missing		0

National report for general ICUs - Year 2012

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

Patients (N): 6794

Sex	N	%
Male	4007	59.0
Female	2787	41.0
Missing	0	

Age (years)	N	%
17-45	661	9.7
46-65	1946	28.6
66-75	2052	30.2
>75	2135	31.4
Missing	0	
Mean	67.0	
SD	14.5	
Median	70	
Q1-Q3	59-77	
Min-Max	17-103	

Body mass Index (BMI)	N	%
Underweight	351	5.2
Normal	3099	45.6
Overweight	2105	31.0
Obese	1239	18.2
Missing	0	

Pregnancy status	N	%
Females (N=2787)		
Not fertile	1303	46.8
Not pregnant/Unknown	1460	52.4
Currently pregnant	7	0.3
Post partum	17	0.6
Missing	0	

Comorbidities	N	%
No	867	12.8
Yes	5927	87.2
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	3734	55.0
Any tumour without metastasis	1745	25.7
Moderate COPD	1144	16.8
Myocardial infarction	920	13.5
Arrhythmia	908	13.4
Peripheral vascular disease	806	11.9
Diabetes Type II without insulin tr.	776	11.4
Metastatic cancer	621	9.1
NYHA class II-III	594	8.7
Cerebrovascular disease	500	7.4
Missing	0	

Stay before ICU (days)	Mean	SD	Median	Q1-Q3	Missing
	4.4	9.1	1	1-4	0

Source of admission	N	%
Same hospital	6770	99.6
Other hospital	24	0.4
Long-term chronic care hospital	0	0.0
Directly from the community (e.g., ambulance, home, ...)	0	0.0
Missing	0	

Ward of admission	N	%
Hospital (N=6794)		
Medical ward	108	1.6
Surgical ward	6647	97.8
Emergency room	17	0.3
Other ICU	13	0.2
High dependency care unit	9	0.1
Missing	0	

Reason for transfer from	N	%
Other ICU (N=13)		
Specialist expertise	5	38.5
Step-up care	2	15.4
Logistical/organizational reasons	4	30.8
Step-down care	2	15.4
Missing	0	

Ward of admission	N	%
Same hospital (N=6770)		
Medical ward	107	1.6
Surgical ward	6629	97.9
Emergency room	16	0.2
Other ICU	10	0.1
High dependency care unit	8	0.1
Missing	0	

Ward of admission	N	%
Other hospital (N=24)		
Medical ward	1	4.2
Surgical ward	18	75.0
Emergency room	1	4.2
Other ICU	3	12.5
High dependency care unit	1	4.2
Missing	0	

Scheduled admission	N	%
No	1235	18.2
Yes	5559	81.8
Missing	0	

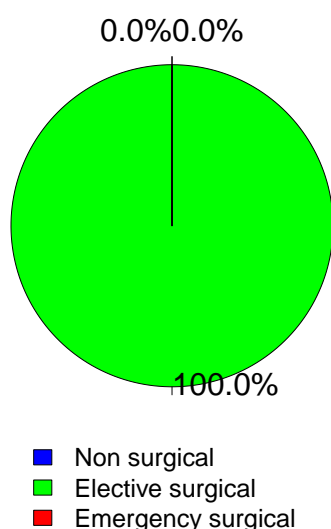
National report for general ICUs - Year 2012

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

Trauma	N	%
No	6506	95.8
Yes	288	4.2
Multiple trauma	12	0.2
Missing	0	

Surgical status	N	%
Non surgical	0	0.0
Elective surgical	6794	100.0
Emergency surgical	0	0.0
Missing	0	

Surgical status



Timing	N	%
Elective surgical (N=6794)		
From -7 to -3 days	27	0.4
From -2 to -1 days	93	1.4
On ICU admission day	7008	103.1
The day after ICU admission	6	0.1
Missing	6	

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=6794)		
Operating theatre of surgical ward	6521	96.0
Operating theatre of emergency room	11	0.2
Surgical ward	126	1.9
Other	136	2.0
Missing	0	

Surgical interventions (top 10)	N	%
Elective surgical (N=6794)		
Gastrointestinal surgery	1605	23.6
Nephro/Urological surgery	1016	15.0
Orthopaedic surgery	823	12.1
Neurosurgery	585	8.6
ENT surgery	432	6.4
Abdominal vascular surgery	416	6.1
Gynaecological surgery	400	5.9
Thoracic surgery	372	5.5
Pancreatic surgery	328	4.8
Peripheral vascular surgery	281	4.1
Missing	0	

Non surgical interventions	N	%
None	6703	98.7
Elective	71	1.0
Emergency	20	0.3
Missing	0	

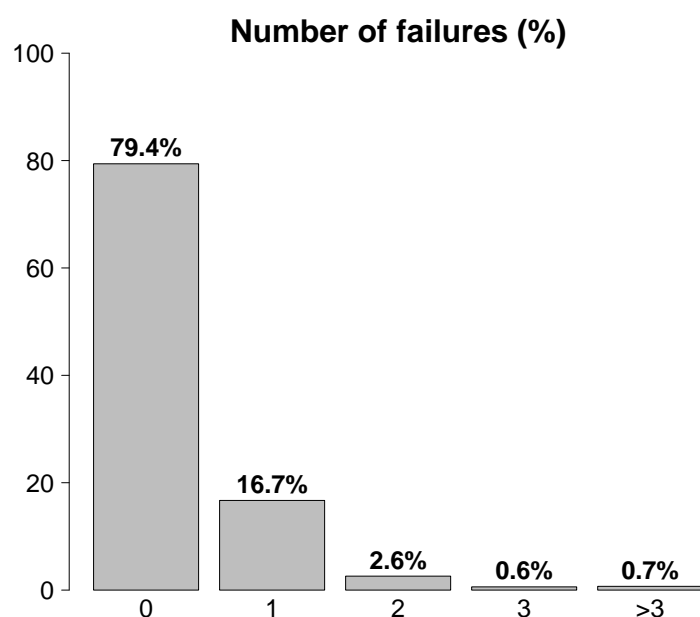
Non surgical interventions	N	%
Elective (N=71)		
Interventional radiology	15	21.1
Interventional endoscopy	9	12.7
Interventional cardiology	2	2.8
Interventional neuroradiology	2	2.8
Missing	43	

Surgical interventions	N	%
Emergency (N=20)		
Interventional radiology	6	30.0
Interventional cardiology	4	20.0
Interventional neuroradiology	1	5.0
Interventional endoscopy	1	5.0
Missing	8	

National report for general ICUs - Year 2012

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

Reason for admission	N	%
Monitoring/Weaning	6322	93.1
Post surgical weaning	3112	45.8
Surgical monitoring	3204	47.2
Post interventional weaning	1	0.0
Interventional monitoring	5	0.1
Non surgical monitoring	0	0.0
Missing	0	
Admission for procedures/treatments	8	0.1
Intensive Treatment	464	6.8
Only ventilatory support	276	4.1
Only cardiovascular support	89	1.3
Ventilatory and cardiovascular support	99	1.5
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	5394	79.4
Yes	1400	20.6
A: Respiratory failure	375	5.5
B: Cardiovascular failure	188	2.8
C: Neurological failure	39	0.6
D: Hepatic failure	16	0.2
E: Renal failure	900	13.2
F: Acute skin failure	6	0.1
G: Metabolic failure	266	3.9
H: Coagulation failure	32	0.5
Missing	0	

Failures on admission (top 10)	N	%
E	698	10.3
A	222	3.3
G	115	1.7
EG	72	1.1
B	57	0.8
AB	35	0.5
ABEG	24	0.4
AE	28	0.4
H	23	0.3
ABCEG	11	0.2
Missing	0	

Respiratory failure	N	%
None	6419	94.5
Only hypoxic failure	77	1.1
Only hypercapnic failure	7	0.1
Hypoxic-hypercapnic failure	19	0.3
Intubation for airway maint.	272	4.0
Missing	0	

Cardiovascular failure	N	%
None	6606	97.2
Without shock	42	0.6
Cardiogenic shock	33	0.5
Septic shock	7	0.1
Haemorrhagic/hypovolemic shock	69	1.0
Hypovolemic shock	19	0.3
Anaphylactic shock	4	0.1
Neurogenic shock	3	0.0
Other shock	4	0.1
Mixed shock	7	0.1
Missing	0	

Neurologic failure	N	%
None	5514	99.3
Cerebral coma	13	0.2
Metabolic coma	9	0.2
Postanoxic coma	17	0.3
Toxic coma	0	0.0
Missing or not evaluable	1241	

Renal failure (AKIN)	N	%
None	5894	86.8
Mild	660	9.7
Moderate	116	1.7
Severe	124	1.8
Missing	0	

Metabolic failure	N	%
None	6528	96.1
pH ≤ 7.3, PaCO ₂ < 45 mmHg	122	1.8
Base deficit ≥ 5 mmol/L, lactate > 1.5x	144	2.1
Missing	0	

National report for general ICUs - Year 2012**Characteristics on admission** - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

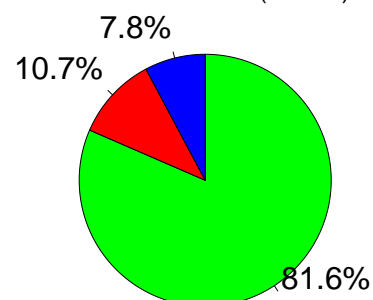
Clinical conditions on admission	N	%
Respiratory	658	9.7
Lung cancer	294	4.3
Upper respiratory tract disease	131	1.9
Pleural effusion	46	0.7
Atelectasis	45	0.7
Acute asthma/bronchospasm	38	0.6
Cardiovascular	932	13.7
Non-ruptured aneurysm	377	5.5
Peripheral vascular disease	275	4.0
Acute severe arrhythmia: tachycardias	70	1.0
Left heart failure without pulm. edema	43	0.6
Systemic hypertensive crisis	35	0.5
Neurological	612	9.0
Brain tumour	439	6.5
Cerebral Aneurysm	38	0.6
Seizures	36	0.5
Polyneuropathy/myopathy	29	0.4
Cerebral artery stroke	23	0.3
Gastrointestinal and hepatic	1878	27.6
Digestive tract malignancy	1147	16.9
Pancreatic malignancy	313	4.6
Hepatic malignancy	183	2.7
Acute bile-duct disease	130	1.9
Intestinal occlusion	55	0.8
Trauma (anatomical districts)	288	4.2
Pelvis/bone/joint & muscle	272	4.0
Head	12	0.2
Spine	11	0.2
Chest	5	0.1
Abdomen	2	0.0
-	0	0.0
-	0	0.0
Other	2938	43.2
Nephrourologic disease	926	13.6
Other disease	588	8.7
Orthopaedic disease	477	7.0
ENT/maxillofacial disease	443	6.5
Gynaecological disease	369	5.4
Post transplantation	38	0.6
Renal transplantation	19	0.3
Liver transplantation	11	0.2
Infections	103	1.5
Orthopaedic prosthesis infection	17	0.3
Cholecystitis/cholangitis	13	0.2
NON-surgical urinary tract infection	13	0.2
Post-surgical peritonitis	5	0.1
Pleurisy/Pleural empyema	5	0.1
Pneumonia	8	0.1
Primary peritonitis	4	0.1
NON-surgical secondary peritonitis	6	0.1
NON-surgical skin/soft tissue infection	10	0.1
Vascular implant infection	4	0.1
Missing	0	

Trauma (anatomical districts)	N	%
Head	12	0.2
Maxillofacial fracture	7	0.1
Cerebral contusion/laceration	3	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Spine	11	0.2
Vertebral fracture, without deficit	9	0.1
Cervical injury, incomplete deficit	1	0.0
-	0	0.0
Chest	5	0.1
-	0	0.0
-	0	0.0
Traum. haemothorax/pneumothorax	2	0.0
Abdomen	2	0.0
-	0	0.0
Bowel transection/perforation	1	0.0
-	0	0.0
Pelvis/bone/joint & muscle	272	4.0
Long bones fracture	260	3.8
Multiple fracture of the pelvis	12	0.2
Very severe or open fracture of the pelvis	3	0.0
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	6691	98.5
Infection with or without SIRS	84	1.2
SEVERE SEPSIS	11	0.2
SEPTIC SHOCK	8	0.1
Missing	0	

Infection severity on admission

Patients infected (N=103)

