

GiViTi

Gruppo Italiano per la Valutazione degli Interventi In Terapia Intensiva

**Report
PROSAFE project**

Year 2015

National report (7 ICUs)

SLOVENIA

PROSAFE project - National report (7 ICUs) - ITALY

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The project

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

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

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

The Petals functioning in 2015 in Italy were:

- the Infections Surveillance Petal, designed to describe the epidemiology of infections in ICUs in Italy, focusing specifically on the identification and study of the main risk and prognostic factors for infections, with a view to comparing the various ICUs in terms of incidence of infections and their severity, prevalent bacterial flora and multiresistant germs;
- the Cardiosurgical Petal, whose aim is to describe in detail the characteristics of patients admitted to the ICU and subject to cardiosurgical procedures;
- the StART Petal, whose objective is to assess the appropriateness of ICU bed utilization by comparing the level of care required by admitted patients with the level of care that can be provided using available resources.
- the CReACTIVE Petal (Collaborative REsearch on ACute Traumatic brain Injury in intensiVe care medicine in Europe), that aims to collect relevant information to better characterize patients admitted to the ICU for a traumatic brain injury (european collaborative project FP7-HEALTH-2013-INNOVATION-1).
- the COMPACT 2 Petal, designed to randomize eligible patients and collect data for the clinical trial.

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 325 ICUs collected data during 2015, 289 Italian and 36 foreign ICUs, for a total of 107250 patients registered in PROSAFE. Only the ICUs that collected valid data (256) 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 95628 patients admitted to intensive care during 2015.

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 (Italian) national report on the high dependency units.
6. The personalized report for each individual centre, in Italian or English, which has different sections according to type of ICU and a similar structure to the national report, is designed to foster precise but user-friendly interpretation of the various values for predicting hospital mortality.

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

Description of the statistics

Project participation

The table on page 17 summarizes the participation in the project of the 256 ICUs which collected valid data in 2015 for a period of at least 4 months.

Description of the hospitals and ICUs

This section presents the organizational-structural features of the ICUs included in the report. The information (except for the information shown on page 21, which is the result of joint analysis of structural data and those collected during the year via the software) is taken from the 'Structural Data' form (available on the GiViTI portal at <https://givitiweb.marionegri.it/>). Absolute numbers, percentages and the number of missing data are reported for the categorical variables; the mean, standard deviation, median and Q1 (first quartile: the value below which lie 25% of the population) and Q3 (third quartile: the value below which lie 75% of the population) serve as indicators for the continuous variables.

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

Number of accredited beds Number of beds officially accredited.

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

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

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

Indicators of utilization Data on the number of available beds, total admissions in 2015 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.

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

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

Study flow-chart

The flow chart, or tree diagram, on page 23 presents the various subgroups of analysed patients. PROSAFE has a very accurate indicator of the completeness and validity of the data entered on each patient, i.e. status.

The program envisages 5 status levels:

- status 1 - the patient record presents errors or unsolved warnings;
- status 2 - the record is incomplete, there are still missing data;
- status 3 - the patient has been discharged from the ICU, the clinical data are all entered and have undergone

congruency checks; only hospital outcome is missing;

- status 4 - record complete and free of errors;
- status 5 - record free of errors but incomplete; the missing data are irretrievable.

Patients with status 1, 2 and 5 data are clearly incomplete.

It would be wrong to omit only patients with incomplete data (in status 1, 2 and 5) from the analyses since this could skew the estimates because of a so-called 'selection bias'. Patients with incomplete data may instead represent a special population subgroup. If only these patients were omitted from the analysed group, the statistics would no longer represent the whole group. It is plausible to assume, for example, that the majority of the patients for whom hospital outcome is missing were discharged alive from hospital, since it is much easier and quicker to retrieve information on hospital outcome when a patient has died. Calculating statistics on hospital mortality in the whole group of patients would result in mortality being incorrectly overestimated.

To address this problem it was decided to omit from each individual ICU's data any patients recruited during months when the validity percentages were below a high threshold (approximately 90%). Another check performed to reduce the risk of selection bias is to analyse the number of patients admitted per month. If the number of patients admitted in one or more months differs significantly from the mean number of monthly admissions (with a threshold arbitrarily set at a mean of ± 2 trimmed SD), or if the variability in the number of admissions is too high (variation coefficient above 40%), a warning message will appear asking for the entered data to be checked. To correctly participate in the PROSAFE project, all patients consecutively admitted to the ICU must be registered in the software on a continuous basis throughout the year; any marked swings in the number of admissions should suggest that there may be patient registration 'gaps'. It is, however, impossible to distinguish between registration 'gaps' and periods in which there is a real reduction/increase in admissions. Hence our objective is to draw attention to potential problems by asking each individual centre for feedback.

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

From January to December, Centre XX000 recruits a total of 619 patients. The first table and the bar graph show the number of monthly admissions to intensive care. In this case, a warning will appear at the bottom of the bar graph asking for confirmation of the entered data.

Centre XX000 - Year 2014

Data validity

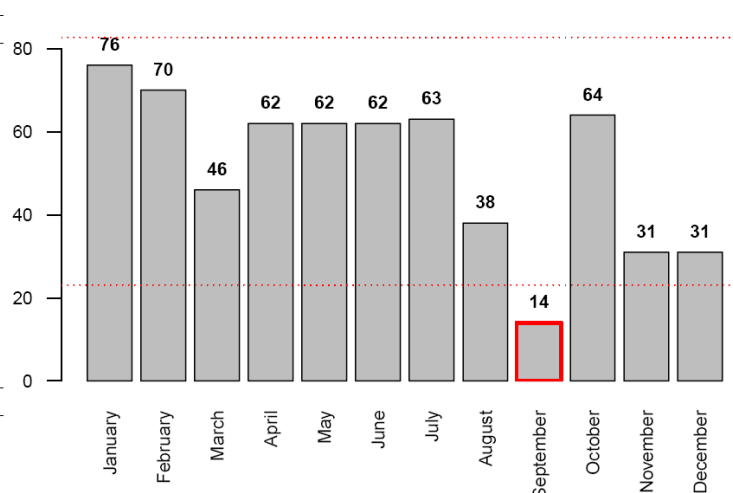
Patients admitted: 619

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

Admissions

Mean	51.6
Median	62.0
SD	19.1
VC	37.1

Admissions



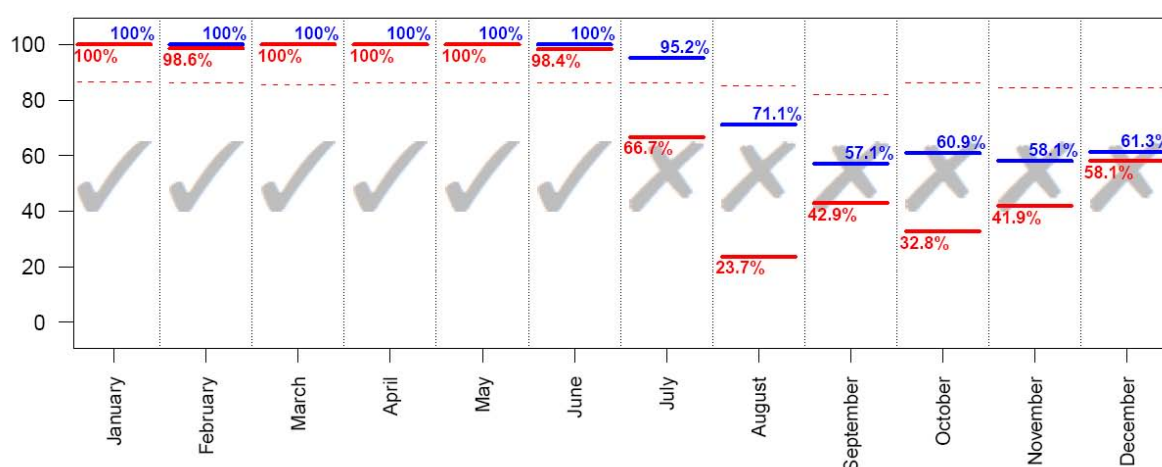
WARNING! The highlighted months have a number of patients quite different from the average. Please verify the correctness of the data and, particularly, that all consecutive patients have been registered in the Prosafe software.

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

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

The final graph shows level of data completeness in the various months. Percentages of patients with records in status 3 or 4 and in status 4 are shown in blue and red respectively.

According to our elimination criterion, the overall analysis will exclude those patients admitted in the months of August, September, October, November and December since they present a validity percentage below the defined threshold (dashed line). Accordingly, 441 patients have valid data for the analysis. Regarding analysis of hospital mortality, patients admitted in July will also be excluded (in that month the % of patients with record not in status 4 is still too high). Hence, the analysis on hospital outcome will involve 378 patients on 619 admitted.



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

Description of patients

These sections of the report present the results of the analyses conducted on the group of patients with valid data. Patients admitted in the months with This part presents patient characteristics at ICU admission and during ICU stay, severity scores, process indicators, and outcomes for the various patient subgroups.

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

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

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

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

The categories of underweight, overweight and obese are determined according to the following criteria: underweight if $\text{BMI} < 20$ (males) or $\text{BMI} < 19$ (females); normal weight if $20 \leq \text{BMI} \leq 25$ (males) or $19 \leq \text{BMI} \leq 24$ (females); overweight if $25 < \text{BMI} \leq 30$ (males) or $24 < \text{BMI} \leq 29$ (females); obese if $\text{BMI} > 30$ (males) or $\text{BMI} > 29$ (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/PIM 3 The PIM score for individual pediatric patients can become the probability of dying in ICU. This is performed by the following formula:

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

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

Evoluzione della gravità		Degenza				
N (R %)		Nessuna	Infezione con o senza SIRS	SEPSI GRAVE	SHOCK SETTICO	TOT
Ammissione	Nessuna	173 (93.0%)	9 (4.8%)	1 (0.5%)	3 (1.6%)	186
	Infezione con o senza SIRS	-	19 (95.0%)	0 (0.0%)	1 (5.0%)	20
	SEPSI GRAVE	-	-	15 (88.2%)	2 (11.8%)	17
	SHOCK SETTICO	-	-	-	36 (100.0%)	36
	TOT	173	28	16	42	259

VAP Forms of pneumonia associated with invasive ventilation are defined as VAP (pneumonia onset 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 a defined % of patients were in status 4, after excluding readmissions from another hospital ward.

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


Readmissions Only readmissions from other hospital wards are considered.

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

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

Patients	Model	Mortality
Adults non CS	GiViTI 2015 (GiViTI 2015 $\geq 24h$ and $< 24h$ union)	Last hospital mortality
Adults non CS with LOS $\geq 24h$	GiViTI 2015, $\geq 24h$	Last hospital mortality
	SAPS2	Hospital mortality
Adults non CS with LOS $< 24h$	GiViTI 2015, $< 24h$	Last hospital mortality
Pediatric	PIM 2	ICU mortality
	PIM 3	ICU mortality
	PELOD	ICU mortality

Statistics

Nation	TYPE							Total
	General	Cardiosurgical	Surgical	Neurosurgical	Pediatrics	HDC	Other	
 Cyprus	2 ICUs 1121 patients					1 ICUs 50 patients		3 ICUs 1171 patients
 Greece	3 ICUs 595 patients				1 ICUs 107 patients			4 ICUs 702 patients
 Hungary	4 ICUs 2017 patients			1 ICUs 358 patients				5 ICUs 2375 patients
 Israel					2 ICUs 823 patients			2 ICUs 823 patients
 Italy	167 ICUs 55973 patients	18 ICUs 9682 patients	15 ICUs 8538 patients	10 ICUs 3732 patients	5 ICUs 2078 patients	10 ICUs 5014 patients	7 ICUs 2748 patients	232 ICUs 87765 patients
 Poland	3 ICUs 321 patients							3 ICUs 321 patients
 Slovenia	1 ICUs 316 patients		4 ICUs 1529 patients				2 ICUs 626 patients	7 ICUs 2471 patients
Total	180 ICUs 60343 patients	18 ICUs 9682 patients	19 ICUs 10067 patients	11 ICUs 4090 patients	8 ICUs 3008 patients	11 ICUs 5064 patients	9 ICUs 3374 patients	256 ICUs 95628 patients

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

Description of hospitals (N=7) - Year 2015

Number of beds in hospital	N	%
< 300 beds	2	50.0
300 - 800 beds	1	25.0
> 800 beds	1	25.0
Missing	3	

Type of ICUs present in hospital	N	%
General	1	14.3
Medical	4	57.1
Surgical	4	57.1
Neurological/neurosurgical	1	14.3
Cardiosurgical	1	14.3
Burns	1	14.3
Post-transplantations	0	0.0
Other	1	14.3

Type of subICUs present in hospital	N	%
General	0	0.0
Surgical	3	42.9
Cardiological	2	28.6
Respiratory	0	0.0
Neurological (stroke unit)	1	14.3
Other	2	28.6

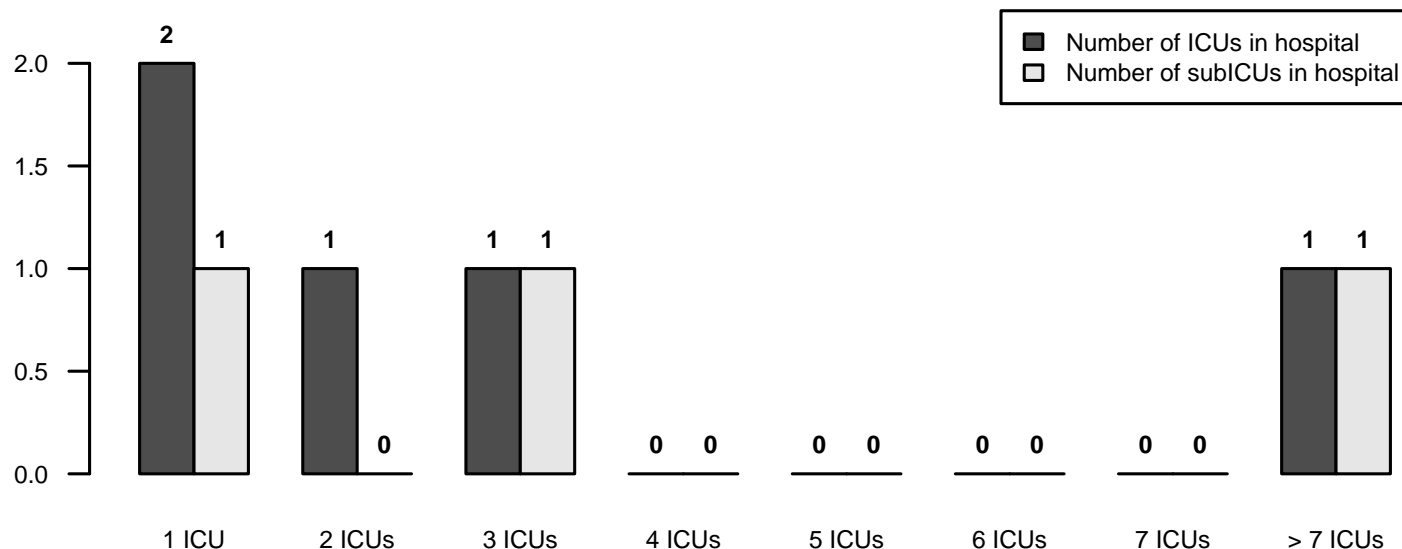
Non surgical specialties	N	%
Cardiology	4	80.0
Pulmonology	3	60.0
Nephrology	4	80.0
Infection disease	2	40.0
Pediatric	4	80.0
Neonatology	1	20.0
Neurology	3	60.0
Haematology	2	40.0
Emergency room	4	80.0
Traumatology	4	80.0
Emergency medical	4	80.0

Surgical specialties (independent ward)	N	%
Neurosurgery	1	14.3
Cardiosurgery	1	14.3
Major vascular surgery	3	42.9
Thoracic surgery	1	14.3
Pediatric surgery	2	28.6
Transplantation activities	1	14.3

Surgical specialties (procedures only)	N	%
Neurosurgery	3	42.9
Cardiosurgery	0	0.0
Major vascular surgery	0	0.0
Thoracic surgery	1	14.3
Pediatric surgery	3	42.9
Transplantation activities	2	28.6

Services/activities available in H (h24)	N	%
Neuroradiology	1	14.3
Interventional vascular radiology	1	14.3
CT scan	4	57.1
MRI	3	42.9
Interventional hemodynamic	1	14.3
Endoscopy	4	57.1
Bronchoscopy	5	71.4
Hyperbaric chamber	0	0.0
Microbiology	1	14.3

Services/activities available in H (rep.)	N	%
Neuroradiology	1	14.3
Interventional vascular radiology	2	28.6
CT scan	0	0.0
MRI	2	28.6
Interventional hemodynamic	2	28.6
Endoscopy	1	14.3
Bronchoscopy	0	0.0
Hyperbaric chamber	2	28.6
Microbiology	3	42.9



Description of ICUs (N=7) - Year 2015

Number of accredited beds		
Mean (SD)	10.2 (6.8)	
Median (Q1–Q3)	8 (5.8–12.5)	
Missing	3	

Number of available beds		
Mean (SD)	10.2 (6.8)	
Median (Q1–Q3)	8 (5.8–12.5)	
Missing	3	

University affiliation	N	%
Yes	3	60.0
No	2	40.0
Missing	2	

Square meter per bed		
Mean (SD)	9.5 (5.3)	
Median (Q1–Q3)	11 (8–12.5)	
Missing	3	

Clinical psychologist	N	%
No	3	60.0
For relatives	1	20.0
For patients	2	40.0
For personnel	1	20.0