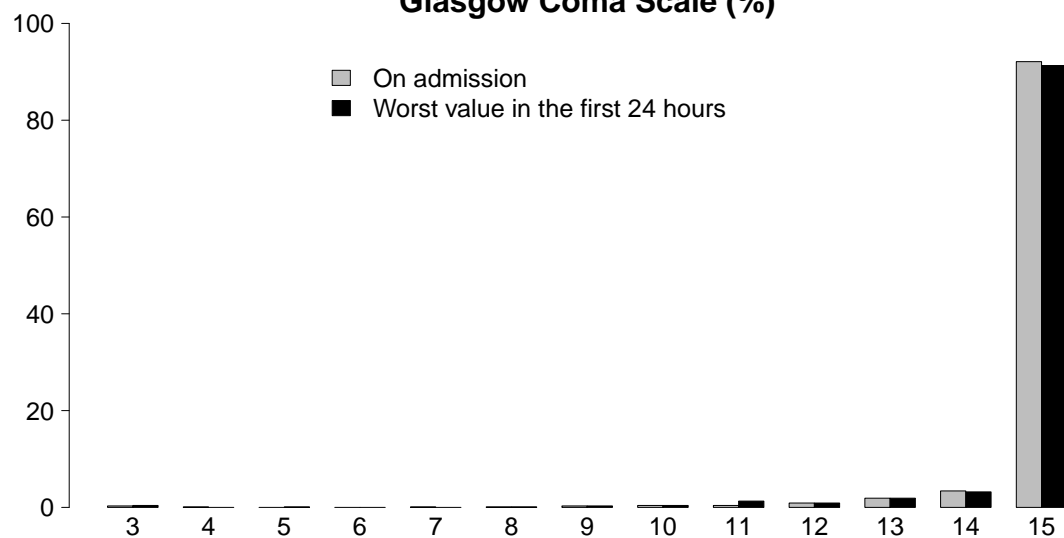


■ Infection with or without SIRS
■ SEVERE SEPSIS
■ SEPTIC SHOCK

National report for general ICUs - Year 2012

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

Glasgow Coma Scale (%)



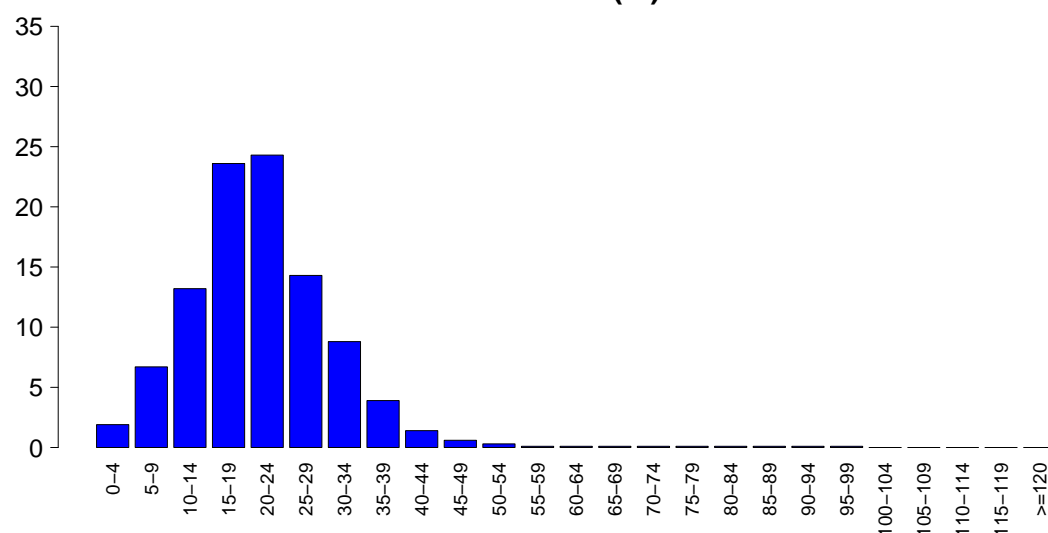
GCS (admission)

Median	15
Q1-Q3	15-15
Not evaluable	1241
Missing	0

GCS (first 24 hours)

Median	15
Q1-Q3	15-15
Not evaluable	563
Missing	0

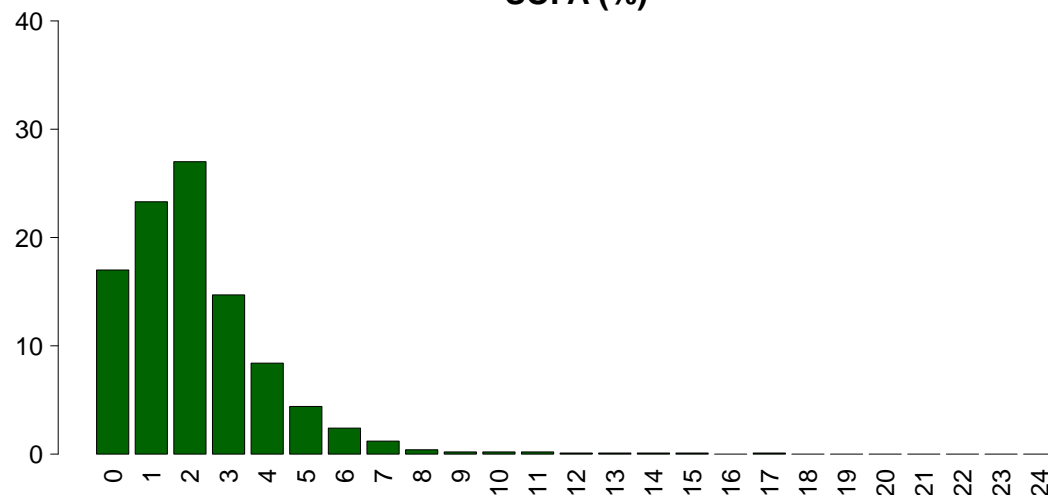
SAPS II (%)



SAPSII

Mean	21.3
SD	10.1
Median	21
Q1-Q3	15-26
Not evaluable	563
Missing	0

SOFA (%)



SOFA

Mean	2.2
SD	2.0
Median	2
Q1-Q3	1-3
Not evaluable	563
Missing	0

National report for general ICUs - Year 2012**Characteristics during the stay** - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

Complications during the stay	N	%
No	6634	97.6
Yes	160	2.4
Missing	0	

Failures during the stay	N	%
No	6738	99.2
Yes	56	0.8
A: Respiratory failure	24	0.4
B: Cardiovascular failure	25	0.4
C: Neurological failure	3	0.0
D: Hepatic failure	2	0.0
E: Renal failure (AKIN)	9	0.1
F: Acute skin failure	0	0.0
G: Metabolic failure	3	0.0
H: Coagulation failure	1	0.0
Missing	0	

Failures during the stay (top 10)	N	%
A	19	0.3
B	18	0.3
E	5	0.1
AB	3	0.0
ABCEH	1	0.0
ABE	1	0.0
BE	2	0.0
C	2	0.0
D	2	0.0
G	3	0.0
Missing	0	

Respiratory failure occurred	N	%
None	6770	99.6
Intubation for airway maint.	13	0.2
Hypoxic failure	9	0.1
Hypercapnic failure	3	0.0
Missing	0	

Cardiovascular failure occurred	N	%
None	6769	99.6
Cardiogenic shock	14	0.2
Hypovolemic shock	1	0.0
Haemorrhagic/hypovolemic shock	10	0.1
Septic shock	1	0.0
Anaphylactic shock	0	0.0
Neurogenic shock	0	0.0
Other shock	0	0.0
Missing	0	

Neurological failure occurred	N	%
None	6791	100.0
Cerebral coma	2	0.0
Metabolic coma	0	0.0
Postanoxic coma	1	0.0
Missing	0	

Renal failure occurred (AKIN)	N	%
None	6785	99.9
Mild	3	0.0
Moderate	1	0.0
Severe	5	0.1
Missing	0	

Complications during the stay	N	%
Respiratory	12	0.2
-	0	0.0
-	0	0.0
Aspiration pneumonia	1	0.0
Acute asthma/bronchospasm	3	0.0
Atelectasis	3	0.0
Cardiovascular	62	0.9
Cardiac arrest	25	0.4
Acute severe arrhythmia: tachycardias	18	0.3
Acute severe arrhythmia: bradycardias	7	0.1
Acute myocardial infarction	7	0.1
Acute ischaemia	2	0.0
Neurological	19	0.3
Drowsiness/agitation/delirium	12	0.2
Seizures	5	0.1
-	0	0.0
-	0	0.0
-	0	0.0
Gastrointestinal and hepatic	11	0.2
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Abdominal compartment syndrome	1	0.0
Other	21	0.3
Nephrourologic disease	10	0.1
Other disease	8	0.1
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Clinical sepsis	2	0.0
Missing	0	

National report for general ICUs - Year 2012**Characteristics during the stay** - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

Infections			Maximum severity of infection		
	N	%		N	%
None	6688	98.4	None	6688	98.4
Only on admission	103	1.5	Infection with or without SIRS	85	1.3
On admission and during ICU stay	0	0.0	SEVERE SEPSIS	12	0.2
Only during ICU stay	3	0.0	SEPTIC SHOCK	9	0.1
Missing	0		Missing	0	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	SEVERE SEPSIS	SEPTIC SHOCK
Admission	None	6688 (100.0%)	1 (0.0%)	1 (0.0%)	1 (0.0%)	6691
	Infection with or without SIRS	-	84 (100.0%)	0 (0.0%)	0 (0.0%)	84
	SEVERE SEPSIS	-	-	11 (100.0%)	0 (0.0%)	11
	SEPTIC SHOCK	-	-	-	8 (100.0%)	8
	TOT	6688	85	12	9	6794

National report for general ICUs - Year 2012
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)	5885	86.6								
Invasive ventilation	3809	56.1	3430	50.5	160	2.4				
Non invasive ventilation	248	3.7	81	1.2	121	1.8				
Tracheostomy	143	2.1	136	2	141	2.1				
iNO (inhaled nitric oxide)	0	0.0								
Central Venous Catheter	3000	44.2	2655	39.1	2851	42				
Arterial Catheter	4272	62.9	3657	53.8	645	9.5				
Vasoactive drugs	302	4.4	206	3	63	0.9				
Antiarrhythmics	117	1.7	67	1	76	1.1				
IABP	1	0.0	0	0	0	0				
Invasive monitoring of C.O.	28	0.4	24	0.4	1	0				
Continuous monitoring of ScVO2	3	0.0	3	0	1	0				
Temporary pacing	3	0.0	2	0	1	0				
Ventricular assistance	0	0.0								
DC-shock	16	0.2								
CPR	41	0.6								
Massive blood transfusion	55	0.8								
ICP monitoring without liquor-drainage	2	0.0	2	0	1	0				
ICP monitoring with liquor-drainage	15	0.2	15	0.2	14	0.2				
External ventricular drainage without ICP	7	0.1	7	0.1	7	0.1				
Haemofiltration	4	0.1	1	0	1	0				
Haemodialysis	12	0.2	3	0	8	0.1				
ECMO	0	0.0								
Hepatic clearance techniques	0	0.0								
Clearance techniques during sepsis	1	0.0	0	0	0	0				
IAP (intra-abdominal pressure)	9	0.1								
Hypothermia	1	0.0								
Enteral nutrition	61	0.9	21	0.3	57	0.8				
Parenteral nutrition	452	6.7	114	1.7	428	6.3				
SDD (Topical, Topical and systemic)	5	0.1								
Patient restraint	80	1.2								
Peridural catheter	751	11.1	721	10.6	714	10.5				
Electrical cardioversion	0	0.0								
Vacuum therapy	0	0.0								
Antibiotics	5214	76.7								
Antibiotics for surgical prophylaxis	5062	74.5	4394	64.7	3673	54.1				
Antibiotics for medical prophylaxis	62	0.9	50	0.7	47	0.7				
Empirical antibiotic therapy	69	1.0	50	0.7	63	0.9				
Targeted antibiotic therapy	28	0.4	27	0.4	28	0.4				

National report for general ICUs - Year 2012**Process indicators** - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTi model

Invasive ventilation (N=3809)	N	%
Due to pulmonary failure	81	2.1
For airway maintenance	272	7.0
In weaning	3117	80.4
Not evaluable	409	10.5
Reintubation within 48 hours	0	0.0

Non invasive ventilation (N=248)	N	%
Non invasive ventilation only	158	63.7
Non invasive ventilation failed	9	3.6
For weaning	81	32.7
Other	0	0.0
Missing	0	

Tracheostomy (N=143)	N	%
Surgical	135	94.4
Percutwist	3	2.1
Ciaglia	0	0.0
Monodil. Ciaglia	3	2.1
Fantoni	0	0.0
Griggs	0	0.0
Other Kind	2	1.4
Missing	0	

Invasive monitoring of C.O. (N=28)	N	%
Swan Ganz	6	21.4
PICCO	6	21.4
LIDCO	0	0.0
Vigileo-PRAM	15	53.6
Other	1	3.6
Missing	0	

SDD (N=5)	N	%
Topical	0	0.0
Topical and systemic	5	100.0
Missing	0	

Antibiotic therapy

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

National report for general ICUs - Year 2012**Outcome indicators** - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

ICU outcome	N	%
Dead	82	1.2
Transferred to same hospital	6657	98.0
Transferred to other hospital	35	0.5
Discharged home	20	0.3
Disch. terminally ill	0	0.0
Missing	0	

Transferred to (N=6692)	N	%
Ward	6407	95.7
Other ICU	46	0.7
High dependency care unit	225	3.4
Rehabilitation	13	0.2
Day hospital or Long-term care	1	0.0
Missing	0	

Reason of transfer to Other ICU (N=46)	N	%
Specialist expertise	24	52.2
Step-up care	2	4.3
Logistical/organizational reasons	20	43.5
Step-down care	0	0.0
Missing	0	

Transferred to Same hospital (N=6657)	N	%
Ward	6388	96.0
Other ICU	39	0.6
High dependency care unit	224	3.4
Rehabilitation	5	0.1
Day hospital or Long-term care	1	0.0
Missing	0	

Transferred to Other hospital (N=35)	N	%
Ward	19	54.3
Other ICU	7	20.0
High dependency care unit	1	2.9
Rehabilitation	8	22.9
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	6712	98.8
Dead	82	1.2
Missing	0	

Timing of ICU mortality (N=82)	N	%
Daytime (08:00AM - 07:59PM)	55	67.1
Nighttime (08:00PM - 07:59AM)	27	32.9
Weekdays (Monday - Friday)	70	85.4
Weekend (Saturday - Sunday)	12	14.6
Missing	0	

Brain death assessment (N=82)	N	%
Yes, with organ donation	4	4.9
Yes, without organ donation	2	2.4
No	76	92.7
Missing	0	

Organ/Tissue removal (N=4)	N	%
No removal	0	0.0
Only organ removal	2	50.0
Only tissue removal	1	25.0
Organ and tissue removal	1	25.0
Missing	0	

Hospital mortality	N	%
Dead	272	4.0
Transf. to other acute-care hospital	111	1.6
Transf. to other type of hosp. stay	487	7.2
Nursing home	81	1.2
Voluntary discharge	17	0.3
Discharged home	5826	85.8
Missing	0	

To other type of H stay (N=487)	N	%
Rehabilitation in the same institute	122	25.1
Rehabilitation in other institute	270	55.4
DH/long-term care, same inst.	38	7.8
DH/long-term care, other inst.	57	11.7
Missing	0	

Disch. terminally ill (N=6522)	N	%
Yes	44	0.7
No	6478	99.3
Missing	0	

Hospital mortality	N	%
Alive	6478	95.3
Dead	316	4.7
Missing	0	

Timing of hosp. mortality (N=316)	N	%
In ICU	82	25.9
Within 24 hours after ICU	17	5.4
Within 48 hours after ICU	20	6.3
Within 72 hours after ICU	30	9.5
Within 96 hours after ICU	33	10.4
After more than 96 hours after ICU	201	63.6
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=234)		
Mean	23.1	
SD	32.0	
Median	14	
Q1-Q3	7-29	
Missing	0	

National report for general ICUs - Year 2012**Outcome indicators** - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	6477	95.3
Dead	317	4.7
Missing	0	

Stay after ICU (days)		
Alive (N=6712)		
	Mean	11.7
	SD	13.1
	Median	8
	Q1-Q3	5-14
	Missing	1

Hospital stay (days)		
	Mean	16.9
	SD	17.0
	Median	12
	Q1-Q3	8-21
	Missing	1

Hospital stay (days)		
Alive (N=6478)		
	Mean	16.4
	SD	15.4
	Median	12
	Q1-Q3	8-20
	Missing	1

Hospital stay (days)		
Dead (N=316)		
	Mean	27.7
	SD	35.3
	Median	18
	Q1-Q3	6-38
	Missing	0

National report for general ICUs - Year 2012

Characteristics on admission - Pediatric patients evaluated with PIM 2

Patients (N): 595

Sex		N	%
	Male	366	61.5
	Female	229	38.5
	Missing	0	

Age		N	%
	Newborn (0-4 weeks)	2	0.3
	1-6 months	21	3.5
	6-12 months	19	3.2
	12-24 months	43	7.2
	2-4 years	80	13.4
	5-8 years	78	13.1
	9-16 years	352	59.2
	Missing	0	
	Mean	9.4	
	SD	5.6	
	Median	11	
	Q1-Q3	4-15	
	Min-Max	0-16	

Weight (kg)			
Newborns (N=2)			
	Mean	19.2	
	SD	13.8	
	Median	19.2	
	Q1-Q3	14.4-24.1	
	Missing	0	

Gestational age			
Newborns (N=2)			
	At term	2	100.0
	Not at term	0	0.0
	Missing	0	

Comorbidities		N	%
	No	374	62.9
	Yes	221	37.1
	Missing	0	

Comorbidities (top 10)		N	%
	Encephalopathy	54	9.1
	Skeletal malformations/disorders	27	4.5
	Any tumour without metastasis	26	4.4
	Asthma	21	3.5
	Hemiplegia or paraplegia or quadriplegia	21	3.5
	Genetic diseases	19	3.2
	Brain and skull malformations	13	2.2
	Congenital heart disease	12	2.0
	Neurodegenerative/Neuromuscular disease	11	1.8
	Malignant haematological disease	10	1.7
	Missing	0	

Previous ICU admissions		N	%
	None	407	68.4
	<=2	71	11.9
	>2	28	4.7
	Unknown	89	15.0
	Missing	0	

Previous ICU admissions (N=99)		N	%
	Paediatric	40	40.4
	Neonatal	21	21.2
	General - adult	47	47.5
	Other/Unknown	5	5.1
	Missing	0	

Stay before ICU (days)			
	Mean	2.8	
	SD	9.8	
	Median	0	
	Q1-Q3	0-1	
	Missing	18	

Source of admission		N	%
	Same hospital	511	85.9
	Other hospital	67	11.3
	Long-term chronic care hospital	0	0.0
	Directly from the community (e.g., ambulance, home, ...)	17	2.9
	Missing	0	

Ward of admission			
Hospital (N=578)			
	Medical ward	94	16.3
	Surgical ward	204	35.3
	Emergency room	255	44.1
	Other ICU	19	3.3
	High dependency care unit	5	0.9
	Neonatology	1	0.2
	Missing	0	

Reason for transfer from			
Other ICU (N=19)			
	Specialist expertise	9	47.4
	Step-up care	3	15.8
	Logistical/organizational reasons	7	36.8
	Step-down care	0	0.0
	Missing	0	

Scheduled admission		N	%
	No	464	78.0
	Yes	131	22.0
	Missing	0	

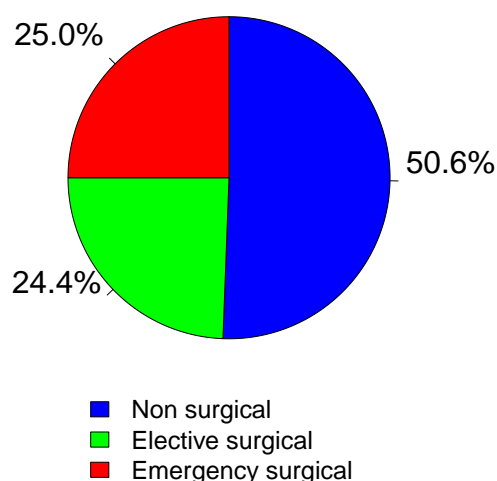
National report for general ICUs - Year 2012

Characteristics on admission - Pediatric patients evaluated with PIM 2

Trauma	N	%
No	425	71.4
Yes	170	28.6
Multiple trauma	59	9.9
Missing	0	

Surgical status	N	%
Non surgical	301	50.6
Elective surgical	145	24.4
Emergency surgical	149	25.0
Missing	0	

Surgical status



Source of admission

Surgical pts. (N=294)	N	%
Operating theatre of surgical ward	188	65.3
Operating theatre of emergency room	39	13.5
Surgical ward	8	2.8
Other	53	18.4
Missing	6	

Surgical interventions (top 10)

Elective surgical (N=145)	N	%
Neurosurgery	38	26.2
Orthopaedic surgery	30	20.7
Gastrointestinal surgery	19	13.1
ENT surgery	11	7.6
Maxillo-Facial surgery	9	6.2
Nephro/Urological surgery	8	5.5
Thoracic surgery	8	5.5
Biliary tract surgery	8	5.5
Other surgery	7	4.8
Hepatic surgery	3	2.1
Missing	0	

Timing	N	%
Elective surgical (N=145)		
From -7 to -3 days	0	0.0
From -2 to -1 days	3	2.1
On ICU admission day	138	95.2
The day after ICU admission	6	4.1
Missing	1	

Surgical interventions (top 10)

Emergency surgical (N=149)	N	%
Gastrointestinal surgery	39	26.2
Orthopaedic surgery	38	25.5
Neurosurgery	27	18.1
Splenectomy	14	9.4
ENT surgery	13	8.7
Thoracic surgery	10	6.7
Organ/s transplantation	6	4.0
Hepatic surgery	4	2.7
Nephro/Urological surgery	4	2.7
Other surgery	4	2.7
Missing	0	

Timing

Emergency surgical (N=149)	N	%
From -7 to -3 days	3	2.0
From -2 to -1 days	17	11.4
On ICU admission day	143	96.0
The day after ICU admission	9	6.0
Missing	1	

Non surgical interventions

	N	%
None	556	93.4
Elective	15	2.5
Emergency	24	4.0
Missing	0	

Non surgical interventions

Elective (N=15)	N	%
Therapeutic endoscopy (bronchoscopy excluded)	4	26.7
Therapeutic bronchoscopy	3	20.0
Interventional radiology	2	13.3
Interventional cardiology	1	6.7
Interventional neuroradiology	0	0.0
Interventional endoscopy	0	0.0
Missing	5	

Surgical interventions

Emergency (N=24)	N	%
Interventional radiology	11	45.8
Therapeutic endoscopy (bronchoscopy excluded)	4	16.7
Therapeutic bronchoscopy	4	16.7
Diagnostic bronchoscopy on admission	3	12.5
Interventional neuroradiology	1	4.2
Interventional cardiology	0	0.0
Missing	1	

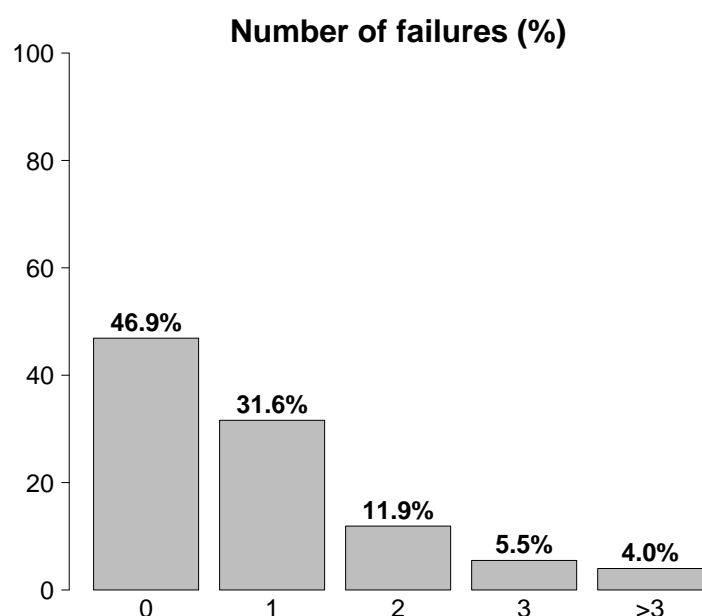
National report for general ICUs - Year 2012

Characteristics on admission - Pediatric patients evaluated with PIM 2

Reason for admission	N	%
Monitoring/Weaning	343	57.6
Post surgical weaning	79	13.6
Surgical monitoring	127	21.9
Post interventional weaning	3	0.5
Interventional monitoring	8	1.4
Non surgical monitoring	111	19.1
Missing	15	
Admission for procedures/treatments	24	4.0
Intensive Treatment	226	38.0
Ventilatory support	211	35.5
Cardiovascular support	57	9.6
Metabolic support	28	4.7
Missing	0	
Palliative Sedation	2	0.3
Diagnosis of death/Organ donation	0	0.0
Missing	0	

Failures on admission (top 10)	N	%
A	107	18.0
B	23	3.9
AB	21	3.5
E	19	3.2
D	15	2.5
AD	14	2.4
C	12	2.0
G	12	2.0
AC	8	1.3
ABD	6	1.0
Missing	0	

Respiratory failure	N	%
None	384	64.5
Only hypoxic failure	74	12.4
Only hypercapnic failure	3	0.5
Hypoxic-hypercapnic failure	21	3.5
Intubation for airway maint.	113	19.0
Missing	0	



Cardiovascular failure	N	%
None	538	90.4
Without shock	12	2.0
Cardiogenic shock	7	1.2
Septic shock	15	2.5
Haemorrhagic/hypovolemic shock	15	2.5
Hypovolemic shock	1	0.2
Anaphylactic shock	0	0.0
Neurogenic shock	3	0.5
Other shock	0	0.0
Mixed shock	4	0.7
Missing	0	

Failures on admission	N	%
No	279	46.9
Yes	316	53.1
A: Respiratory failure	205	34.5
B: Cardiovascular failure	104	17.5
C: Neurological failure	50	8.4
D: Hepatic failure	69	11.6
E: Renal failure	61	10.3
F: Acute skin failure	0	0.0
G: Metabolic failure	40	6.7
H: Coagulation failure	7	1.2
Missing	0	

Neurologic failure	N	%
None	417	84.6
Cerebral coma	52	10.5
Metabolic coma	7	1.4
Postanoxic coma	13	2.6
Toxic coma	4	0.8
Missing or not evaluable	102	

Renal failure (RIFLE)	N	%
None	534	89.7
Risk	43	7.2
Injury	6	1.0
Failure	7	1.2
Loss	3	0.5
End-stage renal disease	2	0.3
Missing	0	