ICU Structure	N	%
NON OPEN-SPACE	1	25.0
OPEN-SPACE (or alike)	3	75.0
Missing	3	

Physicians	N	%
Dedicated to ICU only	0	0.0
Dedicated to ICU on a rotation basis	1	25.0
Dedicated to ICU only and on a rotation basis	3	75.0
Missing	3	

Available beds per physician (average)		
Mean (SD)	4.7 (1.6)	
Median (Q1–Q3)	4.5 (3.8–5.4)	
Missing	3	

Nurses	N	%
Dedicated to ICU only	1	25.0
Dedicated to ICU on a rotation basis	0	0.0
Dedicated to ICU only and on a rotation basis	3	75.0
Missing	3	

Available beds per nurse (average)		
Mean (SD)	2.2 (0.3)	
Median (Q1–Q3)	2.2 (2–2.4)	
Missing	3	

Number of hours conceded for relatives' visits	N	%
1	4	100.0
2	0	0.0
3-4	0	0.0
5-12	0	0.0
13-20	0	0.0
>20	0	0.0
Missing	3	

Maximum number of visitors per patient	N	%
One	1	20.0
Two	3	60.0
Three or more	1	20.0
Missing	2	

Biomedical devices per available bed	Median	Q1-Q3	<5 years old (mean %)
Basic ICU monitors (ECG, NIPB, SaO2)	0.1	0.0–0.2	16.6
Advanced ICU monitors	1.1	1.0–1.3	25.0
Invasive monitoring of cardiac output (Swan-Ganz)	0.0	0.0–0.1	0.0
Invasive monitoring of cardiac output (PiCCO)	0.2	0.2–0.2	12.5
Invasive monitoring of cardiac output (Vigileo)	0.0	0.0–0.0	0.0
Non-invasive monitoring of cardiac output (impedentiometry)	0.0	0.0–0.0	
Defibrillators	0.1	0.1–0.2	37.5
Both invasive and non invasive ventilators	1.1	0.8–1.2	18.4
Invasive ventilators	0.9	0.8–1.1	19.6
Non invasive ventilators	0.0	0.0–0.2	35.0
Syringe pumps	4.5	3.5–5.3	25.2
Peristaltic pumps	1.1	0.8–1.2	0.0

Biomedical equipment in ICU	N	%
Transoesophageal echo	2	40.0
Basic ultrasounds	4	80.0
Advanced ultrasounds	3	60.0
Blood-gas analyzer	4	80.0
Haemodialysis - Haemofiltration	3	60.0
Transport ventilator	5	100.0
Fiberscope	5	100.0
Extracorporeal circulation system	0	0.0

Routine microbiological surveillance cultures	N	%
Yes	4	80.0
No	1	20.0
Missing	2	

Description of ICUs (N=7) - Year 2015

Patients admitted

Mean (SD)	354.7 (181.1)
Median	319.8
Q1–Q3	244.1–507.3
Missing	0

Occupancy rate (%)

Mean (SD)	69.4 (18.3)
Median	71
Q1–Q3	56.8–83.6
Missing	3

Rotation index (patients/bed)

Mean (SD)	33.2 (14.3)
Median	29.9
Q1–Q3	26–37.1
Missing	3

Turnover (hours)

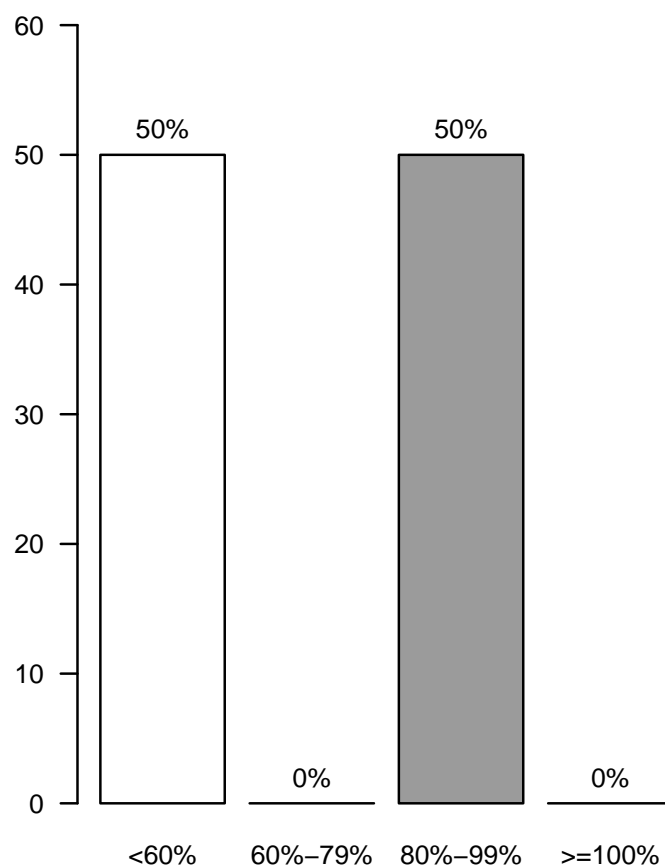
Mean (SD)	104.5 (92.2)
Median	83
Q1–Q3	45.3–142.2
Missing	3

Occupied beds per physician (average)

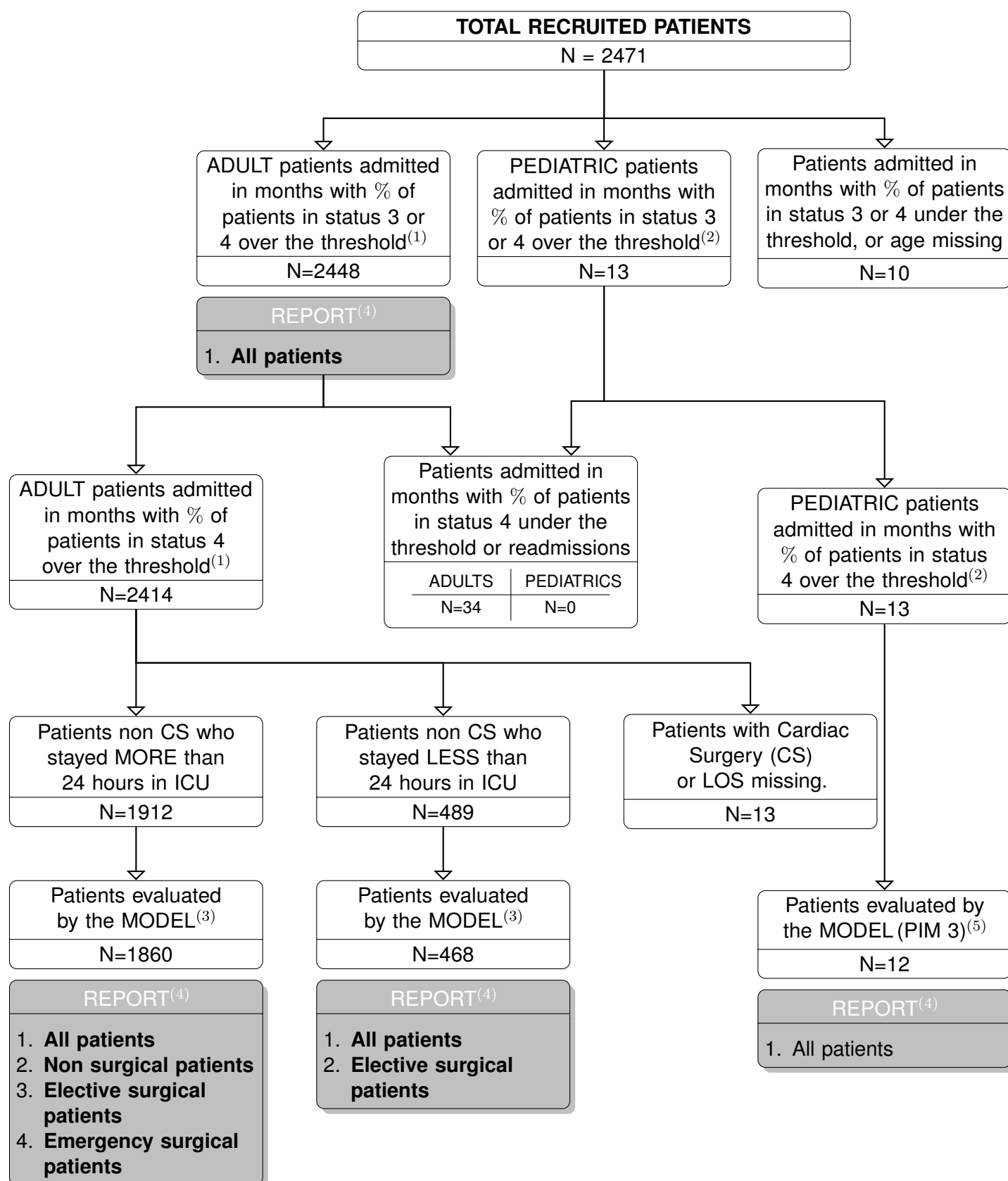
Mean (SD)	3.1 (0.7)
Median	3
Q1–Q3	2.6–3.5
Missing	3

Occupied beds per nurse (average)

Mean (SD)	1.6 (0.4)
Median	1.6
Q1–Q3	1.4–1.8
Missing	3

Occupancy rate (%)

Overall population (7 ICUs) - Year 2015
Study flow-chart



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

(2) Patients under 17 years of age are considered PEDIATRIC patients.

(3) Patients evaluated by the GiViTI model of hospital mortality are those with all the variables of the model completed, including the hospital outcome. Patients admitted for diagnosis of death/organ donation and readmissions are excluded.

(4) Statistics produced for groups with more than 20 patients (bold).

(5) Patients transferred to other ICU are excluded.

National report - Year 2015

Characteristics on admission - Adult patients

Patients (N): 2448

Sex	N	%
Male	1527	62.4
Female	921	37.6
Missing	0	

Age (years)	N	%
17-45	272	11.1
46-65	789	32.2
66-75	602	24.6
>75	785	32.1
Missing	0	
Mean	65.9	
SD	16.2	
Median	68	
Q1–Q3	58–78	
Min–Max	17–98	

Body mass Index (BMI)	N	%
Underweight	92	3.8
Normal	996	41.4
Overweight	882	36.7
Obese	435	18.1
Missing	43	

Pregnancy status	N	%
Females (N=921)		
Not fertile	506	55.1
Not pregnant/Unknown	408	44.4
Currently pregnant	1	0.1
Post partum	4	0.4
Missing	2	

Comorbidities	N	%
No	378	15.5
Yes	2066	84.5
Missing	4	

Comorbidities (top 10)	N	%
Hypertension	1359	55.6
Arrhythmia	474	19.4
Any tumour without metastasis	413	16.9
NYHA class II-III	401	16.4
Diabetes Type II without insulin tr.	304	12.4
Moderate or severe renal disease	296	12.1
Metastatic cancer	234	9.6
Drug-induced coagulopathy	201	8.2
Cerebrovascular disease	193	7.9
Peripheral vascular disease	189	7.7
Missing	4	

Stay before ICU (days)	Mean	SD	Median	Q1–Q3	Missing
	4.4	12.0	1	0–3	1

Source of admission	N	%
Same hospital	2329	95.2
Other hospital	115	4.7
Long-term chronic care hospital	3	0.1
Directly from the community	0	0.0
Missing	1	

Ward of admission	N	%
Hospital (N=2444)		
Medical ward	321	13.1
Surgical ward	1256	51.4
Emergency room	667	27.3
Other ICU	106	4.3
High dependency care unit	94	3.8
Missing	0	

Reason for transfer from	N	%
Other ICU (N=106)		
Specialist expertise	25	23.6
Step-up care	30	28.3
Logistical/organizational reasons	50	47.2
Step-down care	1	0.9
Missing	0	

Ward of admission	N	%
Same hospital (N=2329)		
Medical ward	309	13.3
Surgical ward	1242	53.3
Emergency room	654	28.1
Other ICU	42	1.8
High dependency care unit	82	3.5
Missing	0	

Ward of admission	N	%
Other hospital (N=115)		
Medical ward	12	10.4
Surgical ward	14	12.2
Emergency room	13	11.3
Other ICU	64	55.7
High dependency care unit	12	10.4
Missing	0	

Scheduled admission	N	%
No	1838	75.2
Yes	607	24.8
Missing	3	

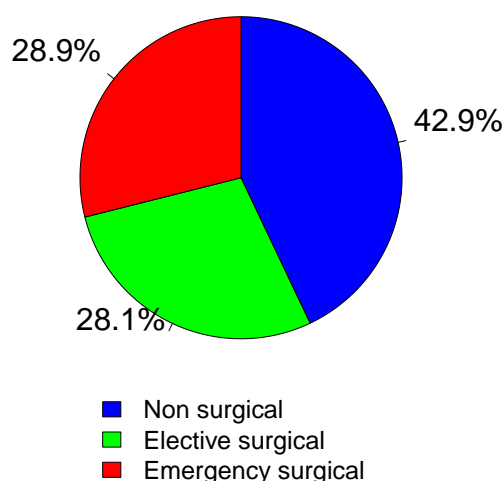
National report - Year 2015

Characteristics on admission - Adult patients

Trauma	N	%
No	2016	82.5
Yes	429	17.5
Multiple trauma	124	5.1
Missing	3	

Surgical status	N	%
Non surgical	1050	42.9
Elective surgical	688	28.1
Emergency surgical	707	28.9
Missing	3	

Surgical status



Source of admission	N	%
Surgical pts. (N=1395)		
Operating theatre of surgical ward	1000	71.7
Operating theatre of emergency room	118	8.5
Surgical ward	87	6.2
Other	190	13.6
Missing	0	

Surgical interventions (top 10)	N	%
Elective surgical (N=688)		
Gastrointestinal surgery	331	48.1
Nephro/Urological surgery	99	14.4
Peripheral vascular surgery	86	12.5
Other surgery	40	5.8
Orthopaedic surgery	33	4.8
Hepatic surgery	31	4.5
Gynaecological surgery	22	3.2
Neurosurgery	13	1.9
Thoracic surgery	12	1.7
Biliary tract surgery	11	1.6
Missing	10	

Timing	N	%
Elective surgical (N=688)		
From -7 to -3 days	23	3.3
From -2 to -1 days	31	4.5
On ICU admission day	663	96.4
The day after ICU admission	8	1.2
Missing	1	

Surgical interventions (top 10)	N	%
Emergency surgical (N=707)		
Gastrointestinal surgery	316	44.7
Neurosurgery	108	15.3
Orthopaedic surgery	74	10.5
Other surgery	55	7.8
Nephro/Urological surgery	34	4.8
Biliary tract surgery	26	3.7
ENT surgery	16	2.3
Thoracic surgery	15	2.1
Abdominal vascular surgery	14	2.0
Splenectomy	14	2.0
Missing	35	

Timing	N	%
Emergency surgical (N=707)		
From -7 to -3 days	25	3.5
From -2 to -1 days	49	6.9
On ICU admission day	641	90.7
The day after ICU admission	32	4.5
Missing	0	

Non surgical interventions	N	%
None	2318	94.8
Elective	14	0.6
Emergency	113	4.6
Missing	3	

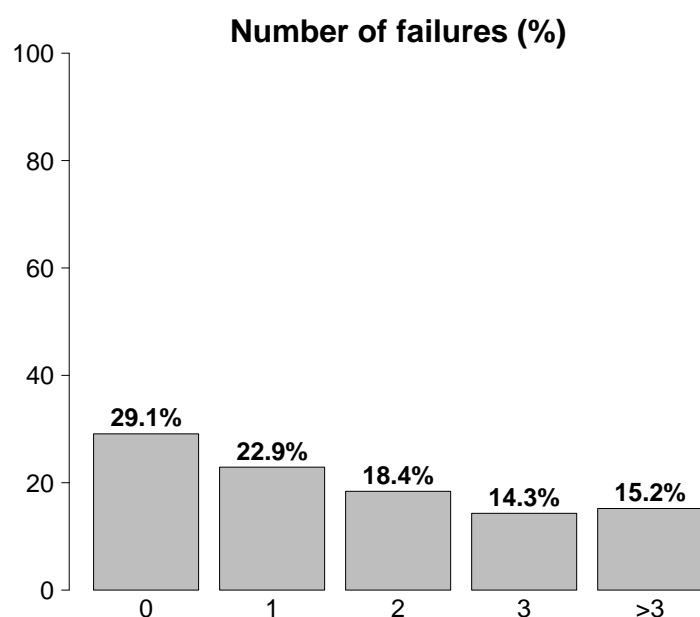
Non surgical interventions	N	%
Elective (N=14)		
Interventional endoscopy	5	35.7
Interventional cardiology	2	14.3
Interventional radiology	1	7.1
Interventional neuroradiology	0	0.0
Missing	6	

Non surgical interventions	N	%
Emergency (N=113)		
Interventional endoscopy	52	46.0
Interventional cardiology	33	29.2
Interventional radiology	20	17.7
Interventional neuroradiology	4	3.5
Missing	4	

National report - Year 2015

Characteristics on admission - Adult patients

Reason for admission	N	%
Monitoring/Weaning	960	39.3
Post surgical weaning	40	1.6
Surgical monitoring	539	22.2
Post interventional weaning	1	0.0
Interventional monitoring	42	1.7
Non surgical monitoring	326	13.4
Missing	12	
Admission for procedures/treatments	0	0.0
Intensive Treatment	1477	60.4
Only ventilatory support	465	19.0
Only cardiovascular support	254	10.4
Ventilatory and cardiovascular support	758	31.0
Missing	0	
Palliative Sedation	7	0.3
Diagnosis of death/Organ donation	0	0.0
Missing	4	