National report for general ICUs - Year 2012

Characteristics on admission - Pediatric patients evaluated with PIM 2

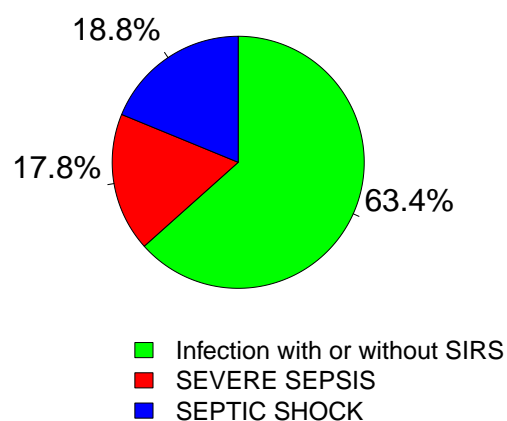
Clinical conditions on admission	N	%
Respiratory	92	15.5
Upper respiratory tract disease	18	3.0
Acute asthma/bronchospasm	18	3.0
Atelectasis	14	2.4
Aspiration pneumonia	13	2.2
Pleural effusion	10	1.7
Cardiovascular	26	4.4
Cardiac arrest	16	2.7
Acute severe arrhythmia: tachycardias	3	0.5
Congenital non-cyanotic cardiopathy	2	0.3
Non-congenital valvular disease	2	0.3
Pericardial effusion (non traumatic)	2	0.3
Neurological	113	19.0
Seizures	50	8.4
Brain tumour	25	4.2
Brain and skull malformations	13	2.2
Spontaneous Hydrocephalus	7	1.2
Metabolic/postanoxic encephalopathy	6	1.0
Gastrointestinal and hepatic	65	10.9
Hepatic-pancreatic-bile duct malf.	13	2.2
Oesophago-gastro-intestinal malf.	13	2.2
Intestinal occlusion	10	1.7
Gastrointestinal bleeding: upper tract	7	1.2
Gastrointestinal perforation	6	1.0
Trauma (anatomical districts)	170	28.6
Head	82	13.8
Abdomen	57	9.6
Pelvis/bone/joint & muscle	54	9.1
Chest	48	8.1
Spine	12	2.0
Major vessels injury	6	1.0
Miscellaneous	3	0.5
Other	175	29.4
Other disease	56	9.4
Metabolic disorder	40	6.7
Acute intoxication	23	3.9
Orthopaedic disease	23	3.9
ENT/maxillofacial disease	17	2.9
Post transplantation	11	1.8
Liver transplantation	8	1.3
Bone marrow transplantation	2	0.3
Infections	102	17.1
Pneumonia	30	5.0
Upper respiratory tract infection	14	2.4
NON-surgical secondary peritonitis	10	1.7
L.R.T.I. other than pneumonia	9	1.5
NON-surgical CNS infection	8	1.3
Pleurisy/Pleural empyema	7	1.2
NON-surgical skin/soft tissue infection	7	1.2
Primary bacteraemia of unknown origin	4	0.7
Gastroenteritis	4	0.7
NON-surgical urinary tract infection	4	0.7
Missing	0	

Trauma (anatomical districts)	N	%
Head	82	13.8
Cerebral contusion/laceration	26	4.4
Maxillofacial fracture	24	4.0
Skull fracture	17	2.9
Extradural/epidural haematoma	13	2.2
Traumatic subarachnoid haemorrhage	13	2.2
Spine	12	2.0
Vertebral fracture, without deficit	10	1.7
Paraplegia	2	0.3
-	0	0.0
Chest	48	8.1
Traum. haemothorax/pneumothorax	24	4.0
Severe lung contusion/laceration	21	3.5
Other injuries of the chest	13	2.2
Abdomen	57	9.6
Spleen: Moderate-Severe laceration	14	2.4
Spleen: Massive rupture	14	2.4
Liver: Moderate-Severe laceration	12	2.0
Pelvis/bone/joint & muscle	54	9.1
Long bones fracture	46	7.7
Multiple fracture of the pelvis	15	2.5
Very severe or open fracture of the pelvis	3	0.5
Major vessels injury	6	1.0
Major abdominal vessels: transection	3	0.5
Cava: rupture/transection	2	0.3
Proximal limbs vessels: transection	2	0.3
Miscellaneous	3	0.5
Inhalation injury	2	0.3
Burns (>30% BSA)	1	0.2
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	493	83.0
Infection with or without SIRS	64	10.8
SEVERE SEPSIS	18	3.0
SEPTIC SHOCK	19	3.2
Missing	1	

Infection severity on admission

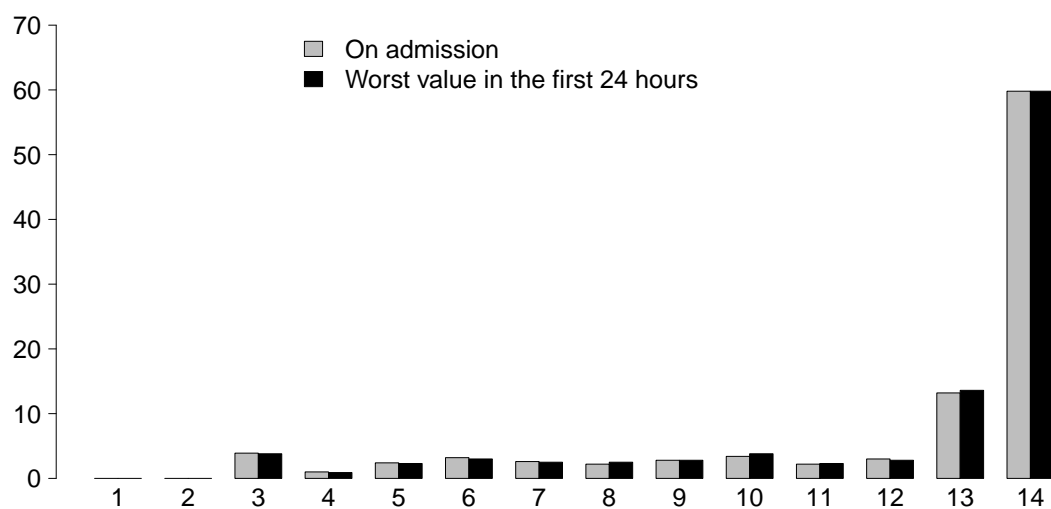
Patients infected (N=101)



National report for general ICUs - Year 2012

Severity scores - Pediatric patients evaluated with PIM 2

Glasgow Coma Scale (%)



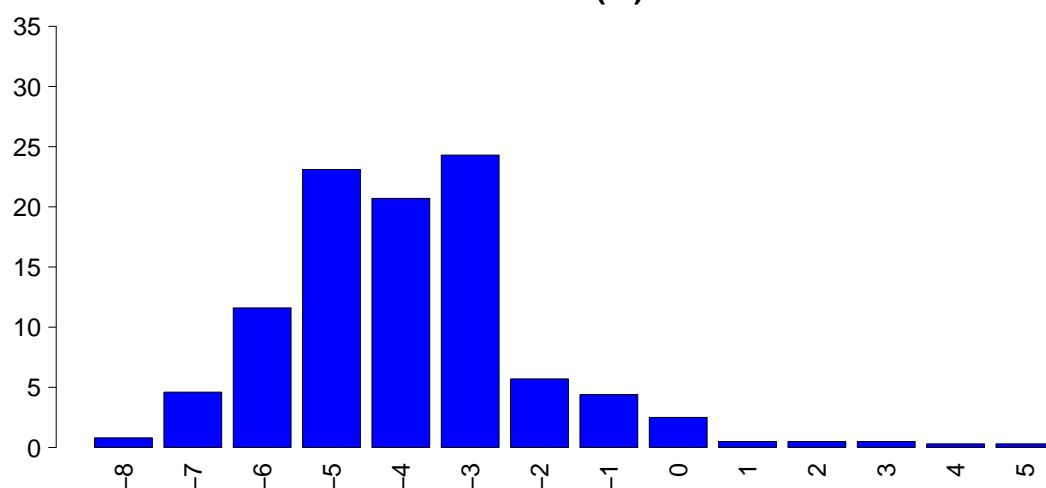
GCS (admission)

Median	14
Q1-Q3	12-14
Not evaluable	102
Missing	0

GCS (first 24 hours)

Median	14
Q1-Q3	12-14
Not evaluable	65
Missing	0

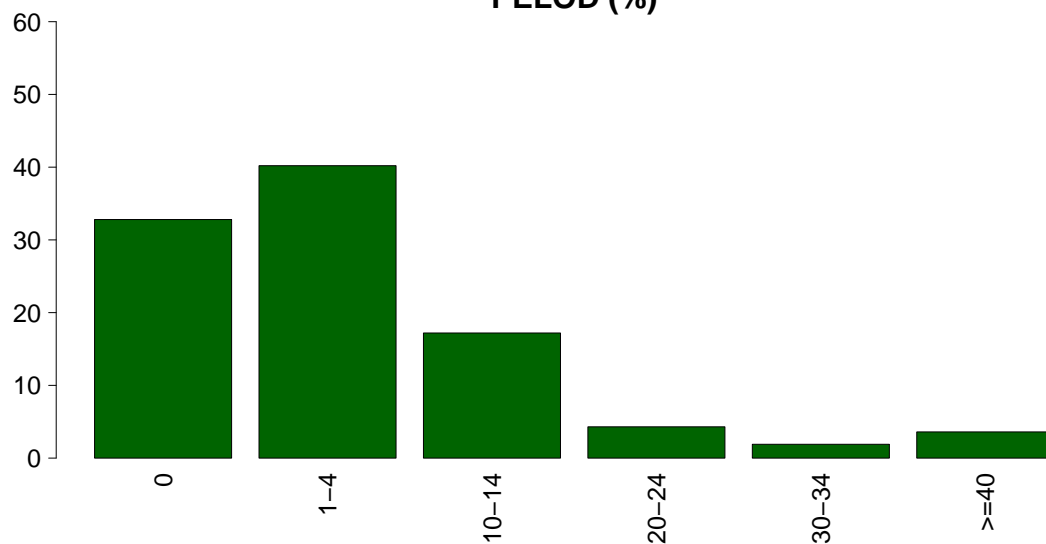
PIM 2 (%)



PIM 2

Mean	-3.9
SD	2.0
Median	-4.2
Q1-Q3	-4.9-3
Not evaluable	0
Missing	0

PELOD (%)



PELOD

Mean	6.0
SD	12.0
Median	1
Q1-Q3	0-10
Not evaluable	65
Missing	0

National report for general ICUs - Year 2012

Characteristics during the stay - Pediatric patients evaluated with PIM 2

Complications during the stay	N	%
No	522	87.7
Yes	73	12.3
Missing	0	

Failures during the stay	N	%
No	574	96.5
Yes	21	3.5
A: Respiratory failure	6	1.0
B: Cardiovascular failure	8	1.3
C: Neurological failure	2	0.3
D: Hepatic failure	0	0.0
E: Renal failure (AKIN)	1	0.2
F: Acute skin failure	0	0.0
G: Metabolic failure	4	0.7
H: Coagulation failure	2	0.3
Missing	0	

Failures during the stay (top 10)	N	%
B	6	1.0
A	5	0.8
G	3	0.5
C	2	0.3
H	2	0.3
AB	1	0.2
BG	1	0.2
E	1	0.2
-	0	0.0
-	0	0.0
Missing	0	

Respiratory failure occurred	N	%
None	589	99.0
Intubation for airway maint.	3	0.5
Hypoxic failure	3	0.5
Hypercapnic failure	1	0.2
Missing	0	

Cardiovascular failure occurred	N	%
None	587	98.7
Cardiogenic shock	1	0.2
Hypovolemic shock	0	0.0
Haemorrhagic/hypovolemic shock	0	0.0
Septic shock	7	1.2
Anaphylactic shock	0	0.0
Neurogenic shock	0	0.0
Other shock	0	0.0
Missing	0	

Neurological failure occurred	N	%
None	593	99.7
Cerebral coma	2	0.3
Metabolic coma	0	0.0
Postanoxic coma	0	0.0
Missing	0	

Renal failure occurred (AKIN)	N	%
None	594	99.8
Mild	0	0.0
Moderate	0	0.0
Severe	1	0.2
Missing	0	

Complications during the stay	N	%
Respiratory	19	3.2
Pleural effusion	8	1.3
Atelectasis	4	0.7
ARDS	3	0.5
Pneumothorax/Pneumomediastinum	2	0.3
ALI (Acute Lung Injury)	1	0.2
Cardiovascular	17	2.9
Cardiac arrest	7	1.2
Acute severe arrhythmia: tachycardias	4	0.7
Acute severe arrhythmia: bradycardias	2	0.3
Left heart failure w/o pulm. edema	2	0.3
Hypertensive crisis	1	0.2
Neurological	20	3.4
Drowsiness/agitation/delirium	12	2.0
Seizures	7	1.2
Brain edema	3	0.5
Hydrocephalus	3	0.5
Intracranial hypertension	1	0.2
Gastrointestinal and hepatic	5	0.8
Gastrointestinal bleeding: upper tract	2	0.3
Ascites	1	0.2
Bowel ischaemia	1	0.2
Intrabdominal bleeding	1	0.2
Paralytic Ileus	1	0.2
Other	8	1.3
Metabolic disorder	4	0.7
Other disease	2	0.3
Acute rejection	1	0.2
Anastomotic stricture or leak	1	0.2
Extremity compartment syndrome (severe)	1	0.2
-	0	0.0
-	0	0.0
Infections	16	2.7
Pneumonia	7	1.2
Primary bacteraemia of unknown origin	3	0.5
L.R.T.I. other than pneumonia	3	0.5
F.U.O. fever of unknown origin	2	0.3
NON-surgical urinary tract infection	2	0.3
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