Failures on admission	N	%
No	712	29.1
Yes	1736	70.9
A: Respiratory failure	1223	50.0
B: Cardiovascular failure	1012	41.3
C: Neurological failure	214	8.7
D: Hepatic failure	41	1.7
E: Renal failure	848	34.6
F: Acute skin failure	6	0.2
G: Metabolic failure	691	28.2
H: Coagulation failure	92	3.8
Missing	0	

Failures on admission (top 10)	N	%
A	300	12.3
ABEG	206	8.4
AB	199	8.1
E	129	5.3
ABE	82	3.3
ABG	78	3.2
B	76	3.1
BEG	76	3.1
BE	60	2.5
AE	49	2.0
Missing	0	

Respiratory failure	N	%
None	1225	50.0
Only hypoxic failure	645	26.3
Only hypercapnic failure	64	2.6
Hypoxic-hypercapnic failure	145	5.9
Intubation for airway maint.	369	15.1
Missing	0	

Cardiovascular failure	N	%
None	1436	58.7
Without shock	321	13.1
Cardiogenic shock	100	4.1
Septic shock	337	13.8
Haemorrhagic/hypovolemic shock	110	4.5
Hypovolemic shock	22	0.9
Anaphylactic shock	5	0.2
Neurogenic shock	41	1.7
Other shock	36	1.5
Mixed shock	40	1.6
Missing	0	

Neurologic failure	N	%
None	1843	89.6
Cerebral coma	99	4.8
Metabolic coma	65	3.2
Postanoxic coma	40	1.9
Toxic coma	10	0.5
Missing or not evaluable	391	

Renal failure (AKIN)	N	%
None	1587	65.2
Mild	430	17.7
Moderate	202	8.3
Severe	216	8.9
Missing	13	

Metabolic failure	N	%
None	1744	71.6
pH \leq 7.3, PaCO ₂ $<$ 45 mmHg	277	11.4
Base deficit \geq 5 mmol/L, lactate $>$ 1.5x	414	17.0
Missing	13	

National report - Year 2015

Characteristics on admission - Adult patients

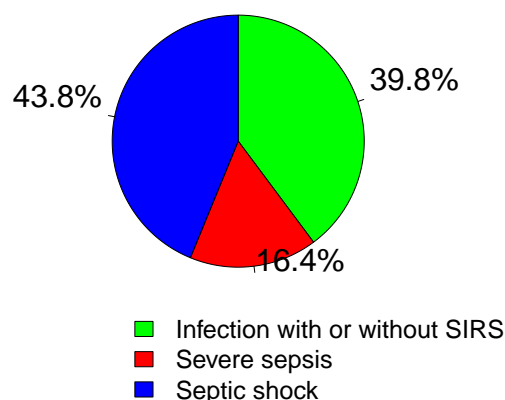
Clinical conditions on admission	N	%
Respiratory	352	14.4
Pleural effusion	113	4.6
Aspiration pneumonia	75	3.1
Atelectasis	44	1.8
Pulmonary embolism	35	1.4
Acute exacerbation of COPD	32	1.3
Cardiovascular	583	23.9
Peripheral vascular disease	111	4.5
Left heart failure without pulm. edema	102	4.2
Cardiac arrest	89	3.6
Acute severe arrhythmia: tachycardias	81	3.3
Acute myocardial infarction	68	2.8
Neurological	170	7.0
Cerebral artery stroke	48	2.0
Seizures	35	1.4
Brain tumour	24	1.0
Metabolic/postanoxic encephalopathy	14	0.6
Spontaneous Intraparenchymal bleeding	14	0.6
Gastrointestinal and hepatic	733	30.0
Digestive tract malignancy	328	13.4
Paralytic Ileus	92	3.8
Intestinal occlusion	90	3.7
Gastrointestinal perforation	62	2.5
Gastrointestinal bleeding: upper tract	45	1.8
Trauma (anatomical districts)	429	17.6
Head	239	9.8
Pelvis/bone/joint & muscle	125	5.1
Chest	119	4.9
Spine	77	3.2
Abdomen	53	2.2
Major vessels injury	10	0.4
Miscellaneous	7	0.3
Other	787	32.2
Other disease	324	13.3
Metabolic disorder	242	9.9
Nephro-urologic disease	211	8.6
Coagulation disorder	92	3.8
Acute intoxication	32	1.3
Post transplantation	36	1.5
Liver transplantation	24	1.0
Renal transplantation	11	0.5
Infections	888	36.3
Pneumonia	347	14.2
NON-surgical urinary tract infection	94	3.8
Post-surgical peritonitis	90	3.7
NON-surgical secondary peritonitis	79	3.2
Clinical sepsis	67	2.7
Cholecystitis/choolangitis	51	2.1
L.R.T.I. other than pneumonia	44	1.8
NON-surgical skin/soft tissue infection	42	1.7
Post-surgical skin/soft tissue infection	28	1.1
NON-surgical CNS infection	20	0.8
Missing	5	

Trauma (anatomical districts)	N	%
Head	239	9.8
Traumatic Subdural haematoma	102	4.2
Traumatic subarachnoid haemorrhage	92	3.8
Skull fracture	76	3.1
Maxillofacial fracture	71	2.9
Cerebral contusion/laceration	60	2.5
Spine	77	3.2
Vertebral fracture, without deficit	53	2.2
Tetraplegia	7	0.3
Cervical injury, incomplete deficit	6	0.2
Chest	119	4.9
Other injuries of the chest	62	2.5
Traum. haemothorax/pneumothorax	61	2.5
Severe lung contusion/laceration	38	1.6
Abdomen	53	2.2
Minor injuries of the abdomen	19	0.8
Spleen: Moderate-Severe laceration	15	0.6
Liver: Moderate-Severe laceration	9	0.4
Pelvis/bone/joint & muscle	125	5.1
Long bone fracture	101	4.1
Multiple fracture of the pelvis	26	1.1
Very severe or open fracture of the pelvis	10	0.4
Major vessels injury	10	0.4
Aorta: rupture/dissection	5	0.2
Major thoracic vessels: transection	2	0.1
Neck vessels: dissection/transection	1	0.0
Miscellaneous	7	0.3
Burns (>30% BSA)	6	0.2
Inhalation injury	2	0.1
Missing	5	

Infection severity on admission	N	%
None	1555	64.0
Infection with or without SIRS	348	14.3
Severe sepsis	143	5.9
Septic shock	383	15.8
Missing	19	

Infection severity on admission

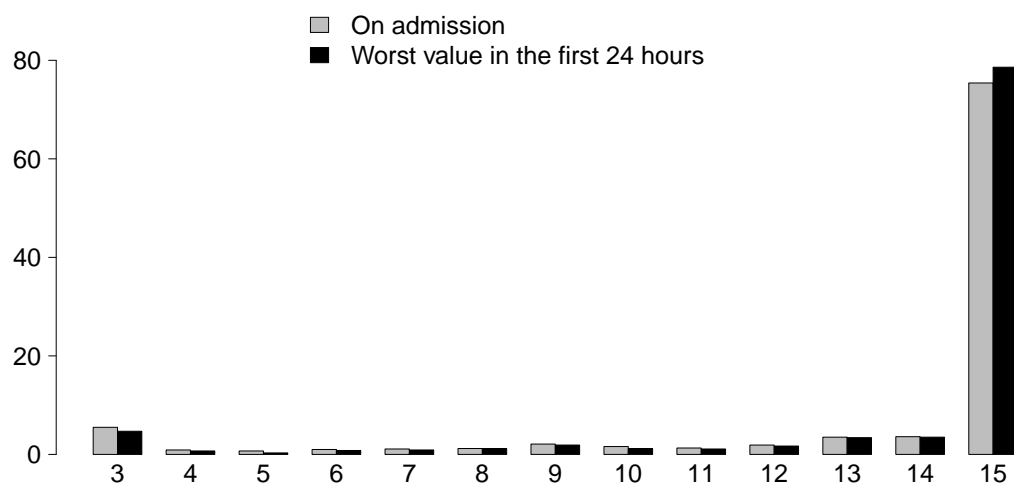
Patients infected (N=874)



National report - Year 2015

Severity scores - Adult patients

Glasgow Coma Scale (%)



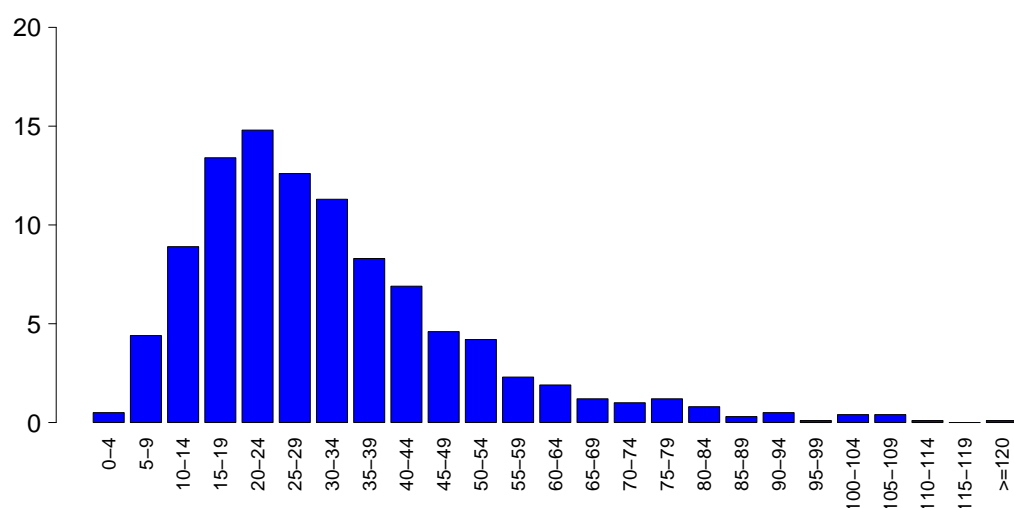
GCS (admission)

Median	15
Q1–Q3	15–15
Not evaluable	384
Missing	7

GCS (first 24 hours)

Median	15
Q1–Q3	15–15
Not evaluable	574
Missing	12

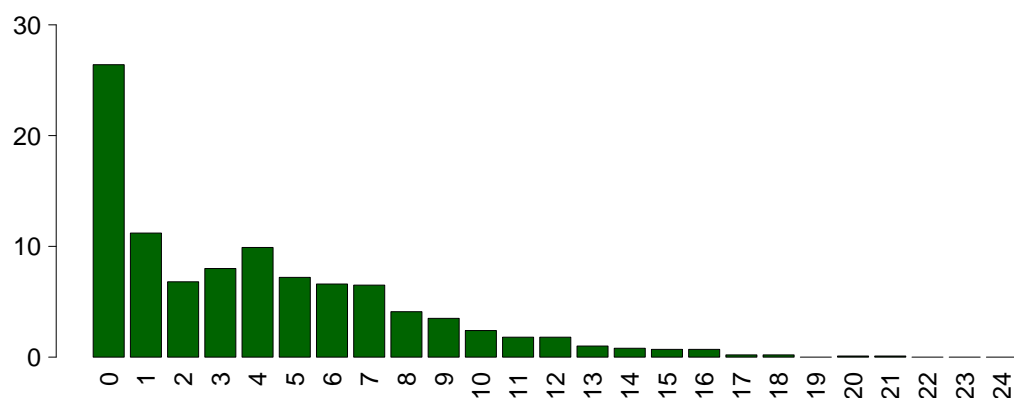
SAPS II (%)



SAPSII

Mean	31.6
SD	18.3
Median	28
Q1–Q3	18–40
Not evaluable	574
Missing	13

SOFA (%)



SOFA

Mean	4.0
SD	4.0
Median	3
Q1–Q3	0–6
Not evaluable	574
Missing	13

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Characteristics during the stay - Adult patients

Complications during the stay	N	%
No	1301	53.3
Yes	1138	46.7
Missing	9	

Failures during the stay	N	%
No	2075	84.8
Yes	373	15.2
A: Respiratory failure	144	5.9
B: Cardiovascular failure	160	6.5
C: Neurological failure	35	1.4
D: Hepatic failure	48	2.0
E: Renal failure (AKIN)	170	6.9
F: Acute skin failure	0	0.0
G: Metabolic failure	97	4.0
H: Coagulation failure	25	1.0
Missing	0	

Failures during the stay (top 10)	N	%
E	64	2.6
A	46	1.9
B	33	1.3
G	27	1.1
BE	22	0.9
AB	20	0.8
D	19	0.8
ABE	15	0.6
BG	11	0.4
ABEG	9	0.4
Missing	0	

Respiratory failure occurred	N	%
None	2295	94.1
Intubation for airway maint.	31	1.3
Hypoxic failure	100	4.1
Hypercapnic failure	39	1.6
Missing	9	

Cardiovascular failure occurred	N	%
None	2279	93.4
Cardiogenic shock	33	1.4
Hypovolemic shock	3	0.1
Haemorrhagic/hypovolemic shock	21	0.9
Septic shock	100	4.1
Anaphylactic shock	4	0.2
Neurogenic shock	1	0.0
Other shock	12	0.5
Missing	9	

Neurological failure occurred	N	%
None	2404	98.6
Cerebral coma	18	0.7
Metabolic coma	15	0.6
Postanoxic coma	3	0.1
Missing	9	

Renal failure occurred (AKIN)	N	%
None	2269	93.0
Mild	43	1.8
Moderate	26	1.1
Severe	101	4.1
Missing	9	

Complications during the stay	N	%
Respiratory	267	10.9
Pleural effusion	118	4.8
Aspiration pneumonia	68	2.8
Atelectasis	53	2.2
Pneumothorax/Pneumomediastinum	31	1.3
Upper resp. tract disease	18	0.7
Cardiovascular	266	10.9
Acute severe arrhythmia: tachycardias	129	5.3
Cardiac arrest	52	2.1
Pulmonary edema	31	1.3
Left heart failure w/o pulm. edema	26	1.1
Acute severe arrhythmia: bradycardias	24	1.0
Neurological	358	14.7
Drowsiness/agitation/delirium	231	9.5
Intracranial hypertension	69	2.8
Brain edema	31	1.3
CrIMyNe	28	1.1
Seizures	25	1.0
Gastrointestinal and hepatic	263	10.8
Paralytic Ileus	122	5.0
Liver Dysfunction Syndrome	37	1.5
Anastomotic dehiscence	33	1.4
Gastrointestinal bleeding: lower tract	28	1.1
Bowel ischaemia	25	1.0
Other	238	9.8
Other disease	134	5.5
Metabolic disorder	97	4.0
Nephro-urologic disease	49	2.0
Other skin and/or soft tissue pathology	8	0.3
Iatrogenic major vessels injury	5	0.2
Graft vascular thrombosis	2	0.1
Delayed spleen rupture	1	0.0
Infections	494	20.3
Pneumonia	231	9.5
Post-surgical peritonitis	64	2.6
Post-surgical skin/soft tissue infection	47	1.9
NON-surgical urinary tract infection	42	1.7
Clinical sepsis	33	1.4
L.R.T.I. other than pneumonia	27	1.1
Other fungal infections	20	0.8
F.U.O. fever of unknown origin	18	0.7
Primary bacteraemia of unknown origin	15	0.6
NON-surgical secondary peritonitis	14	0.6
Missing	9	

National report - Year 2015

Characteristics during the stay - Adult patients

Infections	N	%
None	1223	50.1
Only on admission	722	29.6
On admission and during ICU stay	165	6.8
Only during ICU stay	329	13.5
Missing	9	

Maximum severity of infection	N	%
None	1223	50.7
Infection with or without SIRS	553	22.9
Severe sepsis	189	7.8
Septic shock	447	18.5
Missing	36	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock
Admission	None	1223 (79.7%)	223 (14.5%)	49 (3.2%)	40 (2.6%)	1535
	Infection with or without SIRS	-	327 (94.0%)	12 (3.4%)	9 (2.6%)	348
	Severe sepsis	-	-	128 (89.5%)	15 (10.5%)	143
	Septic shock	-	-	-	383 (100.0%)	383
	TOT	1223	550	189	447	2409

Ventil. Associat. Pneumonia (VAP)	N	%
No	2264	92.6
Yes	182	7.4
Missing	2	

Incidence of VAP

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

Estimate	27.9
CI (95%)	24.0–32.2

Incidence of VAP

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

Estimate	22.3%
CI (95%)	19.2–25.8

Catheter Bacteraemia (CR-BSI)	N	%
No	2428	99.5
Yes	11	0.5
Missing	9	

Incidence of CR-BSI

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

Estimate	0.8
CI (95%)	0.4–1.4

Incidence of CR-BSI

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

Estimate	0.9%
CI (95%)	0.5–1.7

National report - Year 2015
Process indicators - Adult patients

Procedures and/or treatments (Missing=7)	Use		On admission		On discharge		Length (days)		Days from admission	
	N	%	N	%	N	%	Median	Q1-Q3	Median	Q1-Q3
Procedures (antibiotics excluded)	2232	91.4								
Invasive ventilation	1063	43.5	655	26.8	116	4.8	4	1-10	0	0-0
Non invasive ventilation	588	24.1	116	4.8	104	4.3	2	1-4	0	0-1
Tracheostomy	145	5.9	14	0.6	102	4.2	6	1-15	0	7-22
iNO (inhaled nitric oxide)	20	0.8	1	0	2	0.1	4	2-6	0	0-2
Central Venous Catheter	1605	65.8	867	35.5	1169	47.9	5	2-10	0	0-0
PICC	175	7.2	75	3.1	130	5.3	3	1-5	0	0-0
Arterial Catheter	1756	71.9	994	40.7	528	21.6	4	2-9	0	0-0
Vasoactive drugs	1303	53.4	537	22	116	4.8	3	1-5	0	0-0
Antiarrhythmics	256	10.5	29	1.2	32	1.3	2	1-4	0	0-3
IABP	1	0.0	0	0	0	0	6	6-6	0	1-1
Invasive monitoring of C.O.	236	9.7	32	1.3	20	0.8	5	2-8	0	0-1
Continuous monitoring of ScVO2	9	0.4	0	0	0	0	1	1-1	0	0-0
Temporary pacing	16	0.7	1	0	3	0.1	4	1-10	0	0-0
Ventricular assistance	0	0.0								
DC-shock	27	1.1							1	0-4
CPR	64	2.6							0	0-3
Massive blood transfusion	41	1.7							0	0-0
ICP monitoring without liquor-drainage	110	4.5	81	3.3	14	0.6	7	3-15	0	0-1
ICP monitoring with liquor-drainage	8	0.3	4	0.2	2	0.1	4	1-10	0	0-6
External ventricular drainage without ICP	13	0.5	6	0.2	5	0.2	12	6-21	0	9-14
Haemofiltration	4	0.2	0	0	0	0	6	1-14	0	3-11
Haemodialysis	166	6.8	34	1.4	41	1.7	4	1-10	0	0-5
ECMO	1	0.0	0	0	1	0	0	0-0	0	6-6
Hepatic clearance techniques	1	0.0								
Clearance techniques during sepsis	4	0.2	0	0	0	0	4	3-10	0	2-3
IAP (intra-abdominal pressure)	163	6.7								
Hypothermia	44	1.8								
Enteral nutrition	849	34.8	67	2.7	441	18.1	5	2-12	0	1-2
Parenteral nutrition	1365	55.9	204	8.4	750	30.7	3	1-6	0	0-1
SDD (Topical, Topical and systemic)	39	1.6								
Patient restraint	81	3.3								
Peridural catheter	245	10.0	227	9.3	203	8.3	3	2-5	0	0-0
Electrical cardioversion	5	0.2							0	0-1
Vacuum therapy	13	0.5								
Antibiotics	1935	79.3								
Antibiotics for surgical prophylaxis	795	32.6	570	23.4	324	13.3	1	1-4	0	0-0
Antibiotics for medical prophylaxis	238	9.8	96	3.9	129	5.3	3	1-6	0	0-0
Empirical antibiotic therapy	886	36.3	327	13.4	362	14.8	3	2-5	0	0-1
Targeted antibiotic therapy	620	25.4	122	5	403	16.5	6	3-13	0	2-6

National report - Year 2015

Process indicators - Adult patients

			Length (days)				
Invasive ventilation (N=1063)	N	%	Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	594	55.6	8.5	12.0	4	1–11	2
For airway maintenance	373	34.9	8.2	10.4	4	1–11.2	1
In weaning	55	5.1	0.3	0.5	0	0–1	0
Not evaluable	47	4.4	5.9	9.2	2	0–7	6
Reintubation within 48 hours	25	2.3	8.2	11.6	3	2–10	0
Non invasive ventilation (N=588)			Number of surgical interventions				
Non invasive ventilation only	394	67.0				0	2282 93.5
Non invasive ventilation failed	57	9.7				1	117 4.8
For weaning	123	20.9				2	24 1.0
Other	14	2.4				3	8 0.3
Missing	0					>3	10 0.4
						Missing	7
Tracheostomy (N=145)			Surgical interventions				
Surgical	40	27.6	Days from admission				
Percutwist	40	27.6				Mean	10.3
Ciaglia	1	0.7				SD	11.4
Monodil. Ciaglia	4	2.8				Median	7
Fantoni	1	0.7				Q1–Q3	4–12
Griggs	12	8.3				Missing	1
Other Kind	47	32.4					
Missing	0						
Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=129)			Surgical interventions (top 10)				
Mean	16.2					N	%
SD	11.0					Gastrointestinal surgery	105 4.3
Median	16					Other surgery	46 1.9
Q1–Q3	7–22					Orthopaedic surgery	19 0.8
Missing	0					Neurosurgery	16 0.7
						ENT surgery	13 0.5
						Plastic surgery	9 0.4
						Nephro/Urological surgery	7 0.3
						Maxillo-Facial surgery	5 0.2
						Biliary tract surgery	5 0.2
						Thoracic surgery	4 0.2
						Missing	7
Invasive monitoring of C.O. (N=236)			Non surgical interventions				
Swan Ganz	11	4.7				N	%
PICCO	119	50.4				No	2375 97.3
LIDCO	101	42.8				Yes	66 2.7
Vigileo-PRAM	2	0.8				Missing	7
Other	2	0.8					
Missing	1						
SDD (N=39)			Non surgical interventions				
Topical	31	79.5				N	%
Topical and systemic	8	20.5				Mean	10.0
Missing	0					SD	9.7
						Median	6
						Q1–Q3	3.2–12
						Missing	2
Antibiotic therapy			Non surgical interventions				
Pts. infected in ICU only (N=329)	N	%				N	%
Only empirical	127	41.8				Interventional endoscopy	29 1.2
Only targeted	52	17.1				Interventional radiology	26 1.1
Targeted after empirical	109	35.9				Interventional cardiology	12 0.5
Other	16	5.3				Interventional neuroradiology	5 0.2
Missing	25					Missing	7
Surgical interventions			Non surgical interventions				
No	2282	93.5				N	%
Yes	159	6.5				Interventional endoscopy	29 1.2
Missing	7					Interventional radiology	26 1.1
						Interventional cardiology	12 0.5
						Interventional neuroradiology	5 0.2
						Missing	7

National report - Year 2015

Outcome indicators - Adult patients

ICU outcome	N	%
Dead	341	14.1
Transferred to same hospital	1896	78.4
Transferred to other hospital	165	6.8
Discharged home	17	0.7
Disch. terminally ill	0	0.0
Missing	29	

Transferred to (N=2061)	N	%
Ward	1481	71.9
Other ICU	95	4.6
High dependency care unit	485	23.5
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Reason for transfer to Other ICU (N=95)	N	%
Specialist expertise	21	22.1
Step-up care	30	31.6
Logistical/organizational reasons	32	33.7
Step-down care	12	12.6
Missing	0	

Transferred to Same hospital (N=1896)	N	%
Ward	1397	73.7
Other ICU	46	2.4
High dependency care unit	453	23.9
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Transferred to Other hospital (N=165)	N	%
Ward	84	50.9
Other ICU	49	29.7
High dependency care unit	32	19.4
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	2078	85.9
Dead	341	14.1
Missing	29	

Timing of ICU mortality (N=341)	N	%
Daytime (08:00AM - 07:59PM)	202	59.2
Nighttime (08:00PM - 07:59AM)	139	40.8
Weekdays (Monday - Friday)	256	75.1
Weekend (Saturday - Sunday)	85	24.9
Missing	0	

Hospital mortality *	N	%
Alive	1867	77.9
Dead	529	22.1
Missing	18	

Timing of hosp. mortality * (N=529)	N	%
In ICU	336	63.5
Within 24 hours after ICU	5	0.9
24-47 hours after ICU	12	2.3
48-71 hours after ICU	12	2.3
72-95 hours after ICU	13	2.5
After 95 hours after ICU	151	28.5
Missing	0	

Timing of hosp. mortality (days from ICU disch.) * Discharged alive from ICU (N=193)		
Mean	22.2	
SD	29.6	
Median	12	
Q1–Q3	4–30	
Missing	0	

* Statistics computed on patients admitted in months with % of patients in status 4 over the threshold (readmissions excluded) (N=2414).

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Outcome indicators - Adult patients

Last hospital mortality *	N	%
Alive	1847	77.2
Dead	544	22.8
Missing	23	

Readmission from ward	N	%
No	2414	98.6
Yes	34	1.4
Missing	0	

Number of readmissions (N=34)	N	%
1	34	100.0
2	0	0.0
>2	0	0.0
Missing	0	

Timing of readmission (N=34)	N	%
Within 48 hours	3	8.8
48-71 hours	3	8.8
72-95 hours	2	5.9
After 95 hours	26	76.5
Missing	0	

Timing readmission (days)	N	
Mean	13.1	
SD	17.2	
Median	7.8	
Q1–Q3	4.2–15.6	

ICU stay (days)		
Mean	6.8	
SD	10.3	
Median	3	
Q1–Q3	1–7	
Missing	10	

ICU stay (days) Alive (N=2078)		
Mean	6.3	
SD	9.5	
Median	3	
Q1–Q3	1–7	
Missing	0	

ICU stay (days) Dead (N=341)		
Mean	9.5	
SD	14.0	
Median	4	
Q1–Q3	1–12	
Missing	0	

Stay after ICU (days) *		
Alive (N=2049)		
Mean	13.6	
SD	19.7	
Median	7	
Q1–Q3	3–16	
Missing	8	

Hospital stay (days) *		
Mean	22.1	
SD	26.7	
Median	14	
Q1–Q3	7–27	
Missing	19	

Hospital stay (days) *		
Alive (N=1867)		
Mean	21.6	
SD	25.2	
Median	14	
Q1–Q3	8–26	
Missing	1	

Hospital stay (days) *		
Dead (N=529)		
Mean	24.2	
SD	31.3	
Median	15	
Q1–Q3	4–31	
Missing	0	

* Statistics computed on patients admitted in months with % of patients in status 4 over the threshold (readmissions excluded) (N=2414).

National report - Year 2015

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

Patients (N): 1860

Sex	N	%
Male	1151	61.9
Female	709	38.1
Missing	0	

Age (years)	N	%
17-45	190	10.2
46-65	579	31.1
66-75	462	24.8
>75	629	33.8
Missing	0	
Mean	66.5	
SD	16.0	
Median	69	
Q1–Q3	58–79	
Min–Max	17–98	

Body mass Index (BMI)	N	%
Underweight	74	4.0
Normal	782	42.1
Overweight	672	36.1
Obese	331	17.8
Missing	1	

Pregnancy status	N	%
Females (N=709)		
Not fertile	404	57.0
Not pregnant/Unknown	302	42.6
Currently pregnant	1	0.1
Post partum	2	0.3
Missing	0	

Comorbidities	N	%
No	269	14.5
Yes	1591	85.5
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	1024	55.1
Arrhythmia	383	20.6
Any tumour without metastasis	354	19.0
NYHA class II-III	329	17.7
Diabetes Type II without insulin tr.	243	13.1
Moderate or severe renal disease	239	12.8
Metastatic cancer	201	10.8
Drug-induced coagulopathy	164	8.8
Cerebrovascular disease	156	8.4
Peripheral vascular disease	145	7.8
Missing	0	

Stay before ICU (days)	Mean	SD	Median	Q1–Q3	Missing
	4.6	11.8	1	0–4	0

Source of admission	N	%
Same hospital	1762	94.7
Other hospital	97	5.2
Long-term chronic care hospital	1	0.1
Directly from the community	0	0.0
Missing	0	

Ward of admission	N	%
Hospital (N=1859)		
Medical ward	254	13.7
Surgical ward	964	51.9
Emergency room	474	25.5
Other ICU	89	4.8
High dependency care unit	78	4.2
Missing	0	

Reason for transfer from	N	%
Other ICU (N=89)		
Specialist expertise	21	23.6
Step-up care	26	29.2
Logistical/organizational reasons	41	46.1
Step-down care	1	1.1
Missing	0	

Ward of admission	N	%
Same hospital (N=1762)		
Medical ward	247	14.0
Surgical ward	952	54.0
Emergency room	464	26.3
Other ICU	31	1.8
High dependency care unit	68	3.9
Missing	0	

Ward of admission	N	%
Other hospital (N=97)		
Medical ward	7	7.2
Surgical ward	12	12.4
Emergency room	10	10.3
Other ICU	58	59.8
High dependency care unit	10	10.3
Missing	0	

Scheduled admission	N	%
No	1397	75.1
Yes	463	24.9
Missing	0	

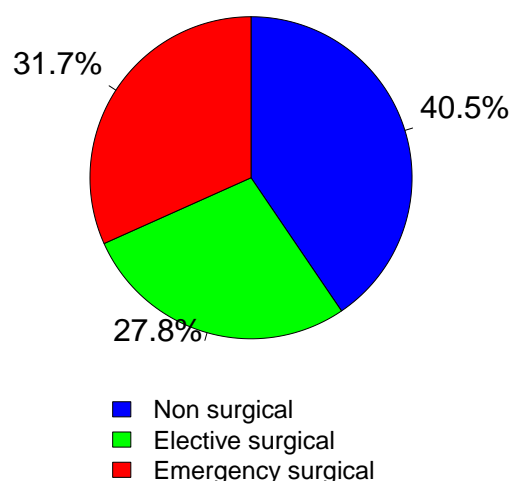
National report - Year 2015

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

Trauma	N	%
No	1501	80.7
Yes	359	19.3
Multiple trauma	104	5.6
Missing	0	

Surgical status	N	%
Non surgical	754	40.5
Elective surgical	517	27.8
Emergency surgical	589	31.7
Missing	0	

Surgical status



Source of admission	N	%
Surgical pts. (N=1106)		
Operating theatre of surgical ward	770	69.6
Operating theatre of emergency room	107	9.7
Surgical ward	76	6.9
Other	153	13.8
Missing	0	

Surgical interventions (top 10)	N	%
Elective surgical (N=517)		
Gastrointestinal surgery	306	59.2
Nephro/Urological surgery	35	6.8
Other surgery	34	6.6
Peripheral vascular surgery	33	6.4
Hepatic surgery	30	5.8
Orthopaedic surgery	23	4.4
Gynaecological surgery	21	4.1
Biliary tract surgery	10	1.9
Neurosurgery	10	1.9
Pancreatic surgery	9	1.7
Missing	6	

Timing	N	%
Elective surgical (N=517)		
From -7 to -3 days	20	3.9
From -2 to -1 days	22	4.3
On ICU admission day	500	96.7
The day after ICU admission	7	1.4
Missing	0	

Surgical interventions (top 10)	N	%
Emergency surgical (N=589)		
Gastrointestinal surgery	268	45.5
Neurosurgery	105	17.8
Orthopaedic surgery	51	8.7
Other surgery	45	7.6
Nephro/Urological surgery	30	5.1
Biliary tract surgery	22	3.7
Plastic surgery	12	2.0
ENT surgery	12	2.0
Splenectomy	12	2.0
Hepatic surgery	11	1.9
Missing	21	

Timing	N	%
Emergency surgical (N=589)		
From -7 to -3 days	22	3.7
From -2 to -1 days	41	7.0
On ICU admission day	538	91.3
The day after ICU admission	27	4.6
Missing	0	

Non surgical interventions	N	%
None	1769	95.1
Elective	12	0.6
Emergency	79	4.2
Missing	0	

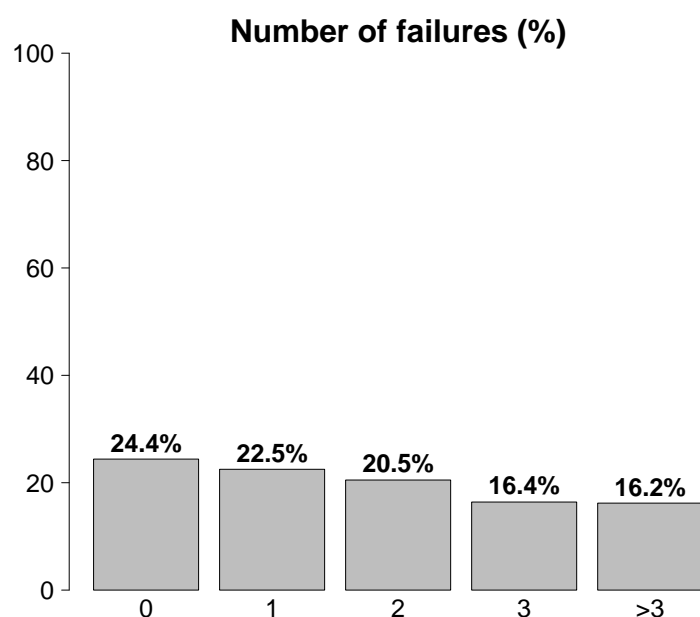
Non surgical interventions	N	%
Elective (N=12)		
Interventional endoscopy	5	41.7
Interventional cardiology	1	8.3
Interventional radiology	0	0.0
Interventional neuroradiology	0	0.0
Missing	6	

Non surgical interventions	N	%
Emergency (N=79)		
Interventional endoscopy	35	44.3
Interventional radiology	20	25.3
Interventional cardiology	18	22.8
Interventional neuroradiology	2	2.5
Missing	4	

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

Reason for admission	N	%
Monitoring/Weaning	636	34.2
Post surgical weaning	26	1.4
Surgical monitoring	410	22.0
Post interventional weaning	1	0.1
Interventional monitoring	19	1.0
Non surgical monitoring	180	9.7
Missing	0	
Admission for procedures/treatments	0	0.0
Intensive Treatment	1224	65.8
Only ventilatory support	359	19.3
Only cardiovascular support	215	11.6
Ventilatory and cardiovascular support	650	34.9
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	453	24.4
Yes	1407	75.6
A: Respiratory failure	1009	54.2
B: Cardiovascular failure	865	46.5
C: Neurological failure	174	9.4
D: Hepatic failure	28	1.5
E: Renal failure	694	37.3
F: Acute skin failure	4	0.2
G: Metabolic failure	548	29.5
H: Coagulation failure	70	3.8
Missing	0	

Failures on admission (top 10)	N	%
A	222	11.9
AB	176	9.5
ABEG	173	9.3
E	99	5.3
ABE	77	4.1
ABG	69	3.7
B	65	3.5
BEG	64	3.4
BE	55	3.0
ABC	40	2.2
Missing	0	