National report for general ICUs - Year 2012

Characteristics during the stay - Pediatric patients evaluated with PIM 2

Infections	N	%
None	481	80.8
Only on admission	98	16.5
On admission and during ICU stay	4	0.7
Only during ICU stay	12	2.0
Missing	0	

Maximum severity of infection	N	%
None	481	81.2
Infection with or without SIRS	67	11.3
SEVERE SEPSIS	19	3.2
SEPTIC SHOCK	25	4.2
Missing	3	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	SEVERE SEPSIS	SEPTIC SHOCK
Admission	None	481 (98.0%)	7 (1.4%)	1 (0.2%)	2 (0.4%)	491
	Infection with or without SIRS	-	60 (93.8%)	3 (4.7%)	1 (1.6%)	64
	SEVERE SEPSIS	-	-	15 (83.3%)	3 (16.7%)	18
	SEPTIC SHOCK	-	-	-	19 (100.0%)	19
	TOT	481	67	19	25	592

Ventil. Associat. Pneumonia (VAP)	N	%
No	588	98.8
Yes	7	1.2
Missing	0	

Incidence of VAP

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

Estimate	7.7
CI (95%)	3.1-15.9

Incidence of VAP

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

Estimate	6.2%
CI (95%)	2.5-12.7

Catheter Bacteraemia (CR-BSI)	N	%
No	595	100.0
Yes	0	0.0
Missing	0	

Incidence of CR-BSI

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

Estimate	0.0
CI (95%)	0.0-2.2

Incidence of CR-BSI

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

Estimate	0.0%
CI (95%)	0.0-2.7

National report for general ICUs - Year 2012 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
	500	84									
Invasive ventilation	331	55.6	246	41.3	30	5	1	0-2	0	0-0	0
Non invasive ventilation	37	6.2	11	1.8	6	1	1	0-2	0	0-2	0
Tracheostomy	22	3.7	9	1.5	17	2.9	12	6-16	7	4-12	0
iNO (inhaled nitric oxide)	2	0.3	1	0.2	0	0	7	4-10	4	4-4	0
Central Venous Catheter	256	43.0	137	23	205	34.5	3	1-7	0	0-0	0
Arterial Catheter	284	47.7	141	23.7	38	6.4	2	1-5	0	0-0	0
Vasoactive drugs	55	9.2	27	4.5	6	1	2	1-3	0	0-0	0
Antiarrhythmics	3	0.5	1	0.2	2	0.3	4	2-12	1	0-2	0
IABP	0	0.0									
Invasive monitoring of C.O.	3	0.5	3	0.5	1	0.2	6	6-18			
Continuous monitoring of ScVO2	1	0.2	0	0	0	0	5	5-5	0	0-0	0
Temporary pacing	0	0.0									
Ventricular assistance	0	0.0									
DC-shock	3	0.5							0	0-0	0
CPR	16	2.7							0	0-0	0
Massive transfusion	9	1.5							0	0-0	0
ICP monitoring without liquor-drainage	6	1.0	1	0.2	2	0.3	10	3-13	0	0-0	0
ICP monitoring with liquor-drainage	6	1.0	3	0.5	3	0.5	5	4-6	2	1-13	0
External ventricular drainage without ICP	3	0.5	1	0.2	2	0.3	3	2-8	2	1-2	0
Haemofiltration	2	0.3	0	0	0	0	7	6-8	0	0-1	0
Haemodialysis	0	0.0									
ECMO	3	0.5	2	0.3	0	0	7	4-13	0	0-0	0
Hepatic clearance techniques	0	0.0									
Clearance techniques during sepsis	1	0.2	0	0	0	0	0	0-0	0	0-0	0
IAP (intra-abdominal pressure)	3	0.5									
Hypothermia	2	0.3									
Enteral nutrition	119	20.0	25	4.2	68	11.4	4	2-10	1	1-3	0
Parenteral nutrition	74	12.4	15	2.5	41	6.9	4	2-7	1	0-2	0
SDD (Topical, Topical and systemic)	3	0.5									
Patient restraint	8	1.3									
Diagnostic fibero bronchoscopy	11	1.8									
Surfactant treatment	1	0.2	0	0	0	0			0	0-1	0
Vacuum therapy	3	0.5							1		
Oxygen therapy	65	10.9	40	6.7	29	4.9	1	1-2	0	0-1	0
Blood transfusion	2	0.3									
Peritoneal dialysis	0	0.0									
Plasmapheresis	0	0.0									
Thoracic drainage	17	2.9	12	2	12	2	4	1-5	0	0-0	0
Peridural catheter	12	2.0	12	2	8	1.3	1	1-1	0		
Urinary catheter	122	20.5	79	13.3	87	14.6	2	1-5	0	0-0	0
Near-infrared spectroscopy	0	0.0									
Phototherapy	0	0.0									
Electrical cardioversion	0	0.0									
Antibiotics	367	61.7									
Antibiotics for surgical prophylaxis	185	31.1	138	23.2	126	21.2	1	1-2	0	0-0	0
Antibiotics for medical prophylaxis	86	14.5	30	5	64	10.8	2	1-4	0	0-0	0
Empirical antibiotic therapy	92	15.5	45	7.6	67	11.3	3	1-6	0	0-0	0
Targeted antibiotic therapy	31	5.2	4	0.7	17	2.9	7	3-12	0	2-8	0

National report for general ICUs - Year 2012

Process indicators - Pediatric patients evaluated with PIM 2

Invasive ventilation (N=331)	N	%	Length (days)				
			Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	82	24.7	4.9	7.2	2	1-6	0
For airway maintenance	113	34.0	3.9	8.1	1	1-4	0
In weaning	86	25.9	0.5	0.5	1	0-1	0
Not evaluable	51	15.4	3.5	6.4	1	0-3	1
Reintubation within 48 hours	5	1.5	3.2	4.0	2	1.0-3.0	0

Non invasive ventilation (N=37)	N	%
Non invasive ventilation only	23	62.2
Non invasive ventilation failed	6	16.2
For weaning	8	21.6
Other	0	0.0
Missing	0	

Tracheostomy (N=22)	N	%
Surgical	10	45.5
Percutwist	2	9.1
Ciaglia	3	13.6
Monodil. Ciaglia	2	9.1
Fantoni	2	9.1
Griggs	1	4.5
Other Kind	2	9.1
Missing	0	

Tracheostomy - Days after the beginning of inv. vent.

N	21
Mean	6.5
SD	9.5
Median	4
Q1-Q3	0-9

Invasive monitoring of C.O. (N=3)	N	%
Swan Ganz	0	0.0
PICCO	3	100.0
LIDCO	0	0.0
Vigileo-PRAM	0	0.0
Other	0	0.0
Missing	0	

SDD (N=3)	N	%
Topical	2	66.7
Topical and systemic	1	33.3
Missing	0	

Antibiotic therapy

Pts. infected in ICU only (N=12)	N	%
Only empirical	2	16.7
Only targeted	7	58.3
Targeted after empirical	3	25.0
Other	0	0.0
Missing	0	

Surgical interventions	N	%
No	579	97.3
Yes	16	2.7
Missing	0	

Number of surgical interventions	N	%
0	579	97.3
1	12	2.0
2	2	0.3
3	2	0.3
>3	0	0.0
Missing	0	

Surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	9.9	5.0	7.5	6.2-12	0

Surgical interventions (top 10)	N	%
Orthopaedic surgery	10	1.7
Plastic surgery	3	0.5
Maxillo-Facial surgery	2	0.3
Peripheral vascular surgery	2	0.3
Neurosurgery	2	0.3
Thoracic surgery	1	0.2
Organ/s transplantation	1	0.2
Other surgery	1	0.2
-	0	0.0
-	0	0.0
Missing	0	

Non surgical interventions	N	%
No	590	99.2
Yes	5	0.8
Missing	0	

Non surgical interventions

Days from admission	Mean	SD	Median	Q1-Q3	Missing
	23.1	11.5	21	16-32	1

Non surgical interventions	N	%
Interventional radiology	5	0.8
Therapeutic endoscopy (bronchoscopy excluded)	3	0.5
Therapeutic bronchoscopy	1	0.2
Diagnostic bronchoscopy on admission	1	0.2
Interventional cardiology	0	0.0
Interventional neuroradiology	0	0.0
Missing	0	

National report for general ICUs - Year 2012**Outcome indicators** - Pediatric patients evaluated with PIM 2

ICU outcome	N	%
Dead	28	4.7
Transferred to same hospital	513	86.2
Transferred to other hospital	33	5.5
Discharged home	21	3.5
Disch. terminally ill	0	0.0
Missing	0	

Transferred to (N=546)	N	%
Ward	490	89.7
Other ICU	0	0.0
High dependency care unit	45	8.2
Rehabilitation	8	1.5
Day hospital or Long-term care	3	0.5
Missing	0	

Reason of transfer to Other ICU (N=0)	N	%
Specialist expertise	0	0.0
Step-up care	0	0.0
Logistical/organizational reasons	0	0.0
Step-down care	0	0.0
Missing	0	

Transferred to Same hospital (N=513)	N	%
Ward	467	91.0
Other ICU	0	0.0
High dependency care unit	41	8.0
Rehabilitation	2	0.4
Day hospital or Long-term care	3	0.6
Missing	0	

Transferred to Other hospital (N=33)	N	%
Ward	23	69.7
Other ICU	0	0.0
High dependency care unit	4	12.1
Rehabilitation	6	18.2
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	567	95.3
Dead	28	4.7
Missing	0	

Timing of ICU mortality (N=28)	N	%
Daytime (08:00AM - 07:59PM)	17	60.7
Nighttime (08:00PM - 07:59AM)	11	39.3
Weekdays (Monday - Friday)	17	60.7
Weekend (Saturday - Sunday)	11	39.3
Missing	0	

Brain death assessment (N=28)	N	%
Yes, with organ donation	2	7.1
Yes, without organ donation	2	7.1
No	24	85.7
Missing	0	

Organ/Tissue removal (N=2)	N	%
No removal	0	0.0
Only organ removal	2	100.0
Only tissue removal	0	0.0
Organ and tissue removal	0	0.0
Missing	0	

Hospital mortality	N	%
Dead	35	5.9
Transf. to other acute-care hospital	47	7.9
Transf. to other type of hosp. stay	37	6.2
Nursing home	10	1.7
Voluntary discharge	5	0.8
Discharged home	459	77.4
Missing	2	

To other type of H stay (N=37)	N	%
Rehabilitation in the same institute	7	18.9
Rehabilitation in other institute	22	59.5
DH/long-term care, same inst.	4	10.8
DH/long-term care, other inst.	4	10.8
Missing	0	

Disch. terminally ill (N=558)	N	%
Yes	6	1.1
No	552	98.9
Missing	0	

Hospital mortality	N	%
Alive	553	93.3
Dead	40	6.7
Missing	2	

Timing of hosp. mortality (N=40)	N	%
In ICU	28	70.0
Within 24 hours after ICU	2	5.0
Within 48 hours after ICU	3	7.5
Within 72 hours after ICU	3	7.5
Within 96 hours after ICU	3	7.5
After more than 96 hours after ICU	9	22.5
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=12)		
Mean	45.3	
SD	62.6	
Median	22	
Q1-Q3	4-47	
Missing	0	

National report for general ICUs - Year 2012**Outcome indicators - Pediatric patients evaluated with PIM 2**

Last hospital mortality	N	%
Alive	553	93.3
Dead	40	6.7
Missing	2	

Expected outcome (N=567)	N	%
Recovery/resolution of acute episode	534	94.2
Palliative care grade 1	14	2.5
Palliative care grade 2	2	0.4
Palliative care grade 3	10	1.8
Palliative care grade 4	7	1.2
Missing	0	

Outcome treatments (N=33)	N	%
NON invasive ventilation	2	6.1
Invasive ventilation	8	24.2
Oxygen therapy	8	24.2
Tracheostomy	12	36.4
Diuretics grugs	2	6.1
Inotropic agents drugs	0	0.0
Antiepileptics drugs	12	36.4
Dialitic therapy	0	0.0
Limb replacement	0	0.0
Nasogastric tube	6	18.2
Ostomies	14	42.4
Home based parenteral nutrition	2	6.1
Motor physiotherapy	16	48.5
Respiratory physiotherapy	13	39.4
Posture	12	36.4
Psychological counselling	5	15.2
Missing	0	

ICU stay (days)		
Mean	3.9	
SD	7.1	
Median	1	
Q1-Q3	1-3	
Missing	0	

ICU stay (days) Alive (N=567)		
Mean	4.0	
SD	7.2	
Median	1	
Q1-Q3	1-3	
Missing	0	

ICU stay (days) Dead (N=28)		
Mean	2.3	
SD	4.2	
Median	1	
Q1-Q3	1-1.2	
Missing	0	

Stay after ICU (days) Alive (N=567)		
Mean	11.0	
SD	25.9	
Median	6	
Q1-Q3	3-11	
Missing	2	

Hospital stay (days)		
Mean	16.1	
SD	27.0	
Median	9	
Q1-Q3	5-18	
Missing	2	

Hospital stay (days) Alive (N=553)		
Mean	15.4	
SD	23.4	
Median	9	
Q1-Q3	5-17	
Missing	0	

Hospital stay (days) Dead (N=40)		
Mean	25.7	
SD	56.6	
Median	2	
Q1-Q3	1-25.5	
Missing	0	

Appendix

National report for general ICUs - Year 2012

Prognostic models - Adult patients with LOS>=to 24 hours

Model: Logistic regression.