Respiratory failure	N	%
None	851	45.8
Only hypoxic failure	511	27.5
Only hypercapnic failure	55	3.0
Hypoxic-hypercapnic failure	126	6.8
Intubation for airway maint.	317	17.0
Missing	0	

Cardiovascular failure	N	%
None	995	53.5
Without shock	284	15.3
Cardiogenic shock	76	4.1
Septic shock	296	15.9
Haemorrhagic/hypovolemic shock	89	4.8
Hypovolemic shock	19	1.0
Anaphylactic shock	3	0.2
Neurogenic shock	37	2.0
Other shock	30	1.6
Mixed shock	31	1.7
Missing	0	

Neurologic failure	N	%
None	1362	88.7
Cerebral coma	86	5.6
Metabolic coma	50	3.3
Postanoxic coma	30	2.0
Toxic coma	8	0.5
Missing or not evaluable	324	

Renal failure (AKIN)	N	%
None	1166	62.7
Mild	364	19.6
Moderate	163	8.8
Severe	167	9.0
Missing	0	

Metabolic failure	N	%
None	1312	70.5
pH \leq 7.3, PaCO ₂ $<$ 45 mmHg	236	12.7
Base deficit \geq 5 mmol/L, lactate $>$ 1.5x	312	16.8
Missing	0	

National report - Year 2015**Characteristics on admission - Adult patients with LOS \geq 24 hours evaluated in the GiViTI model**

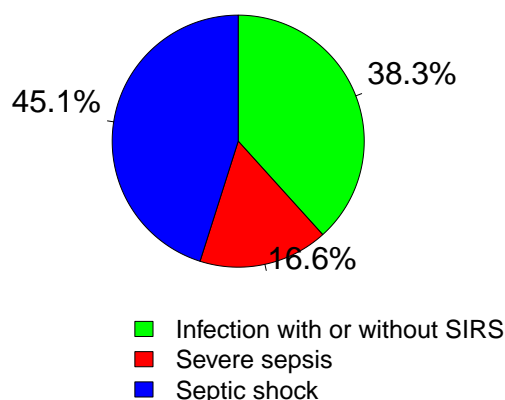
Clinical conditions on admission	N	%
Respiratory	291	15.6
Pleural effusion	95	5.1
Aspiration pneumonia	63	3.4
Atelectasis	37	2.0
Pulmonary embolism	29	1.6
Acute exacerbation of COPD	26	1.4
Cardiovascular	397	21.3
Left heart failure without pulm. edema	86	4.6
Acute severe arrhythmia: tachycardias	65	3.5
Cardiac arrest	62	3.3
Peripheral vascular disease	55	3.0
Left heart failure with pulmonary edema	47	2.5
Neurological	114	6.1
Seizures	28	1.5
Cerebral artery stroke	18	1.0
Brain tumour	18	1.0
Metabolic/postanoxic encephalopathy	12	0.6
Spontaneous Intraparenchymal bleeding	11	0.6
Gastrointestinal and hepatic	638	34.3
Digestive tract malignancy	307	16.5
Paralytic Ileus	82	4.4
Intestinal occlusion	74	4.0
Gastrointestinal perforation	55	3.0
Gastrointestinal bleeding: upper tract	32	1.7
Trauma (anatomical districts)	359	19.3
Head	217	11.7
Chest	93	5.0
Pelvis/bone/joint & muscle	93	5.0
Spine	62	3.3
Abdomen	47	2.5
Major vessels injury	6	0.3
Miscellaneous	6	0.3
Other	559	30.1
Other disease	248	13.3
Metabolic disorder	180	9.7
Nephro-urologic disease	134	7.2
Coagulation disorder	70	3.8
Haematological disease	23	1.2
Post transplantation	30	1.6
Liver transplantation	23	1.2
Renal transplantation	6	0.3
Infections	747	40.2
Pneumonia	293	15.8
NON-surgical urinary tract infection	79	4.2
Post-surgical peritonitis	78	4.2
NON-surgical secondary peritonitis	70	3.8
Clinical sepsis	57	3.1
Cholecystitis/choolangitis	44	2.4
L.R.T.I. other than pneumonia	35	1.9
NON-surgical skin/soft tissue infection	34	1.8
Post-surgical skin/soft tissue infection	25	1.3
Upper respiratory tract infection	18	1.0
Missing	0	

Trauma (anatomical districts)	N	%
Head	217	11.7
Traumatic Subdural haematoma	96	5.2
Traumatic subarachnoid haemorrhage	85	4.6
Skull fracture	71	3.8
Maxillofacial fracture	64	3.4
Cerebral contusion/laceration	53	2.8
Spine	62	3.3
Vertebral fracture, without deficit	41	2.2
Tetraplegia	6	0.3
Paraplegia	6	0.3
Chest	93	5.0
Traum. haemothorax/pneumothorax	50	2.7
Other injuries of the chest	47	2.5
Severe lung contusion/laceration	29	1.6
Abdomen	47	2.5
Minor injuries of the abdomen	16	0.9
Spleen: Moderate-Severe laceration	14	0.8
Liver: Moderate-Severe laceration	9	0.5
Pelvis/bone/joint & muscle	93	5.0
Long bone fracture	76	4.1
Multiple fracture of the pelvis	19	1.0
Very severe or open fracture of the pelvis	10	0.5
Major vessels injury	6	0.3
Aorta: rupture/dissection	2	0.1
Neck vessels: dissection/transection	1	0.1
Major thoracic vessels: transection	1	0.1
Miscellaneous	6	0.3
Burns (>30% BSA)	5	0.3
Inhalation injury	2	0.1
Missing	0	

Infection severity on admission	N	%
None	1113	60.2
Infection with or without SIRS	282	15.3
Severe sepsis	122	6.6
Septic shock	332	18.0
Missing	11	

Infection severity on admission

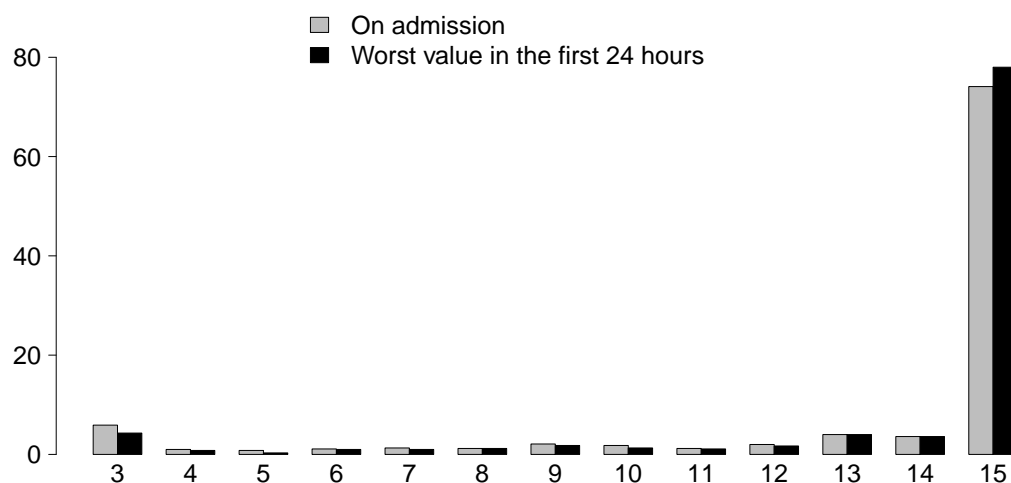
Patients infected (N=736)



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

Glasgow Coma Scale (%)



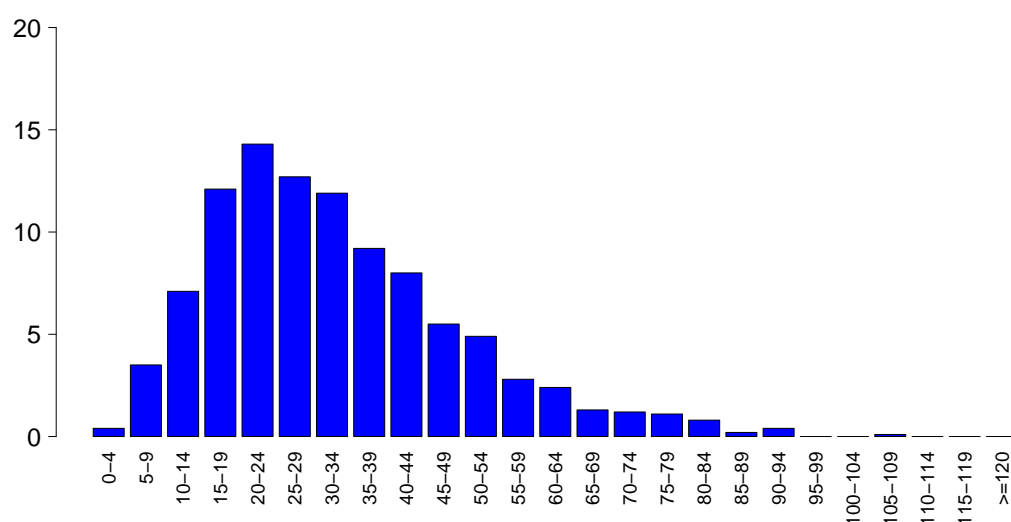
GCS (admission)

Median	15
Q1–Q3	14–15
Not evaluable	324
Missing	0

GCS (first 24 hours)

Median	15
Q1–Q3	15–15
Not evaluable	502
Missing	0

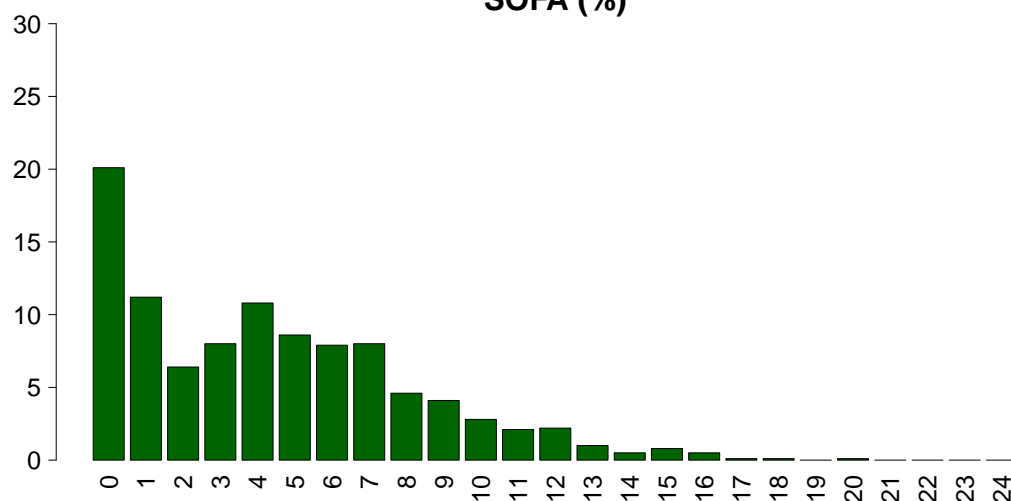
SAPS II (%)



SAPSII

Mean	32.5
SD	16.9
Median	29
Q1–Q3	21–42
Not evaluable	502
Missing	0

SOFA (%)



SOFA

Mean	4.4
SD	3.8
Median	4
Q1–Q3	1–7
Not evaluable	502
Missing	0

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

Complications during the stay	N	%
No	841	45.2
Yes	1019	54.8
Missing	0	

Failures during the stay	N	%
No	1520	81.7
Yes	340	18.3
A: Respiratory failure	130	7.0
B: Cardiovascular failure	142	7.6
C: Neurological failure	30	1.6
D: Hepatic failure	44	2.4
E: Renal failure (AKIN)	154	8.3
F: Acute skin failure	0	0.0
G: Metabolic failure	88	4.7
H: Coagulation failure	22	1.2
Missing	0	

Failures during the stay (top 10)	N	%
E	59	3.2
A	43	2.3
B	30	1.6
G	24	1.3
BE	20	1.1
D	19	1.0
AB	18	1.0
ABE	14	0.8
BG	11	0.6
ABEG	8	0.4
Missing	0	

Respiratory failure occurred	N	%
None	1730	93.0
Intubation for airway maint.	27	1.5
Hypoxic failure	92	4.9
Hypercapnic failure	34	1.8
Missing	0	

Cardiovascular failure occurred	N	%
None	1718	92.4
Cardiogenic shock	29	1.6
Hypovolemic shock	3	0.2
Haemorrhagic/hypovolemic shock	16	0.9
Septic shock	95	5.1
Anaphylactic shock	3	0.2
Neurogenic shock	1	0.1
Other shock	8	0.4
Missing	0	

Neurological failure occurred	N	%
None	1830	98.4
Cerebral coma	16	0.9
Metabolic coma	13	0.7
Postanoxic coma	1	0.1
Missing	0	

Renal failure occurred (AKIN)	N	%
None	1706	91.7
Mild	41	2.2
Moderate	25	1.3
Severe	88	4.7
Missing	0	

Complications during the stay	N	%
Respiratory	241	13.0
Pleural effusion	106	5.7
Aspiration pneumonia	64	3.4
Atelectasis	50	2.7
Pneumothorax/Pneumomediastinum	29	1.6
Pulmonary embolism	16	0.9
Cardiovascular	227	12.2
Acute severe arrhythmia: tachycardias	118	6.3
Cardiac arrest	32	1.7
Pulmonary edema	30	1.6
Acute severe arrhythmia: bradycardias	22	1.2
Left heart failure w/o pulm. edema	22	1.2
Neurological	323	17.4
Drowsiness/agitation/delirium	205	11.0
Intracranial hypertension	66	3.5
Brain edema	29	1.6
CrIMyNe	28	1.5
Seizures	23	1.2
Gastrointestinal and hepatic	244	13.1
Paralytic Ileus	115	6.2
Liver Dysfunction Syndrome	34	1.8
Anastomotic dehiscence	29	1.6
Gastrointestinal bleeding: lower tract	26	1.4
Bowel ischaemia	23	1.2
Other	220	11.8
Other disease	126	6.8
Metabolic disorder	88	4.7
Nephro-urologic disease	44	2.4
Other skin and/or soft tissue pathology	7	0.4
Iatrogenic major vessels injury	5	0.3
Graft vascular thrombosis	2	0.1
Delayed spleen rupture	1	0.1
Infections	469	25.2
Pneumonia	218	11.7
Post-surgical peritonitis	60	3.2
Post-surgical skin/soft tissue infection	44	2.4
NON-surgical urinary tract infection	40	2.2
Clinical sepsis	31	1.7
L.R.T.I. other than pneumonia	26	1.4
Other fungal infections	19	1.0
F.U.O. fever of unknown origin	18	1.0
Primary bacteraemia of unknown origin	14	0.8
NON-surgical secondary peritonitis	14	0.8
Missing	0	

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

Infections	N	%
None	798	42.9
Only on admission	593	31.9
On admission and during ICU stay	154	8.3
Only during ICU stay	315	16.9
Missing	0	

Maximum severity of infection	N	%
None	798	43.5
Infection with or without SIRS	480	26.1
Severe sepsis	165	9.0
Septic shock	393	21.4
Missing	24	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock
Admission	None	798 (72.7%)	214 (19.5%)	47 (4.3%)	38 (3.5%)	1097
	Infection with or without SIRS	-	263 (93.3%)	10 (3.5%)	9 (3.2%)	282
	Severe sepsis	-	-	108 (88.5%)	14 (11.5%)	122
	Septic shock	-	-	-	332 (100.0%)	332
	TOT	798	477	165	393	1833

Ventil. Associat. Pneumonia (VAP)	N	%
No	1687	90.7
Yes	173	9.3
Missing	0	

Incidence of VAP

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

Estimate	27.8
CI (95%)	23.8–32.2

Incidence of VAP

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

Estimate	22.2%
CI (95%)	19.0–25.8

Catheter Bacteraemia (CR-BSI)	N	%
No	1850	99.5
Yes	10	0.5
Missing	0	

Incidence of CR-BSI

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

Estimate	0.8
CI (95%)	0.4–1.4

Incidence of CR-BSI

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

Estimate	0.9%
CI (95%)	0.4–1.7

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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)		1785	96.0										
	Invasive ventilation	897	48.2	550	29.6	92	4.9	5	2–12	0	0	0–1	0
	Non invasive ventilation	459	24.7	83	4.5	81	4.4	2	1–4	0	0	0–2	0
	Tracheostomy	130	7.0	14	0.8	90	4.8	5	1–14	0	16	9–22	0
	iNO (inhaled nitric oxide)	18	1.0	1	0.1	2	0.1	4	2–7	0	1	0–2	0
	Central Venous Catheter	1401	75.3	757	40.7	1038	55.8	5	3–11	0	0	0–0	0
	PICC	138	7.4	64	3.4	100	5.4	3	2–6	0	0	0–1	0
	Arterial Catheter	1442	77.5	810	43.5	429	23.1	5	3–10	0	0	0–0	0
	Vasoactive drugs	1129	60.7	472	25.4	84	4.5	3	2–6	0	0	0–0	0
	Antiarrhythmics	227	12.2	23	1.2	27	1.5	2	1–4	0	1	0–3	0
	IABP	1	0.1	0	0	0	0	6	6–6	0	1	1–1	0
	Invasive monitoring of C.O.	216	11.6	29	1.6	16	0.9	5	3–8	0	0	0–1	0
	Continuous monitoring of ScVO2	5	0.3	0	0	0	0	1	1–2	0	0	0–1	0
	Temporary pacing	14	0.8	1	0.1	3	0.2	5	2–14	0	0	0–1	0
	Ventricular assistance	0	0.0										
	DC-shock	22	1.2										
	CPR	40	2.2								1	0–5	0
	Massive blood transfusion	30	1.6								2	0–6	0
	ICP monitoring without liquor-drainage	107	5.8	80	4.3	13	0.7	7	4–14	0	0	0–3	0
	ICP monitoring with liquor-drainage	7	0.4	3	0.2	2	0.1	4	1–7	0	2	0–6	0
	External ventricular drainage without ICP	13	0.7	6	0.3	5	0.3	12	6–21	0	12	9–14	0
	Haemofiltration	3	0.2	0	0	0	0	11	6–16	0	8	4–14	0
	Haemodialysis	144	7.7	27	1.5	33	1.8	4	1–11	0	1	0–6	0
	ECMO	1	0.1	0	0	1	0.1	0	0–0	0	6	6–6	0
	Hepatic clearance techniques	0	0.0										
	Clearance techniques during sepsis	4	0.2	0	0	0	0	4	3–10	0	3	2–3	0
	IAP (intra-abdominal pressure)	151	8.1										
	Hypothermia	41	2.2										
Enteral nutrition	793	42.6	61	3.3	406	21.8	5	2–12	0	1	1–2	0	
Parenteral nutrition	1194	64.2	171	9.2	664	35.7	4	2–7	0	1	0–1	0	
SDD (Topical, Topical and systemic)	26	1.4											
Patient restraint	74	4.0											
Peridural catheter	234	12.6	216	11.6	192	10.3	3	2–5	0	0	0–0	0	
Electrical cardioversion	5	0.3								0	0–1	0	
Vacuum therapy	12	0.6											
Antibiotics	1602	86.1											
Antibiotics for surgical prophylaxis	631	33.9	460	24.7	234	12.6	2	1–4	0	0	0–0	0	
Antibiotics for medical prophylaxis	195	10.5	74	4	104	5.6	4	2–7	0	0	0–0	0	
Empirical antibiotic therapy	783	42.1	279	15	301	16.2	3	2–6	0	0	0–2	0	
Targeted antibiotic therapy	574	30.9	100	5.4	372	20	7	3–13	0	4	2–6	0	