Dependent variable: Hospital mortality^o.

Sample used for model development: Patients with LOS>=24 hours from general Italian ICUs.

Sample size: 34225 patients.

Independent variables	Coefficients (95% CI)	Odds Ratio (95% CI)	p
Intercept	-7.11 (-7.6;-6.63)	/	/
Miscellanea			
Age <=37	1.49 (1.25;1.73)	/	
Age in decades (continuous, 38-79)	0.40 (0.34;0.47)	/	<0.001
Age in decades (continuous, >80)	0.43 (0.37;0.49)	/	
Body mass Index (BMI) (Underweight vs. Normal)	0.38 (0.25;0.52)	1.47 (1.29;1.67)	<0.001
Body mass Index (BMI) (Overweight or Obese vs. Normal)	-0.16 (-0.22;-0.09)	0.86 (0.8;0.91)	
Surgical status (Non surgical vs. Elective surgical)	0.86 (0.73;1)	/	×
Surgical status (Emergency surgical vs. Elective surgical)	0.56 (0.43;0.7)	/	
Stay before ICU (days) (logarithm)	0.26 (0.22;0.3)	1.3 (1.25;1.36)	<0.001
Admitted in hospital the same day of ICU admission (Yes vs. No)	0.19 (0.09;0.29)	1.21 (1.1;1.34)	<0.001
Reason for admission (Intensive Treatment vs. Monitoring/Weaning)	0.8 (0.32;1.28)	/	×
Ward of admission: Medical ward	0.2 (0.12;0.28)	1.22 (1.13;1.33)	<0.001
Physiopatological components			
Bilirubin (mg/100ml) (4-11.9 vs. <4)	0.45 (0.27;0.64)	1.57 (1.31;1.89)	<0.001
Bilirubin (mg/100ml) (>=12 vs. <4)	1.13 (0.71;1.54)	3.09 (2.04;4.67)	
Sodium (mEq/L) (>=145 vs. <145)	0.19 (0.11;0.28)	1.21 (1.11;1.32)	<0.001
Platelets (10 ³ /mm3) (50-99 vs. >100)	0.32 (0.22;0.43)	1.38 (1.25;1.53)	<0.001
Platelets (10 ³ /mm3) (<50 vs. >100)	0.72 (0.57;0.86)	2.05 (1.77;2.37)	
MAP (mmHg) (<70 vs. >70)	0.4 (0.31;0.48)	/	×
Urine Output (L/24h) (<0.2 vs. >1)	0.8 (0.65;0.94)	2.21 (1.91;2.56)	
Urine Output (L/24h) (0.2-0.49 vs. >1)	0.47 (0.32;0.61)	1.59 (1.38;1.84)	<0.001
Urine Output (L/24h) (0.5-0.99 vs. >1)	0.3 (0.21;0.39)	1.35 (1.23;1.48)	
WBC (10 ⁹ /L) (<1 vs. 1-20)	0.47 (0.24;0.69)	1.59 (1.27;2)	<0.001
WBC (10 ⁹ /L) (>20 vs. 1-20)	0.18 (0.1;0.26)	1.2 (1.1;1.3)	
Serum urea (mg/100 ml) (>=60 vs. <60)	0.26 (0.18;0.34)	/	×
PaO2/FiO2 (100*mmHg/%) (200-299 vs. >=300)	0.11 (0.02;0.2)	/	
PaO2/FiO2 (100*mmHg/%) (100-199 vs. >=300)	0.26 (0.17;0.35)	/	×
PaO2/FiO2 (100*mmHg/%) (<100 vs. >=300)	0.69 (0.55;0.84)	/	
Heart rate (bpm) (>=120 vs. <120)	0.24 (0.16;0.32)	1.27 (1.18;1.37)	<0.001
Clinical conditions on admission			
Acute intoxication (Yes vs. No)	-0.98 (-1.32;-0.64)	0.38 (0.27;0.53)	<0.001
Spontaneous Intraparenchymal bleeding (Yes vs. No)	0.51 (0.33;0.7)	/	×
ALI (Acute Lung Injury) (Yes vs. No)	0.15 (0;0.3)	1.16 (1;1.36)	<0.001
ARDS (Yes vs. No)	0.45 (0.25;0.64)	1.56 (1.28;1.9)	
Haematological disease (Yes vs. No)	0.58 (0.25;0.9)	1.78 (1.28;2.47)	<0.001
Ascites (Yes vs. No)	0.49 (0.16;0.82)	1.63 (1.17;2.27)	0.004
Nephrourologic disease (Yes vs. No)	-0.26 (-0.42;-0.11)	0.77 (0.66;0.9)	<0.001
Lung cancer (Yes vs. No)	0.81 (0.52;1.09)	2.24 (1.69;2.97)	<0.001
Acute pancreatitis (Yes vs. No)	0.56 (0.29;0.83)	1.75 (1.33;2.29)	<0.001
Seizures (Yes vs. No)	-0.53 (-0.73;-0.32)	0.59 (0.48;0.72)	<0.001
Bowel ischaemia (Yes vs. No)	0.43 (0.2;0.66)	1.54 (1.22;1.94)	<0.001
Spontaneous Subarachnoid haemorrhage (Yes vs. No)	0.37 (0.14;0.59)	1.44 (1.15;1.8)	0.001
Systemic hypertensive crisis (Yes vs. No)	-0.44 (-0.76;-0.11)	0.65 (0.47;0.89)	0.007
Intracranial hypertension (Yes vs. No)	0.77 (0.19;1.34)	2.15 (1.21;3.81)	0.009
Gastrointestinal perforation (Yes vs. No)	0.22 (0.05;0.39)	1.25 (1.05;1.47)	0.010
Pneumonia (Yes vs. No)	0.23 (0.11;0.35)	1.26 (1.12;1.42)	<0.001
Peritonites (Yes vs. No)	0.34 (0.15;0.53)	1.41 (1.16;1.7)	<0.001
Infection severity on admission (Infection with or without SIRS vs. None)	0.3 (-0.09;0.69)	/	
Infection severity on admission (SEVERE SEPSIS vs. None)	1.08 (0.59;1.58)	/	×
Infection severity on admission (SEPTIC SHOCK vs. None)	0.88 (0.35;1.4)	/	
Urinary tract infection (Yes vs. No)	-0.22 (-0.46;0.01)	/	×
Skin or soft tissue infection (Yes vs. No)	0.5 (0.26;0.73)	1.65 (1.3;2.08)	<0.001
Trauma(Yes vs. No)	-1.23 (-1.79;-0.66)	/	×
Multiple trauma (Yes vs. No)	-0.26 (-0.49;-0.04)	0.77 (0.61;0.96)	0.020
Traumatic brain injury (Yes vs. No)	0.03 (-0.21;0.27)	/	×
Spinal cord injury with complete neurologic deficit (Yes vs. No)	0.98 (0.35;1.6)	2.65 (1.42;4.97)	0.003
Traumatic diffuse injury with oedema (Yes vs. No)	0.68 (0.14;1.22)	1.98 (1.15;3.39)	0.015
Comorbidities			
Any tumour without metastasis (Yes vs. No tumor)	0.78 (0.12;1.45)	/	×
Metastatic cancer (Yes vs. No tumor)	3.04 (2.24;3.84)	/	
NYHA class II-III (Yes vs. None)	0.09 (0.01;0.18)	1.1 (1.01;1.2)	<0.001
NYHA class IV (Yes vs. None)	0.43 (0.25;0.61)	1.54 (1.29;1.84)	
Malignant haematological disease (Yes vs. No)	0.72 (0.52;0.92)	2.05 (1.68;2.51)	<0.001
Moderate or severe liver disease (Yes vs. No)	0.68 (0.5;0.85)	1.97 (1.64;2.35)	<0.001
Severe COPD (Yes vs. No)	0.36 (0.26;0.46)	1.44 (1.3;1.59)	<0.001
Diabetes with insuline treatment (Yes vs. No)	0.23 (0.13;0.32)	1.25 (1.14;1.38)	<0.001
Severe malnutrition (Yes vs. No)	1.89 (0.83;2.95)	/	×
Renal failure (Yes vs. No)	0.13 (0.04;0.23)	1.14 (1.04;1.26)	0.006
Dementia (Yes vs. No)	0.24 (0.11;0.38)	1.28 (1.11;1.46)	<0.001
Hemiplegia or paraplegia or quadriplegia (Yes vs. No)	0.27 (0.12;0.42)	1.31 (1.12;1.52)	<0.001
Immunosuppression (Yes vs. No)	0.28 (0.08;0.48)	1.32 (1.09;1.61)	0.005
Restrictive lung disease (Yes vs. No)	1.82 (0.95;2.69)	/	×
Arrhythmia (Yes vs. No)	0.09 (0.02;0.17)	1.1 (1.02;1.18)	0.017

(to be continued)

^o 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.

Organ failures			
GCS (3,4 vs. 15)	2.14 (1.88;2.4)	/	
GCS (5 vs. 15)	1.71 (1.39;2.03)	/	
GCS (6 vs. 15)	0.91 (0.68;1.14)	/	
GCS (7,8,9,10 vs. 15)	0.5 (0.38;0.62)	/	×
GCS (11,12,13,14 vs. 15)	0.31 (0.22;0.4)	/	
GCS (Not evaluable in the first 24 hours in neurological patient* vs. 15)	1.59 (1.35;1.83)	/	
GCS (Not evaluable in the first 24 hours in NON-neurological patient* vs. 15)	0.67 (0.57;0.76)	/	
Neurologic failure (Cerebral coma vs. None or Not evaluable in the first 24 hours)	0.38 (0.22;0.54)	1.46 (1.24;1.71)	
Neurologic failure (Metabolic coma vs. None or Not evaluable in the first 24 hours)	-0.29 (-0.48;-0.11)	0.75 (0.62;0.9)	
Neurologic failure (Postanoxic coma vs. None or Not evaluable in the first 24 hours)	0.94 (0.25;1.63)	2.56 (1.28;5.11)	<0.001
Neurologic failure (Toxic coma vs. None or Not evaluable in the first 24 hours)	-0.78 (-1.32;-0.23)	0.46 (0.27;0.79)	
Cardiovascular failure (Cardiogenic shock vs. None or Without shock)	0.45 (0.32;0.57)	1.56 (1.38;1.76)	
Cardiovascular failure (Neurogenic shock vs. None or Without shock)	0.86 (0.54;1.18)	2.37 (1.72;3.26)	
Cardiovascular failure (Haemorrhagic/hypovolemic shock vs. None or Without shock)	0.23 (0.08;0.39)	1.26 (1.08;1.47)	<0.001
Cardiovascular failure (Other shock vs. None or Without shock)	0.08 (-0.07;0.24)	1.09 (0.93;1.27)	
Cardiovascular failure (Mixed shock vs. None or Without shock)	0.3 (0.05;0.55)	1.35 (1.05;1.74)	
Renal failure (AKIN) (Mild vs. None)	0.06 (-0.03;0.15)	/	×
Renal failure (AKIN) (Moderate or Severe vs. None)	0.44 (0.31;0.56)	/	
Respiratory failure (Yes vs. No)	0.21 (0.08;0.35)	1.24 (1.08;1.42)	0.002
Metabolic failure (Yes vs. No)	0.18 (0.1;0.25)	1.19 (1.11;1.29)	<0.001
Surgical and non surgical procedures			
Gastrointestinal surgery (Yes vs. No)	0.31 (0.2;0.43)	1.37 (1.22;1.54)	<0.001
Pancreatic surgery (Yes vs. No)	0.79 (0.5;1.08)	2.2 (1.64;2.95)	<0.001
Organ/s transplantation (Yes vs. No)	-1.84 (-2.63;-1.04)	0.16 (0.07;0.35)	<0.001
Interventional cardiology (Yes vs. No)	-0.33 (-0.52;-0.14)	0.72 (0.59;0.87)	<0.001
Interactions among independent variables			
GCS (3,4) × Serum urea (mg/100 ml) (>=60)	-0.26 (-0.49;-0.04)	/	
GCS (5) × Serum urea (mg/100 ml) (>=60)	-0.5 (-0.95;-0.06)	/	0.006
GCS Not evaluable in the first 24 hours in neurological patient* × Serum urea (mg/100 ml) (>=60)	-0.29 (-0.58;-0.01)	/	
GCS (3,4) × Infections	-0.81 (-1.07;-0.54)	/	
GCS Not evaluable in the first 24 hours in neurological patient* × Infections	-0.39 (-0.74;-0.04)	/	<0.001
MAP (mmHg) (<70) × Infections	-0.3 (-0.44;-0.16)	/	<0.001
GCS (3,4) × Spontaneous Intraparenchymal bleeding	0.99 (0.61;1.36)	/	<0.001
GCS (3,4) × Traumatic brain injury	0.85 (0.45;1.24)	/	
GCS (5) × Traumatic brain injury	0.13 (-0.51;0.77)	/	<0.001
GCS (6) × Traumatic brain injury	0.82 (0.26;1.39)	/	
Surgical status (Non surgical) × Infection severity on admission Infection with or without SIRS	-0.34 (-0.74;0.06)	/	
Surgical status (Emergency surgical) × Infection severity on admission Infection with or without SIRS	-0.42 (-0.87;0.02)	/	
Surgical status (Non surgical) × Infection severity on admission SEVERE SEPSIS	-0.88 (-1.39;-0.38)	/	
Surgical status (Emergency surgical) × Infection severity on admission SEVERE SEPSIS	-1.06 (-1.59;-0.53)	/	<0.001
Surgical status (Non surgical) × Infection severity on admission SEPTIC SHOCK	-0.71 (-1.22;-0.2)	/	
Surgical status (Emergency surgical) × Infection severity on admission SEPTIC SHOCK	-0.71 (-1.22;-0.19)	/	
Urinary tract infection × Renal failure (AKIN) (Moderate or Severe)	-0.51 (-0.85;-0.17)	/	0.003
Age ^Δ × Trauma	0.02 (0.01;0.02)	/	<0.001
Age ^Δ × Any tumour without metastasis	-0.01 (-0.02;0)	/	<0.001
Age ^Δ × Metastatic cancer	-0.03 (-0.04;-0.02)	/	
Age ^Δ × Severe malnutrition	-0.02 (-0.04;0)	/	0.012
Age ^Δ × Restrictive lung disease	-0.02 (-0.03;-0.01)	/	0.002
Age ^Δ × Neurologic failure (Postanoxic coma)	-0.01 (-0.02;0)	/	0.078
Age ^Δ × Reason for admission (Intensive Treatment)	-0.01 (-0.01;0)	/	0.016
GCS (3,4) × PaO ₂ /FiO ₂ (100*mmHg/%) (200-299)	-0.07 (-0.33;0.19)	/	
GCS (3,4) × PaO ₂ /FiO ₂ (100*mmHg/%) (100-199)	-0.37 (-0.65;-0.1)	/	
GCS (3,4) × PaO ₂ /FiO ₂ (100*mmHg/%) (<100)	-0.34 (-0.79;0.12)	/	
GCS Not evaluable in the first 24 hours in neurological patient* × PaO ₂ /FiO ₂ (100*mmHg/%) (200-299)	0.09 (-0.19;0.38)	/	0.020
GCS Not evaluable in the first 24 hours in neurological patient* × PaO ₂ /FiO ₂ (100*mmHg/%) (100-199)	0 (-0.35;0.35)	/	
GCS Not evaluable in the first 24 hours in neurological patient* × PaO ₂ /FiO ₂ (100*mmHg/%) (<100)	-0.92 (-1.72;-0.12)	/	