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Process indicators - Adult patients with LOS \geq 24 hours evaluated in the GiViTI model

			Length (days)				
Invasive ventilation (N=897)	N	%	Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	513	56.9	9.4	12.5	5	2–12	0
For airway maintenance	321	35.6	9.1	10.7	5	2–13	0
In weaning	29	3.2	0.4	0.5	0	0–1	0
Not evaluable	38	4.2	5.4	9.5	2	0–6.8	4
Reintubation within 48 hours	22	2.4	8.9	12.2	3	2–10.75	0

Non invasive ventilation (N=459)	N	%
Non invasive ventilation only	281	61.2
Non invasive ventilation failed	53	11.5
For weaning	112	24.4
Other	13	2.8
Missing	0	

Tracheostomy (N=130)	N	%
Surgical	35	26.9
Percutwist	38	29.2
Ciaglia	0	0.0
Monodil. Ciaglia	3	2.3
Fantoni	1	0.8
Griggs	10	7.7
Other Kind	43	33.1
Missing	0	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=114)		
Mean	16.8	
SD	11.0	
Median	16	
Q1–Q3	9–22	
Missing	0	

Invasive monitoring of C.O. (N=216)	N	%
Swan Ganz	9	4.2
PICCO	106	49.1
LIDCO	98	45.4
Vigileo-PRAM	2	0.9
Other	1	0.5
Missing	0	

SDD (N=26)	N	%
Topical	19	73.1
Topical and systemic	7	26.9
Missing	0	

Antibiotic therapy		
Pts. infected in ICU only (N=315)	N	%
Only empirical	123	42.1
Only targeted	50	17.1
Targeted after empirical	105	36.0
Other	14	4.8
Missing	23	

Surgical interventions		
No	1714	92.2
Yes	146	7.8
Missing	0	

Number of surgical interventions		
0	1714	92.2
1	106	5.7
2	23	1.2
3	7	0.4
>3	10	0.5
Missing	0	

Surgical interventions		
Days from admission		
Mean	10.5	
SD	11.5	
Median	7	
Q1–Q3	4–12	
Missing	0	

Surgical interventions (top 10)		
	N	%
Gastrointestinal surgery	99	5.3
Other surgery	44	2.4
Orthopaedic surgery	19	1.0
Neurosurgery	15	0.8
ENT surgery	12	0.6
Plastic surgery	9	0.5
Nephro/Urological surgery	7	0.4
Thoracic surgery	4	0.2
Peripheral vascular surgery	4	0.2
Maxillo-Facial surgery	3	0.2
Missing	0	

Non surgical interventions		
No	1798	96.7
Yes	62	3.3
Missing	0	

Non surgical interventions		
Days from admission		
Mean	9.2	
SD	9.4	
Median	6	
Q1–Q3	3–11	
Missing	1	

Non surgical interventions		
	N	%
Interventional endoscopy	26	1.4
Interventional radiology	24	1.3
Interventional cardiology	12	0.6
Interventional neuroradiology	5	0.3
Missing	0	

National report - Year 2015**Outcome indicators** - Adult patients with LOS \geq 24 hours evaluated in the GiViTI model

ICU outcome	N	%
Dead	261	14.2
Transferred to same hospital	1463	79.3
Transferred to other hospital	109	5.9
Discharged home	11	0.6
Disch. terminally ill	0	0.0
Missing	16	

Transferred to (N=1572)	N	%
Ward	1109	70.5
Other ICU	60	3.8
High dependency care unit	403	25.6
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Reason for transfer to Other ICU (N=60)	N	%
Specialist expertise	11	18.3
Step-up care	18	30.0
Logistical/organizational reasons	21	35.0
Step-down care	10	16.7
Missing	0	

Transferred to Same hospital (N=1463)	N	%
Ward	1051	71.8
Other ICU	29	2.0
High dependency care unit	383	26.2
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Transferred to Other hospital (N=109)	N	%
Ward	58	53.2
Other ICU	31	28.4
High dependency care unit	20	18.3
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	1583	85.8
Dead	261	14.2
Missing	16	

Timing of ICU mortality (N=261)	N	%
Daytime (08:00AM - 07:59PM)	159	60.9
Nighttime (08:00PM - 07:59AM)	102	39.1
Weekdays (Monday - Friday)	202	77.4
Weekend (Saturday - Sunday)	59	22.6
Missing	0	

Hospital mortality	N	%
Alive	1420	76.3
Dead	440	23.7
Missing	0	

Timing of hosp. mortality (N=440)	N	%
In ICU	261	59.3
Within 24 hours after ICU	4	0.9
24-47 hours after ICU	12	2.7
48-71 hours after ICU	9	2.0
72-95 hours after ICU	13	3.0
After 95 hours after ICU	141	32.0
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=179)		
Mean		22.4
SD		30.2
Median		11
Q1–Q3		4–29.5
Missing		0

National report - Year 2015**Outcome indicators** - Adult patients with LOS \geq 24 hours evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	1406	75.6
Dead	454	24.4
Missing	0	

ICU stay (days)		
	Mean	8.2
	SD	11.1
	Median	4
	Q1–Q3	2–9
	Missing	0

ICU stay (days)		
Alive (N=1583)		
	Mean	7.7
	SD	10.2
	Median	4
	Q1–Q3	2–8
	Missing	0

ICU stay (days)		
Dead (N=261)		
	Mean	11.8
	SD	15.1
	Median	6
	Q1–Q3	3–16
	Missing	0

Stay after ICU (days)		
Alive (N=1583)		
	Mean	14.8
	SD	20.9
	Median	8
	Q1–Q3	4–18
	Missing	1

Hospital stay (days)		
	Mean	25.0
	SD	27.6
	Median	16
	Q1–Q3	9–31
	Missing	1

Hospital stay (days)		
Alive (N=1420)		
	Mean	24.4
	SD	26.7
	Median	15
	Q1–Q3	9–30
	Missing	1

Hospital stay (days)		
Dead (N=440)		
	Mean	27.1
	SD	30.5
	Median	18
	Q1–Q3	7–34
	Missing	0

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

Patients (N): 754

Sex	N	%
Male	461	61.1
Female	293	38.9
Missing	0	

Age (years)	N	%
17-45	78	10.3
46-65	216	28.6
66-75	184	24.4
>75	276	36.6
Missing	0	
Mean	67.2	
SD	16.3	
Median	71	
Q1–Q3	59–80	
Min–Max	17–98	

Body mass Index (BMI)	N	%
Underweight	33	4.4
Normal	287	38.1
Overweight	274	36.3
Obese	160	21.2
Missing	0	

Pregnancy status	N	%
Females (N=293)		
Not fertile	177	60.4
Not pregnant/Unknown	115	39.2
Currently pregnant	0	0.0
Post partum	1	0.3
Missing	0	

Comorbidities	N	%
No	106	14.1
Yes	648	85.9
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	439	58.2
Arrhythmia	207	27.5
NYHA class II-III	176	23.3
Moderate or severe renal disease	115	15.3
Diabetes Type II without insulin tr.	105	13.9
Drug-induced coagulopathy	86	11.4
Any tumour without metastasis	73	9.7
Cerebrovascular disease	73	9.7
Myocardial infarction	73	9.7
Antiplatelet therapy	71	9.4
Missing	0	

Stay before ICU (days)	Mean	SD	Median	Q1–Q3	Missing
	5.3	12.8	0	0–5	0

Source of admission	N	%
Same hospital	683	90.6
Other hospital	70	9.3
Long-term chronic care hospital	1	0.1
Directly from the community	0	0.0
Missing	0	

Ward of admission	N	%
Hospital (N=753)		
Medical ward	206	27.4
Surgical ward	118	15.7
Emergency room	327	43.4
Other ICU	59	7.8
High dependency care unit	43	5.7
Missing	0	

Reason for transfer from	N	%
Other ICU (N=59)		
Specialist expertise	4	6.8
Step-up care	20	33.9
Logistical/organizational reasons	35	59.3
Step-down care	0	0.0
Missing	0	

Ward of admission	N	%
Same hospital (N=683)		
Medical ward	200	29.3
Surgical ward	114	16.7
Emergency room	322	47.1
Other ICU	11	1.6
High dependency care unit	36	5.3
Missing	0	

Ward of admission	N	%
Other hospital (N=70)		
Medical ward	6	8.6
Surgical ward	4	5.7
Emergency room	5	7.1
Other ICU	48	68.6
High dependency care unit	7	10.0
Missing	0	

Scheduled admission	N	%
No	754	100.0
Yes	0	0.0
Missing	0	

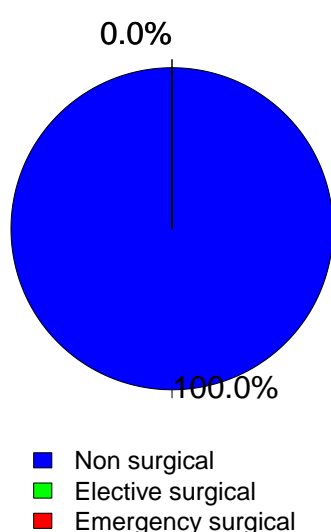
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Characteristics on admission - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Trauma	N	%
No	606	80.4
Yes	148	19.6
Multiple trauma	40	5.3
Missing	0	

Surgical status	N	%
Non surgical	754	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	702	93.1
Elective	0	0.0
Emergency	52	6.9
Missing	0	

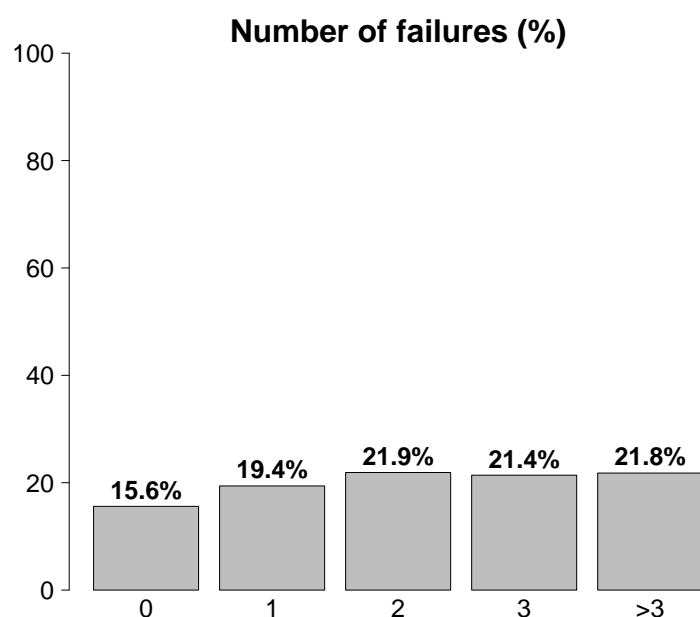
Non surgical interventions	N	%
Elective (N=0)		
Interventional radiology	0	0.0
Interventional cardiology	0	0.0
Interventional neuroradiology	0	0.0
Interventional endoscopy	0	0.0
Missing	0	

Non surgical interventions	N	%
Emergency (N=52)		
Interventional endoscopy	23	44.2
Interventional cardiology	17	32.7
Interventional radiology	12	23.1
Interventional neuroradiology	1	1.9
Missing	0	

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

Reason for admission	N	%
Monitoring/Weaning	200	26.5
Post surgical weaning	0	0.0
Surgical monitoring	0	0.0
Post interventional weaning	1	0.1
Interventional monitoring	19	2.5
Non surgical monitoring	180	23.9
Missing	0	
Admission for procedures/treatments	0	0.0
Intensive Treatment	554	73.5
Only ventilatory support	148	19.6
Only cardiovascular support	114	15.1
Ventilatory and cardiovascular support	292	38.7
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	118	15.6
Yes	636	84.4
A: Respiratory failure	440	58.4
B: Cardiovascular failure	406	53.8
C: Neurological failure	126	16.7
D: Hepatic failure	14	1.9
E: Renal failure	357	47.3
F: Acute skin failure	2	0.3
G: Metabolic failure	298	39.5
H: Coagulation failure	33	4.4
Missing	0	

Failures on admission (top 10)	N	%
ABEG	79	10.5
A	68	9.0
AB	57	7.6
BEG	41	5.4
E	39	5.2
ABE	35	4.6
ABG	33	4.4
BE	33	4.4
ABCEG	28	3.7
B	24	3.2
Missing	0	

Respiratory failure	N	%
None	314	41.6
Only hypoxic failure	239	31.7
Only hypercapnic failure	37	4.9
Hypoxic-hypercapnic failure	63	8.4
Intubation for airway maint.	101	13.4
Missing	0	

Cardiovascular failure	N	%
None	348	46.2
Without shock	110	14.6
Cardiogenic shock	67	8.9
Septic shock	163	21.6
Haemorrhagic/hypovolemic shock	19	2.5
Hypovolemic shock	4	0.5
Anaphylactic shock	1	0.1
Neurogenic shock	12	1.6
Other shock	10	1.3
Mixed shock	20	2.7
Missing	0	

Neurologic failure	N	%
None	488	79.5
Cerebral coma	51	8.3
Metabolic coma	45	7.3
Postanoxic coma	24	3.9
Toxic coma	6	1.0
Missing or not evaluable	140	

Renal failure (AKIN)	N	%
None	397	52.7
Mild	165	21.9
Moderate	92	12.2
Severe	100	13.3
Missing	0	

Metabolic failure	N	%
None	456	60.5
pH \leq 7.3, PaCO ₂ $<$ 45 mmHg	122	16.2
Base deficit \geq 5 mmol/L, lactate $>$ 1.5x	176	23.3
Missing	0	

National report - Year 2015**Characteristics on admission** - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

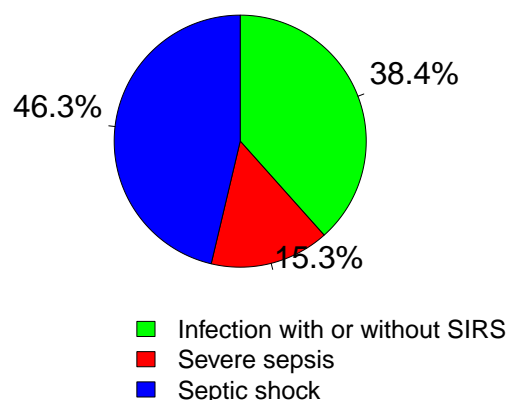
Clinical conditions on admission	N	%
Respiratory	160	21.2
Pleural effusion	53	7.0
Aspiration pneumonia	27	3.6
Acute exacerbation of COPD	20	2.7
Atelectasis	18	2.4
Pulmonary embolism	17	2.3
Cardiovascular	244	32.4
Left heart failure without pulm. edema	58	7.7
Cardiac arrest	50	6.6
Left heart failure with pulmonary edema	41	5.4
Acute myocardial infarction	36	4.8
Acute severe arrhythmia: tachycardias	35	4.6
Neurological	77	10.2
Seizures	25	3.3
Cerebral artery stroke	14	1.9
Metabolic/postanoxic encephalopathy	10	1.3
Brain tumour	10	1.3
Spontaneous Intraparenchymal bleeding	8	1.1
Gastrointestinal and hepatic	101	13.4
Gastrointestinal bleeding: upper tract	21	2.8
Paralytic Ileus	19	2.5
Acute pancreatitis	15	2.0
Digestive tract malignancy	12	1.6
Liver Dysfunction Syndrome	12	1.6
Trauma (anatomical districts)	148	19.6
Head	103	13.7
Chest	46	6.1
Pelvis/bone/joint & muscle	22	2.9
Spine	16	2.1
Abdomen	13	1.7
Major vessels injury	3	0.4
-	0	0.0
Other	228	30.2
Metabolic disorder	127	16.8
Other disease	59	7.8
Nephro-urologic disease	38	5.0
Coagulation disorder	33	4.4
Haematological disease	14	1.9
Post transplantation	1	0.1
Heart transplantation	1	0.1
-	0	0.0
Infections	411	54.5
Pneumonia	214	28.4
NON-surgical urinary tract infection	48	6.4
Clinical sepsis	30	4.0
L.R.T.I. other than pneumonia	30	4.0
Cholecystitis/choolangitis	16	2.1
NON-surgical skin/soft tissue infection	14	1.9
NON-surgical CNS infection	12	1.6
Upper respiratory tract infection	12	1.6
Pandemic influenza A/H1N1	9	1.2
Post-surgical peritonitis	8	1.1
Missing	0	

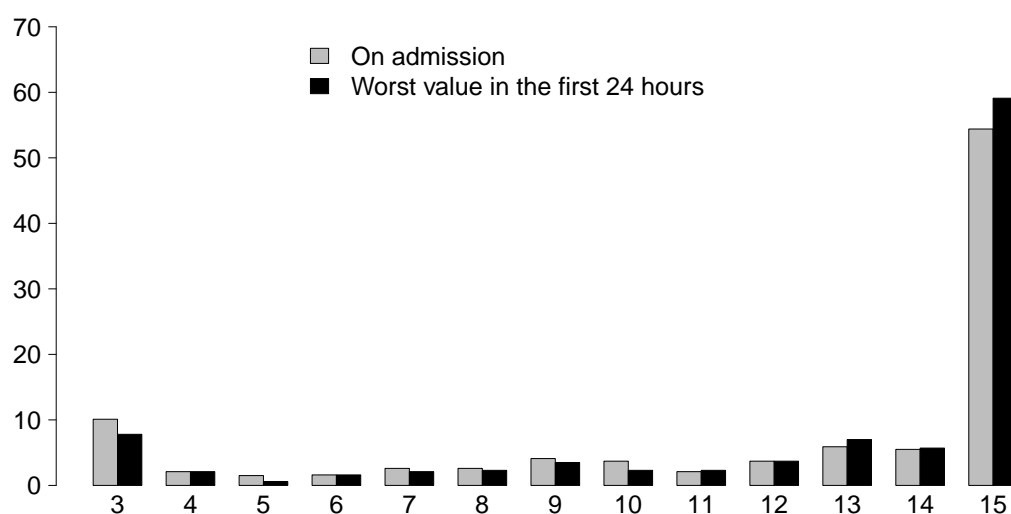
Trauma (anatomical districts)	N	%
Head	103	13.7
Traumatic subarachnoid haemorrhage	52	6.9
Skull fracture	39	5.2
Maxillofacial fracture	35	4.6
Cerebral contusion/laceration	33	4.4
Traumatic Subdural haematoma	32	4.2
Spine	16	2.1
Vertebral fracture, without deficit	14	1.9
Cervical injury, incomplete deficit	1	0.1
Paraplegia	1	0.1
Chest	46	6.1
Other injuries of the chest	27	3.6
Traum. haemothorax/pneumothorax	21	2.8
Severe lung contusion/laceration	10	1.3
Abdomen	13	1.7
Spleen: Moderate-Severe laceration	6	0.8
Minor injuries of the abdomen	4	0.5
Kidney: Rupture/laceration	3	0.4
Pelvis/bone/joint & muscle	22	2.9
Long bone fracture	17	2.3
Multiple fracture of the pelvis	5	0.7
Very severe or open fracture of the pelvis	1	0.1
Major vessels injury	3	0.4
Neck vessels: dissection/transection	1	0.1
Major thoracic vessels: transection	1	0.1
Major abdominal vessels: transection	1	0.1
Miscellaneous	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	343	45.9
Infection with or without SIRS	155	20.7
Severe sepsis	62	8.3
Septic shock	187	25.0
Missing	7	

Infection severity on admission

Patients infected (N=404)

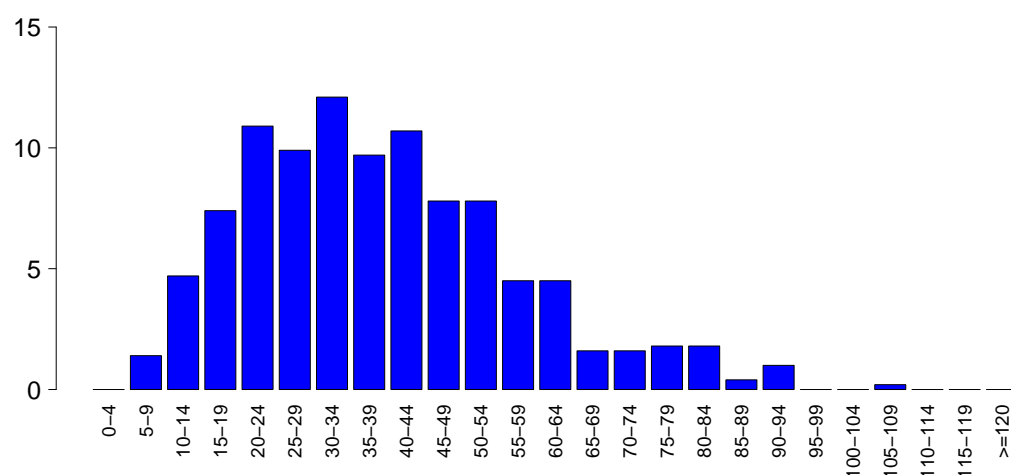


National report - Year 2015**Severity scores** - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model**Glasgow Coma Scale (%)****GCS (admission)**

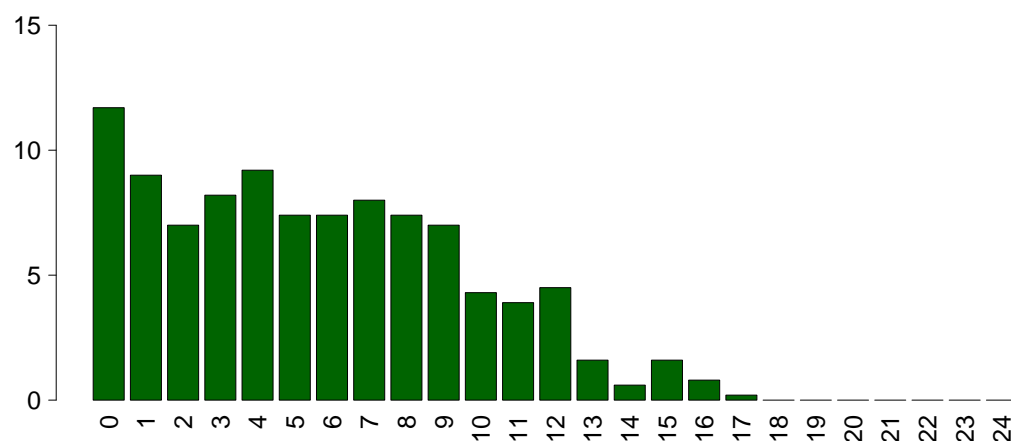
Median	15
Q1–Q3	10–15
Not evaluable	140
Missing	0

GCS (first 24 hours)

Median	15
Q1–Q3	12–15
Not evaluable	267
Missing	0

SAPS II (%)**SAPSII**

Mean	38.8
SD	18.2
Median	36
Q1–Q3	25–50
Not evaluable	267
Missing	0

SOFA (%)**SOFA**

Mean	5.6
SD	4.1
Median	5
Q1–Q3	2–8
Not evaluable	267
Missing	0

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

Complications during the stay	N	%
No	343	45.5
Yes	411	54.5
Missing	0	

Failures during the stay	N	%
No	581	77.1
Yes	173	22.9
A: Respiratory failure	79	10.5
B: Cardiovascular failure	68	9.0
C: Neurological failure	20	2.7
D: Hepatic failure	17	2.3
E: Renal failure (AKIN)	75	9.9
F: Acute skin failure	0	0.0
G: Metabolic failure	44	5.8
H: Coagulation failure	16	2.1
Missing	0	

Failures during the stay (top 10)	N	%
E	28	3.7
A	27	3.6
B	13	1.7
BE	10	1.3
AB	9	1.2
ABE	8	1.1
D	7	0.9
ABG	6	0.8
AC	6	0.8
C	6	0.8
Missing	0	

Respiratory failure occurred	N	%
None	675	89.5
Intubation for airway maint.	14	1.9
Hypoxic failure	56	7.4
Hypercapnic failure	16	2.1
Missing	0	

Cardiovascular failure occurred	N	%
None	686	91.0
Cardiogenic shock	19	2.5
Hypovolemic shock	0	0.0
Haemorrhagic/hypovolemic shock	4	0.5
Septic shock	47	6.2
Anaphylactic shock	1	0.1
Neurogenic shock	1	0.1
Other shock	3	0.4
Missing	0	

Neurological failure occurred	N	%
None	734	97.3
Cerebral coma	11	1.5
Metabolic coma	9	1.2
Postanoxic coma	0	0.0
Missing	0	

Renal failure occurred (AKIN)	N	%
None	679	90.1
Mild	11	1.5
Moderate	15	2.0
Severe	49	6.5
Missing	0	

Complications during the stay	N	%
Respiratory	106	14.1
Pleural effusion	46	6.1
Aspiration pneumonia	25	3.3
Atelectasis	21	2.8
Pneumothorax/Pneumomediastinum	12	1.6
Pulmonary embolism	8	1.1
Cardiovascular	114	15.1
Acute severe arrhythmia: tachycardias	78	10.3
Pulmonary edema	17	2.3
Cardiac arrest	14	1.9
Acute myocardial infarction	11	1.5
Left heart failure w/o pulm. edema	9	1.2
Neurological	151	20.0
Drowsiness/agitation/delirium	99	13.1
Intracranial hypertension	22	2.9
CrIMyNe	16	2.1
Seizures	16	2.1
Brain edema	15	2.0
Gastrointestinal and hepatic	75	9.9
Paralytic Ileus	41	5.4
Liver Dysfunction Syndrome	13	1.7
Bowel ischaemia	10	1.3
Gastrointestinal bleeding: lower tract	9	1.2
Gastrointestinal bleeding: upper tract	5	0.7
Other	71	9.4
Metabolic disorder	44	5.8
Other disease	27	3.6
Nephro-urologic disease	11	1.5
Other skin and/or soft tissue pathology	3	0.4
Iatrogenic major vessels injury	1	0.1
-	0	0.0
-	0	0.0
Infections	172	22.8
Pneumonia	95	12.6
NON-surgical urinary tract infection	20	2.7
L.R.T.I. other than pneumonia	16	2.1
Clinical sepsis	11	1.5
Other fungal infections	8	1.1
Primary bacteraemia of unknown origin	6	0.8
F.U.O. fever of unknown origin	6	0.8
NON-surgical secondary peritonitis	6	0.8
Catheter-related bacteremia (CR-BSI)	4	0.5
Sinusitis	3	0.4
Missing	0	

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

Infections	N	%	Maximum severity of infection	N	%
None	246	32.6	None	246	33.1
Only on admission	336	44.6	Infection with or without SIRS	214	28.8
On admission and during ICU stay	75	9.9	Severe sepsis	65	8.7
Only during ICU stay	97	12.9	Septic shock	218	29.3
Missing	0		Missing	11	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock
Admission	None	246 (72.8%)	70 (20.7%)	9 (2.7%)	13 (3.8%)	338
	Infection with or without SIRS	-	143 (92.3%)	5 (3.2%)	7 (4.5%)	155
	Severe sepsis	-	-	51 (82.3%)	11 (17.7%)	62
	Septic shock	-	-	-	187 (100.0%)	187
	TOT	246	213	65	218	742

Ventil. Associat. Pneumonia (VAP)	N	%
No	679	90.1
Yes	75	9.9
Missing	0	

Incidence of VAP

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

Estimate	23.3
CI (95%)	18.3–29.2

Incidence of VAP

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

Estimate	18.6%
CI (95%)	14.6–23.3

Catheter Bacteraemia (CR-BSI)	N	%
No	750	99.5
Yes	4	0.5
Missing	0	

Incidence of CR-BSI

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

Estimate	0.7
CI (95%)	0.2–1.8

Incidence of CR-BSI

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

Estimate	0.8%
CI (95%)	0.2–2.2

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

Procedures and/or treatments (Missing=0) Procedures (antibiotics excluded)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
	686	91.0										
Invasive ventilation	420	55.7	173	22.9	37	4.9	6	2-12	0	0	0-0	0
Non invasive ventilation	160	21.2	21	2.8	34	4.5	2	1-4	0	0	0-3	0
Tracheostomy	53	7.0	10	1.3	36	4.8	7	1-18	0	16	6-22	0
iNO (inhaled nitric oxide)	6	0.8	0	0	1	0.1	5	3-8	0	0	0-1	0
Central Venous Catheter	541	71.8	149	19.8	309	41	7	3-13	0	0	0-0	0
PICC	55	7.3	10	1.3	33	4.4	4	2-7	0	0	0-0	0
Arterial Catheter	553	73.3	138	18.3	132	17.5	6	3-12	0	0	0-0	0
Vasoactive drugs	470	62.3	105	13.9	47	6.2	3	2-7	0	0	0-0	0
Antiarrhythmics	137	18.2	6	0.8	10	1.3	2	1-5	0	1	0-3	0
IABP	1	0.1	0	0	0	0	6	6-6	0	1	1-1	0
Invasive monitoring of C.O.	101	13.4	8	1.1	6	0.8	5	3-8	0	0	0-1	0
Continuous monitoring of ScVO2	2	0.3	0	0	0	0	2	1-2	0	2	1-2	0
Temporary pacing	12	1.6	0	0	3	0.4	4	2-8	0	0	0-0	0
Ventricular assistance	0	0.0										
DC-shock	11	1.5								4	0-6	0
CPR	22	2.9								1	0-5	0
Massive blood transfusion	9	1.2								0	0-9	0
ICP monitoring without liquor-drainage	26	3.4	13	1.7	2	0.3	10	6-16	0	0	0-1	0
ICP monitoring with liquor-drainage	1	0.1	0	0	0	0	1	1-1	0	0	0-0	0
External ventricular drainage without ICP	3	0.4	1	0.1	1	0.1	8	7-16	0	7	4-10	0
Haemofiltration	1	0.1	0	0	0	0	22	22-22	0	21	21-21	0
Haemodialysis	86	11.4	17	2.3	18	2.4	4	1-9	0	1	0-2	0
ECMO	0	0.0										
Hepatic clearance techniques	0	0.0										
Clearance techniques during sepsis	0	0.0										
IAP (intra-abdominal pressure)	38	5.0										
Hypothermia	21	2.8										
Enteral nutrition	341	45.2	31	4.1	107	14.2	6	3-12	0	1	1-2	0
Parenteral nutrition	319	42.3	46	6.1	114	15.1	4	2-9	0	1	0-1	0
SDD (Topical, Topical and systemic)	7	0.9										
Patient restraint	53	7.0										
Peridural catheter	0	0.0										
Electrical cardioversion	4	0.5								0	0-0	0
Vacuum therapy	1	0.1										
Antibiotics	577	76.5										
Antibiotics for surgical prophylaxis	30	4.0	10	1.3	9	1.2	3	1-6	0	0	0-0	0
Antibiotics for medical prophylaxis	92	12.2	23	3.1	44	5.8	4	2-8	0	0	0-0	0
Empirical antibiotic therapy	398	52.8	122	16.2	130	17.2	4	2-6	0	0	0-1	0
Targeted antibiotic therapy	276	36.6	52	6.9	149	19.8	7	3-13	0	3	2-6	0

National report - Year 2015**Process indicators** - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

			Length (days)				
Invasive ventilation (N=420)	N	%	Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	307	72.6	9.3	12.9	6	2–11	0
For airway maintenance	105	24.8	10.1	11.4	6	2–14	0
In weaning	1	0.2	0.0		0	0–0	0
Not evaluable	10	2.4	8.6	14.4	2	1–8.5	3
Reintubation within 48 hours	10	2.4	10.1	15.1	2	2–10.75	0
Non invasive ventilation (N=160)	N	%	Number of surgical interventions				
Non invasive ventilation only	77	48.1				0	710
Non invasive ventilation failed	30	18.8				1	35
For weaning	42	26.2				2	6
Other	11	6.9				3	2
Missing	0					>3	1
						Missing	0
Tracheostomy (N=53)	N	%	Surgical interventions				
Surgical	18	34.0	Days from admission				
Percutwist	12	22.6				Mean	13.4
Ciaglia	0	0.0				SD	16.2
Monodil. Ciaglia	1	1.9				Median	7
Fantoni	0	0.0				Q1–Q3	3–13.5
Griggs	7	13.2				Missing	0
Other Kind	15	28.3					
Missing	0						
Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=42)			Surgical interventions (top 10)				
Mean	16.5					N	%
SD	12.8					Gastrointestinal surgery	13
Median	14					ENT surgery	11
Q1–Q3	7–21.8					Orthopaedic surgery	8
Missing	0					Other surgery	8
						Neurosurgery	7
						Thoracic surgery	3
						Peripheral vascular surgery	3
						Nephro/Urological surgery	2
						Abdominal vascular surgery	2
						Maxillo-Facial surgery	1
						Missing	0
Invasive monitoring of C.O. (N=101)	N	%	Non surgical interventions				
Swan Ganz	9	8.9				N	%
PICCO	70	69.3				No	720
LIDCO	21	20.8				Yes	34
Vigileo-PRAM	1	1.0				Missing	0
Other	0	0.0					
Missing	0						
SDD (N=7)	N	%	Non surgical interventions				
Topical	5	71.4				Days from admission	
Topical and systemic	2	28.6				Mean	9.2
Missing	0					SD	9.5
						Median	5.5
						Q1–Q3	3–11.2
						Missing	0
Antibiotic therapy			Non surgical interventions				
Pts. infected in ICU only (N=97)			Days from admission				
Only empirical	38	42.2				N	%
Only targeted	7	7.8				Interventional endoscopy	17
Targeted after empirical	40	44.4				Interventional cardiology	8
Other	5	5.6				Interventional radiology	7
Missing	7					Interventional neuroradiology	4
						Missing	0
Surgical interventions			Non surgical interventions				
No	710	94.2				N	%
Yes	44	5.8				Interventional endoscopy	17
Missing	0					Interventional cardiology	8
						Interventional radiology	7
						Interventional neuroradiology	4
						Missing	0