Dependent variable explained

Likelihood Ratio Test: 11382
Degree of freedom: 122
p-value: <0.0001

Goodness-of-fit

Area under the ROC curve: 0.848
GiVITI Calibration Test: 0
p-value: 1

* 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 haemathoma, Traumatic Intraparenchymal bleeding, Traumatic subarachnoid haemorrhage, Skull fracture, NON-surgical CNS infection, Post-surgical CNS infection, Ventriculostomy-related CNS infection.

^Δ The age used in interactions is the maximum between the age and 37.

× See interaction significance.

National report for general ICUs - Year 2012
Prognostic models - Adult patients with LOS<24 hours

Model: Logistic regression.
Dependent variable: Hospital mortality^o.
Sample used for model development: Patients with LOS<24 hours from general Italian ICUs.
Sample size: 12746 patients.

Independent variables	Coefficients (95% CI)	Odds Ratio (95% CI)	p
Intercept	-7.02 (-7.51;-6.52)	/	/
Miscellanea			
Age in decades	0.37 (0.31;0.43)	1.45 (1.37;1.53)	<0.001
Body mass Index (BMI) (Underweight vs. Normal)	0.33 (0.02;0.64)	1.39 (1.02;1.9)	<0.001
Body mass Index (BMI) (Overweight or Obese vs. Normal)	-0.41 (-0.57;-0.24)	0.67 (0.56;0.79)	<0.001
Surgical status (Non surgical vs. Elective surgical)	0.42 (0.16;0.69)	1.53 (1.17;1.99)	<0.001
Surgical status (Emergency surgical vs. Elective surgical)	0.44 (0.21;0.67)	1.55 (1.23;1.96)	<0.001
Stay before ICU (days) (logarithm)	0.36 (0.26;0.46)	1.43 (1.29;1.59)	<0.001
Admitted in hospital the same day of ICU admission (Yes vs. No)	0.42 (0.17;0.68)	1.53 (1.18;1.97)	0.001
Reason for admission (Intensive Treatment vs. Monitoring/Weaning)	-0.52 (-1.01;-0.03)	/	×
Ward of admission: formato("admWard","medicalWard")	0.5 (0.24;0.75)	1.64 (1.27;2.11)	<0.001
Physiopatological components			
Bilirubin (mg/100ml) (>=4 vs. <4)	0.79 (0.33;1.25)	2.21 (1.4;3.5)	0.001
Heart rate (bpm) (<40 vs. >=40)	0.87 (0.42;1.31)	2.38 (1.52;3.71)	<0.001
WBC (10 ⁹ /L) (>20 vs. <=20)	0.44 (0.17;0.71)	1.55 (1.18;2.03)	0.002
HCO3 (mEq/L) (<15 vs. >20)	0.73 (0.38;1.08)	2.07 (1.47;2.93)	<0.001
HCO3 (mEq/L) (15-20 vs. >20)	0.23 (0.03;0.44)	1.26 (1.03;1.55)	<0.001
Platelets (10 ³ /mm3) (50-99 vs. >100)	0.31 (-0.01;0.63)	1.37 (0.99;1.88)	<0.001
Platelets (10 ³ /mm3) (<50 vs. >100)	1.02 (0.54;1.5)	2.77 (1.72;4.48)	<0.001
Systolic Blood Pressure (mmHg) (<70 vs. >=100)	1.08 (0.7;1.47)	/	×
Systolic Blood Pressure (mmHg) (70-99 vs. >=100)	0.35 (0.13;0.57)	/	×
Urine Output (L/24h) (<0.49 vs. >=1)	1.06 (0.63;1.49)	/	×
Urine Output (L/24h) (0.5-0.99 vs. >=1)	0.41 (0.17;0.65)	/	×
PaO2/FiO2 (100*mmHg/%) (100-199 vs. >=200)	0.31 (0.1;0.53)	1.36 (1.1;1.69)	<0.001
PaO2/FiO2 (100*mmHg/%) (<100 vs. >=200)	1.46 (1.02;1.9)	4.3 (2.76;6.69)	<0.001
Clinical conditions on admission			
Spontaneous Intraparenchymal bleeding (Yes vs. No)	1.56 (1.08;2.03)	4.76 (2.96;7.65)	<0.001
Nephrourologic disease (Yes vs. No)	-0.57 (-0.93;-0.21)	0.57 (0.39;0.81)	<0.001
Bowel ischaemia (Yes vs. No)	0.98 (0.31;1.65)	/	×
Spontaneous Subarachnoid haemorrhage (Yes vs. No)	1.37 (0.79;1.95)	3.93 (2.2;7.04)	<0.001
Pulmonary embolism (Yes vs. No)	1.37 (0.69;2.06)	3.95 (1.99;7.85)	<0.001
Ruptured or fissured aneurysm (Yes vs. No)	1.05 (0.43;1.66)	2.85 (1.54;5.29)	0.001
Traumatic brain injury (Yes vs. No)	0.95 (0.53;1.38)	2.6 (1.7;3.97)	<0.001
Peritonites (Yes vs. No)	0.74 (0.21;1.26)	2.09 (1.24;3.53)	0.006
Infections (Yes vs. No)	0.39 (0.06;0.71)	1.47 (1.06;2.04)	0.022
Comorbidities			
Metastatic cancer (Yes vs. No)	0.79 (0.53;1.05)	2.2 (1.69;2.85)	<0.001
Restrictive lung disease (Yes vs. No)	0.94 (0.51;1.37)	2.56 (1.66;3.93)	<0.001
End-stage renal disease (Yes vs. No)	-0.93 (-1.48;-0.39)	0.39 (0.23;0.68)	<0.001
Diabetes with insuline treatment (Yes vs. No)	0.39 (0.12;0.65)	1.47 (1.13;1.92)	0.005
Malignant haematological disease (Yes vs. No)	0.73 (0.22;1.25)	2.08 (1.24;3.49)	0.007
Organ failures			
GCS (3 vs. 15)	2.86 (2.45;3.28)	/	×
GCS (4,5 vs. 15)	2.13 (1.59;2.67)	/	×
GCS (6,7,8 vs. 15)	0.24 (-0.42;0.9)	/	×
GCS (9,10,11,12,13,14 vs. 15)	0.66 (0.45;0.87)	/	×
GCS (Not evaluable in the first 24 hours in neurological patient* vs. 15)	1.08 (0.64;1.51)	/	×
GCS (Not evaluable in the first 24 hours in NON-neurological patient* vs. 15)	0.6 (0.28;0.93)	/	×
Cardiovascular failure (Without shock vs. None)	0.52 (0.06;0.97)	1.68 (1.07;2.64)	<0.001
Cardiovascular failure (Cardiogenic shock vs. None)	0.94 (0.55;1.34)	2.57 (1.73;3.81)	<0.001
Cardiovascular failure (Septic shock vs. None)	1 (0.34;1.67)	2.73 (1.4;5.32)	<0.001
Cardiovascular failure (Haemorrhagic/hypovolemic shock vs. None)	0.67 (0.16;1.18)	1.96 (1.18;3.27)	<0.001
Cardiovascular failure (Hypovolemic shock vs. None)	-0.07 (-0.81;0.66)	0.93 (0.45;1.94)	<0.001
Cardiovascular failure (Neurogenic shock vs. None)	2.07 (1.07;3.08)	7.96 (2.92;21.69)	<0.001
Cardiovascular failure (Other shock vs. None)	1.33 (0.56;2.1)	3.79 (1.75;8.19)	<0.001
Cardiovascular failure (Mixed shock vs. None)	1.52 (0.42;2.63)	4.59 (1.52;13.82)	<0.001
Respiratory failure (Yes vs. No)	0.95 (0.5;1.4)	2.59 (1.66;4.06)	<0.001
Renal failure (AKIN) (Mild vs. None)	0.4 (0.17;0.63)	1.49 (1.19;1.87)	<0.001
Renal failure (AKIN) (Moderate or Severe)	0.64 (0.31;0.98)	1.9 (1.36;2.66)	<0.001
Interactions among independent variables			
GCS (6,7,8) × Systolic Blood Pressure (mmHg) (<70)	1.76 (0.42;3.1)	/	<0.001
GCS (6,7,8) × Systolic Blood Pressure (mmHg) (70-99)	1.08 (0.07;2.08)	/	<0.001
GCS (Not evaluable in the first 24 hours in NON-neurological patient*) × Systolic Blood Pressure (mmHg) (<70)	1.14 (0.39;1.89)	/	<0.001
GCS (Not evaluable in the first 24 hours in NON-neurological patient*) × Systolic Blood Pressure (mmHg) (70-99)	0.57 (0.03;1.11)	/	<0.001
Systolic Blood Pressure (mmHg) (<70) × Urine Output (L/24h) (<0.49 vs. >=1)	1.13 (0.45;1.8)	/	0.001
Systolic Blood Pressure (mmHg) (70-99) × Urine Output (L/24h) (<0.49 vs. >=1)	0.69 (0.15;1.23)	/	0.001
Bowel ischaemia × Reason for admission (Intensive Treatment)	1.32 (-0.21;2.85)	/	0.071
Dependent variable explained			
Goodness-of-fit			
Likelihood ratio test: 8558.6	Area under the ROC curve: 0.954		
Degree of freedom: 60	GiViTi Calibration Test: 0		
p-value: <0.0001	p-value: 1		

^o 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 haemathoma, Traumatic Intraparenchimal bleeding, Traumatic subarachnoid haemorrhage, Skull fracture, NON-surgical CNS infection, Post-surgical CNS infection, Ventriculostomy-related CNS infection.

National report for general ICUs - Year 2012

Validity of the models - Calibration belts

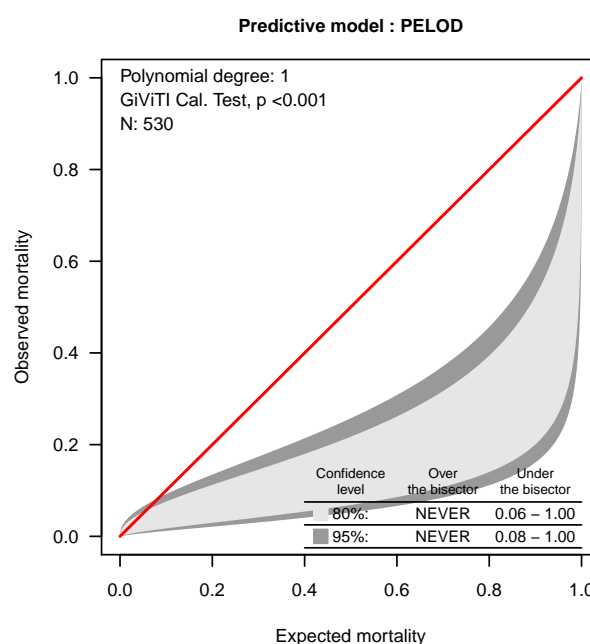
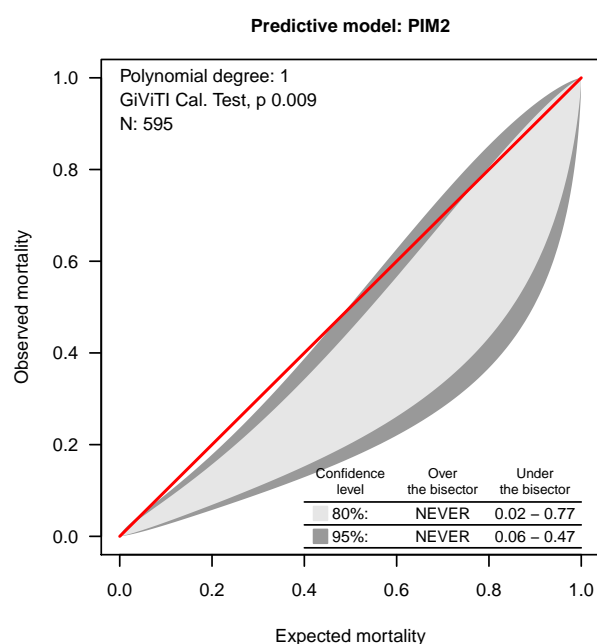
The calibration belt is designed to compare actually observed mortality with expected mortality according to a given prediction model. Expected mortality is plotted on the x axis while observed mortality is plotted on the y-axis. Two overlapping belts are presented in each graph: the first, in light 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 2012 data using PIM 2, PELOD, SAPSII, and GiViTI 2012 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.

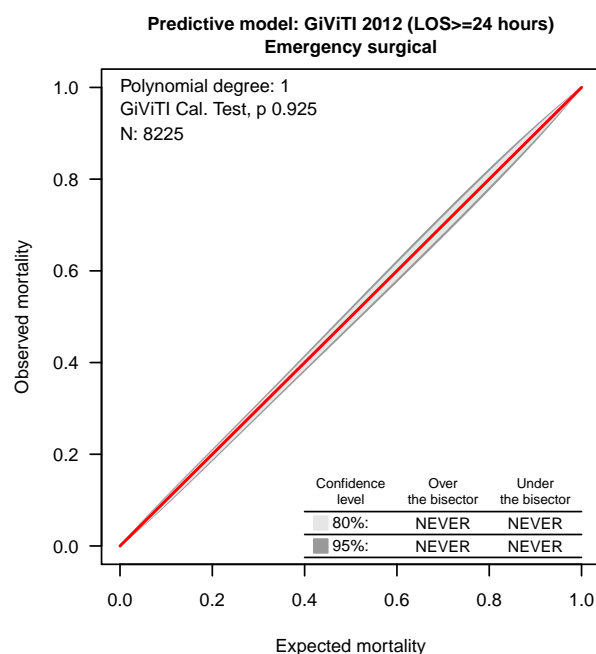
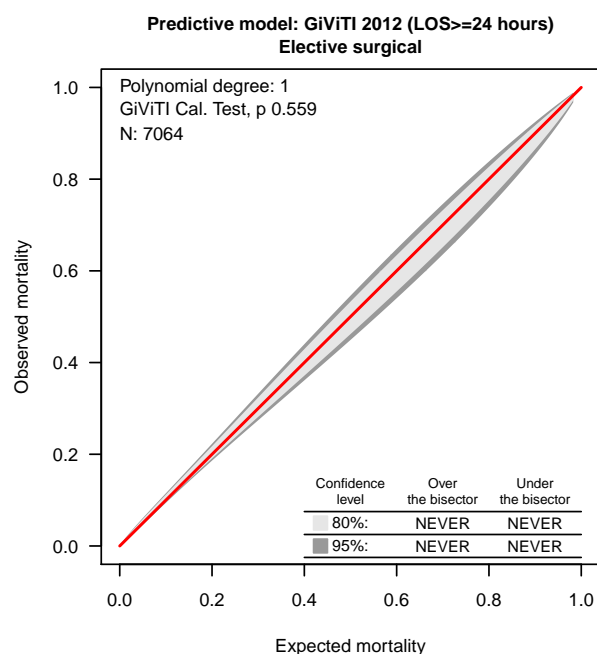
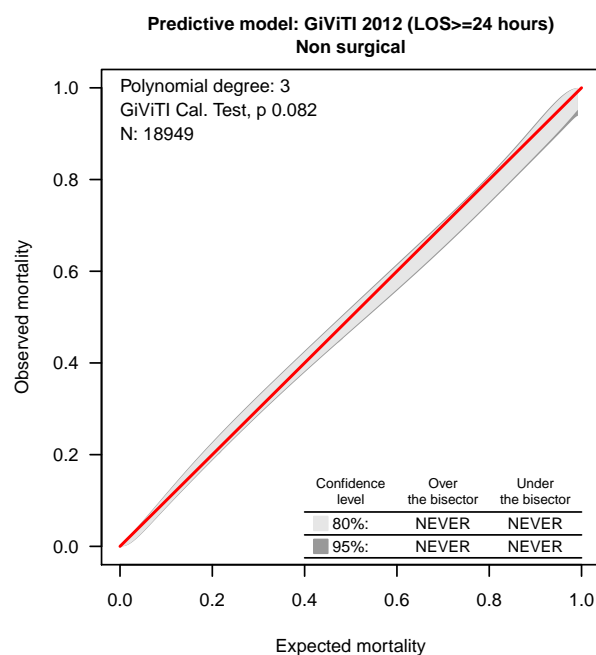
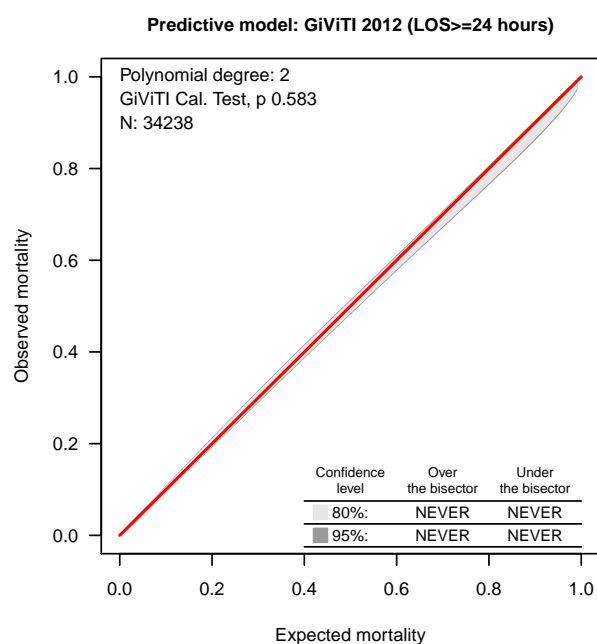
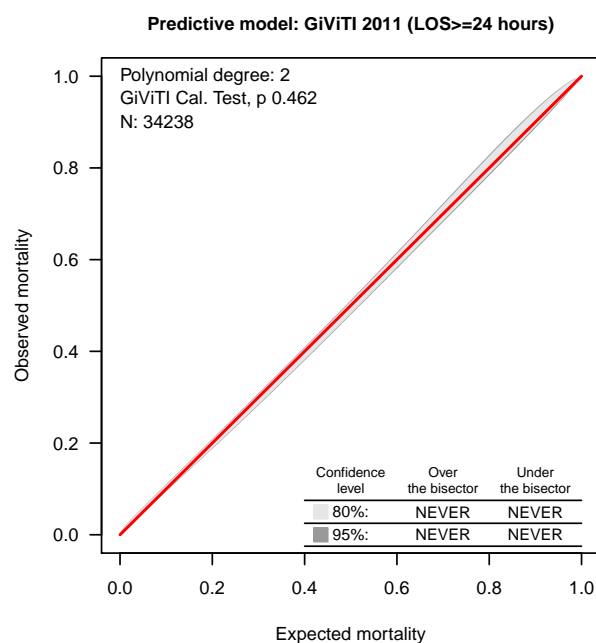
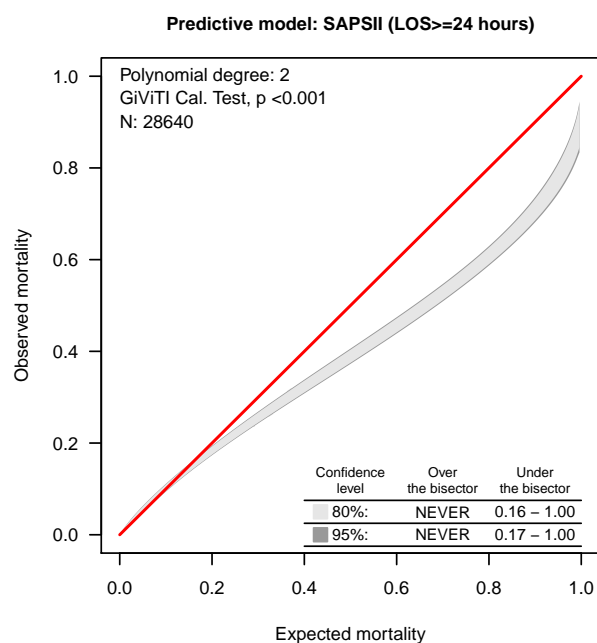
Moreover, the calibration belts built on 2012 data using the GiViTI 2011 models are reported. The aim of these belts is to investigate 2011 to 2012 difference in terms of performance of the GiViTI general ICUs.

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



National report for general ICUs - Year 2012

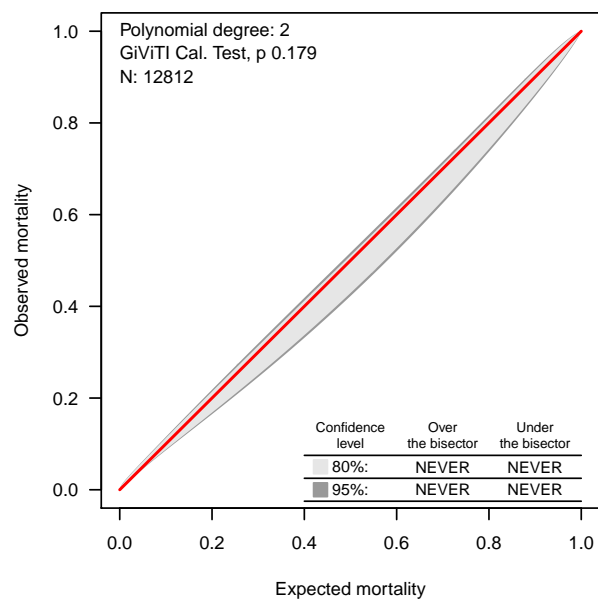
Validity of the models - Calibration belts



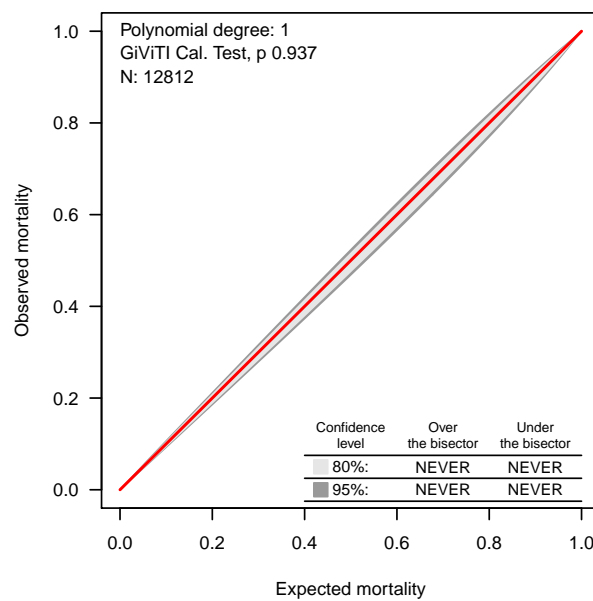
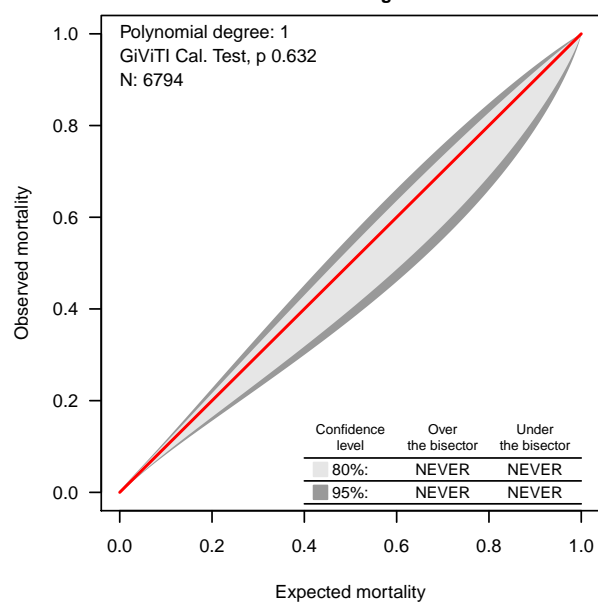
National report for general ICUs - Year 2012

Validity of the models - Calibration belts

Predictive model: GiViTI 2011 (LOS<24 hours)



Predictive model: GiViTI 2012 (LOS<24 hours)

Predictive model: GiViTI 2012 (LOS<24 hours)
Elective surgical

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