National report - Year 2015**Outcome indicators** - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

ICU outcome	N	%
Dead	176	23.8
Transferred to same hospital	473	64.0
Transferred to other hospital	80	10.8
Discharged home	10	1.4
Disch. terminally ill	0	0.0
Missing	15	

Transferred to (N=553)	N	%
Ward	398	72.0
Other ICU	37	6.7
High dependency care unit	118	21.3
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Reason for transfer to Other ICU (N=37)	N	%
Specialist expertise	6	16.2
Step-up care	16	43.2
Logistical/organizational reasons	13	35.1
Step-down care	2	5.4
Missing	0	

Transferred to Same hospital (N=473)	N	%
Ward	351	74.2
Other ICU	12	2.5
High dependency care unit	110	23.3
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Transferred to Other hospital (N=80)	N	%
Ward	47	58.8
Other ICU	25	31.2
High dependency care unit	8	10.0
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	563	76.2
Dead	176	23.8
Missing	15	

Timing of ICU mortality (N=176)	N	%
Daytime (08:00AM - 07:59PM)	109	61.9
Nighttime (08:00PM - 07:59AM)	67	38.1
Weekdays (Monday - Friday)	130	73.9
Weekend (Saturday - Sunday)	46	26.1
Missing	0	

Hospital mortality	N	%
Alive	496	65.8
Dead	258	34.2
Missing	0	

Timing of hosp. mortality (N=258)	N	%
In ICU	176	68.2
Within 24 hours after ICU	0	0.0
24-47 hours after ICU	6	2.3
48-71 hours after ICU	6	2.3
72-95 hours after ICU	7	2.7
After 95 hours after ICU	63	24.4
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=82)		
Mean		25.9
SD		38.2
Median		10
Q1–Q3		4–28.5
Missing		0

National report - Year 2015**Outcome indicators** - Adult non surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	487	64.6
Dead	267	35.4
Missing	0	

ICU stay (days)		
	Mean	9.2
	SD	12.2
	Median	5
	Q1–Q3	2–11
	Missing	0

ICU stay (days)		
Alive (N=563)		
	Mean	8.6
	SD	11.2
	Median	5
	Q1–Q3	2–10
	Missing	0

ICU stay (days)		
Dead (N=176)		
	Mean	11.4
	SD	15.0
	Median	6.5
	Q1–Q3	3–14.2
	Missing	0

Stay after ICU (days)		
Alive (N=563)		
	Mean	15.3
	SD	23.0
	Median	9
	Q1–Q3	3–19
	Missing	1

Hospital stay (days)		
	Mean	24.9
	SD	29.4
	Median	15
	Q1–Q3	8–30
	Missing	1

Hospital stay (days)		
Alive (N=496)		
	Mean	24.2
	SD	27.0
	Median	15
	Q1–Q3	9–31
	Missing	1

Hospital stay (days)		
Dead (N=258)		
	Mean	26.2
	SD	33.7
	Median	16
	Q1–Q3	6–29.8
	Missing	0

National report - Year 2015

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

Patients (N): 517

Sex	N	%
Male	310	60.0
Female	207	40.0
Missing	0	

Age (years)	N	%
17-45	30	5.8
46-65	183	35.4
66-75	154	29.8
>75	150	29.0
Missing	0	
Mean	66.8	
SD	13.4	
Median	68	
Q1–Q3	59–77	
Min–Max	17–94	

Body mass Index (BMI)	N	%
Underweight	18	3.5
Normal	221	42.7
Overweight	192	37.1
Obese	86	16.6
Missing	0	

Pregnancy status	N	%
Females (N=207)		
Not fertile	105	50.7
Not pregnant/Unknown	101	48.8
Currently pregnant	1	0.5
Post partum	0	0.0
Missing	0	

Comorbidities	N	%
No	40	7.7
Yes	477	92.3
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	300	58.0
Any tumour without metastasis	208	40.2
Metastatic cancer	106	20.5
Arrhythmia	83	16.1
NYHA class II-III	74	14.3
Diabetes Type II without insulin tr.	67	13.0
Moderate or severe renal disease	51	9.9
Peripheral vascular disease	41	7.9
Severe malnutrition	40	7.7
Cerebrovascular disease	36	7.0
Missing	0	

Stay before ICU (days)	Mean	SD	Median	Q1–Q3	Missing
	3.8	6.5	1	1–3	0

Source of admission	N	%
Same hospital	510	98.6
Other hospital	7	1.4
Long-term chronic care hospital	0	0.0
Directly from the community	0	0.0
Missing	0	

Ward of admission	N	%
Hospital (N=517)		
Medical ward	5	1.0
Surgical ward	494	95.6
Emergency room	3	0.6
Other ICU	4	0.8
High dependency care unit	11	2.1
Missing	0	

Reason for transfer from	N	%
Other ICU (N=4)		
Specialist expertise	0	0.0
Step-up care	3	75.0
Logistical/organizational reasons	1	25.0
Step-down care	0	0.0
Missing	0	

Ward of admission	N	%
Same hospital (N=510)		
Medical ward	4	0.8
Surgical ward	491	96.3
Emergency room	3	0.6
Other ICU	3	0.6
High dependency care unit	9	1.8
Missing	0	

Ward of admission	N	%
Other hospital (N=7)		
Medical ward	1	14.3
Surgical ward	3	42.9
Emergency room	0	0.0
Other ICU	1	14.3
High dependency care unit	2	28.6
Missing	0	

Scheduled admission	N	%
No	55	10.6
Yes	462	89.4
Missing	0	

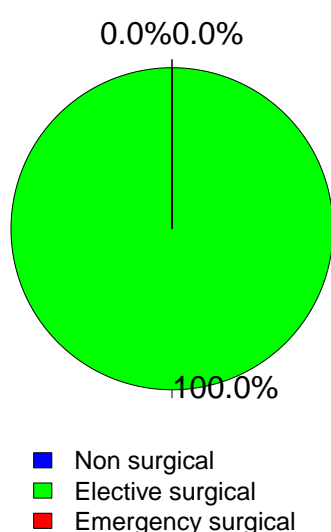
National report - Year 2015

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

Trauma	N	%
No	497	96.1
Yes	20	3.9
Multiple trauma	0	0.0
Missing	0	

Surgical status	N	%
Non surgical	0	0.0
Elective surgical	517	100.0
Emergency surgical	0	0.0
Missing	0	

Surgical status



Source of admission	N	%
Surgical pts. (N=517)		
Operating theatre of surgical ward	462	89.4
Operating theatre of emergency room	1	0.2
Surgical ward	32	6.2
Other	22	4.3
Missing	0	

Surgical interventions (top 10)	N	%
Elective surgical (N=517)		
Gastrointestinal surgery	306	59.2
Nephro/Urological surgery	35	6.8
Other surgery	34	6.6
Peripheral vascular surgery	33	6.4
Hepatic surgery	30	5.8
Orthopaedic surgery	23	4.4
Gynaecological surgery	21	4.1
Biliary tract surgery	10	1.9
Neurosurgery	10	1.9
Pancreatic surgery	9	1.7
Missing	6	

Timing	N	%
Elective surgical (N=517)		
From -7 to -3 days	20	3.9
From -2 to -1 days	22	4.3
On ICU admission day	500	96.7
The day after ICU admission	7	1.4
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	504	97.5
Elective	6	1.2
Emergency	7	1.4
Missing	0	

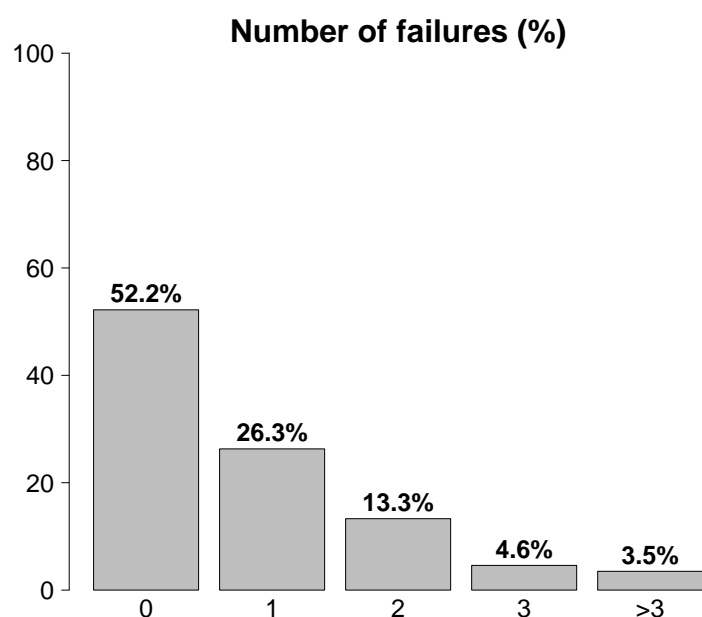
Non surgical interventions	N	%
Elective (N=6)		
Interventional endoscopy	3	50.0
Interventional radiology	0	0.0
Interventional cardiology	0	0.0
Interventional neuroradiology	0	0.0
Missing	3	

Non surgical interventions	N	%
Emergency (N=7)		
Interventional endoscopy	3	42.9
Interventional radiology	2	28.6
Interventional cardiology	0	0.0
Interventional neuroradiology	0	0.0
Missing	2	

National report - Year 2015

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

Reason for admission	N	%
Monitoring/Weaning	319	61.7
Post surgical weaning	8	1.5
Surgical monitoring	311	60.2
Post interventional weaning	0	0.0
Interventional monitoring	0	0.0
Non surgical monitoring	0	0.0
Missing	0	
Admission for procedures/treatments	0	0.0
Intensive Treatment	198	38.3
Only ventilatory support	77	14.9
Only cardiovascular support	57	11.0
Ventilatory and cardiovascular support	64	12.4
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	270	52.2
Yes	247	47.8
A: Respiratory failure	141	27.3
B: Cardiovascular failure	121	23.4
C: Neurological failure	4	0.8
D: Hepatic failure	6	1.2
E: Renal failure	94	18.2
F: Acute skin failure	0	0.0
G: Metabolic failure	53	10.3
H: Coagulation failure	6	1.2
Missing	0	

Failures on admission (top 10)	N	%
A	64	12.4
E	35	6.8
AB	33	6.4
B	30	5.8
BE	12	2.3
ABEG	11	2.1
BEG	8	1.5
AE	7	1.4
ABE	6	1.2
ABG	6	1.2
Missing	0	

Respiratory failure	N	%
None	376	72.7
Only hypoxic failure	98	19.0
Only hypercapnic failure	7	1.4
Hypoxic-hypercapnic failure	15	2.9
Intubation for airway maint.	21	4.1
Missing	0	

Cardiovascular failure	N	%
None	396	76.6
Without shock	63	12.2
Cardiogenic shock	4	0.8
Septic shock	14	2.7
Haemorrhagic/hypovolemic shock	17	3.3
Hypovolemic shock	6	1.2
Anaphylactic shock	1	0.2
Neurogenic shock	2	0.4
Other shock	12	2.3
Mixed shock	2	0.4
Missing	0	

Neurologic failure	N	%
None	483	99.2
Cerebral coma	1	0.2
Metabolic coma	1	0.2
Postanoxic coma	2	0.4
Toxic coma	0	0.0
Missing or not evaluable	30	

Renal failure (AKIN)	N	%
None	423	81.8
Mild	62	12.0
Moderate	24	4.6
Severe	8	1.5
Missing	0	

Metabolic failure	N	%
None	464	89.7
pH \leq 7.3, PaCO ₂ $<$ 45 mmHg	14	2.7
Base deficit \geq 5 mmol/L, lactate $>$ 1.5x	39	7.5
Missing	0	

National report - Year 2015**Characteristics on admission** - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

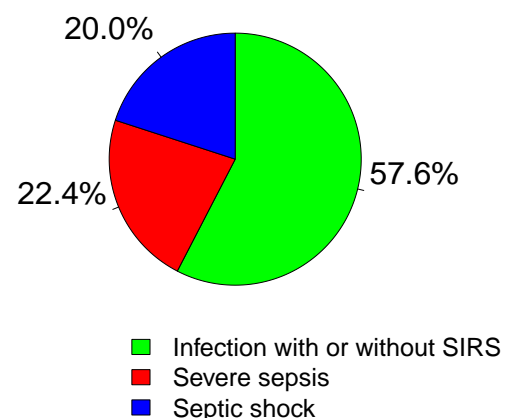
Clinical conditions on admission	N	%
Respiratory	44	8.5
Pleural effusion	17	3.3
Atelectasis	7	1.4
Acute exacerbation of COPD	4	0.8
Pulmonary embolism	4	0.8
Upper respiratory tract disease	3	0.6
Cardiovascular	81	15.7
Peripheral vascular disease	35	6.8
Acute severe arrhythmia: tachycardias	14	2.7
Left heart failure without pulm. edema	11	2.1
Pulmonary hypertension	7	1.4
Non-ruptured aneurysm	7	1.4
Neurological	11	2.1
Brain tumour	7	1.4
Neuropathy/myopathy	3	0.6
Spontaneous Hydrocephalus	1	0.2
Seizures	1	0.2
-	0	0.0
Gastrointestinal and hepatic	302	58.4
Digestive tract malignancy	250	48.4
Hepatic malignancy	26	5.0
Intestinal occlusion	14	2.7
Paralytic Ileus	13	2.5
Ascites	7	1.4
Trauma (anatomical districts)	20	3.9
Pelvis/bone/joint & muscle	16	3.1
Spine	1	0.2
Chest	1	0.2
Abdomen	1	0.2
Miscellaneous	1	0.2
-	0	0.0
-	0	0.0
Other	196	37.9
Other disease	122	23.6
Nephro-urologic disease	47	9.1
Metabolic disorder	20	3.9
Gynaecological disease	11	2.1
Autoimmune disease	9	1.7
Post transplantation	6	1.2
Liver transplantation	5	1.0
Pancreas transplantation	1	0.2
Infections	87	16.8
Pneumonia	25	4.8
Post-surgical peritonitis	23	4.4
Post-surgical skin/soft tissue infection	10	1.9
NON-surgical urinary tract infection	9	1.7
Cholecystitis/cholangitis	7	1.4
NON-surgical secondary peritonitis	6	1.2
Clinical sepsis	4	0.8
L.R.T.I. other than pneumonia	3	0.6
NON-surgical skin/soft tissue infection	3	0.6
F.U.O. fever of unknown origin	2	0.4
Missing	0	

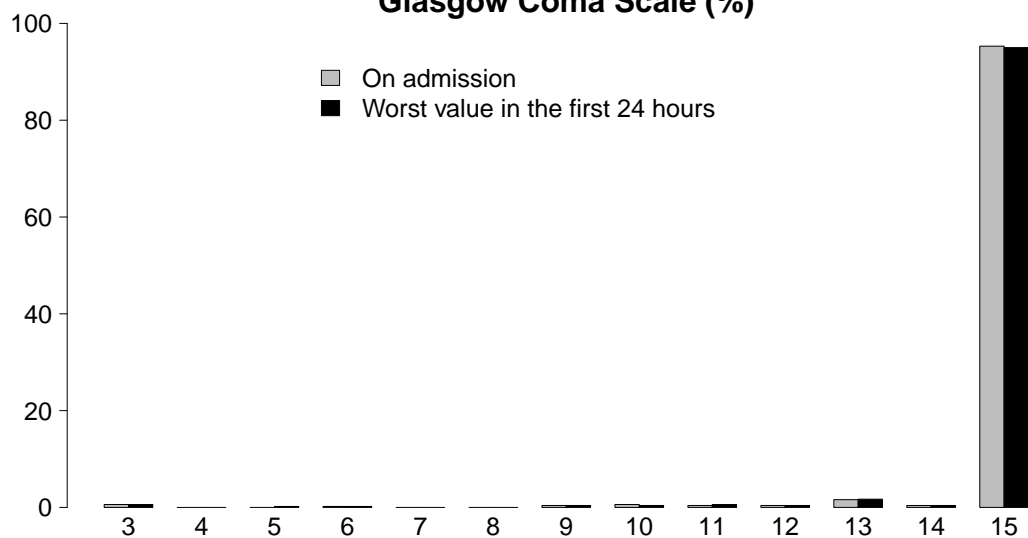
Trauma (anatomical districts)	N	%
Head	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Spine	1	0.2
Tetraplegia	1	0.2
-	0	0.0
-	0	0.0
Chest	1	0.2
Severe lung contusion/laceration	1	0.2
Other injuries of the chest	1	0.2
-	0	0.0
Abdomen	1	0.2
Liver: Moderate-Severe laceration	1	0.2
-	0	0.0
-	0	0.0
Pelvis/bone/joint & muscle	16	3.1
Long bone fracture	16	3.1
-	0	0.0
-	0	0.0
Major vessels injury	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Miscellaneous	1	0.2
Burns (>30% BSA)	1	0.2
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	430	83.5
Infection with or without SIRS	49	9.5
Severe sepsis	19	3.7
Septic shock	17	3.3
Missing	2	

Infection severity on admission

Patients infected (N=85)

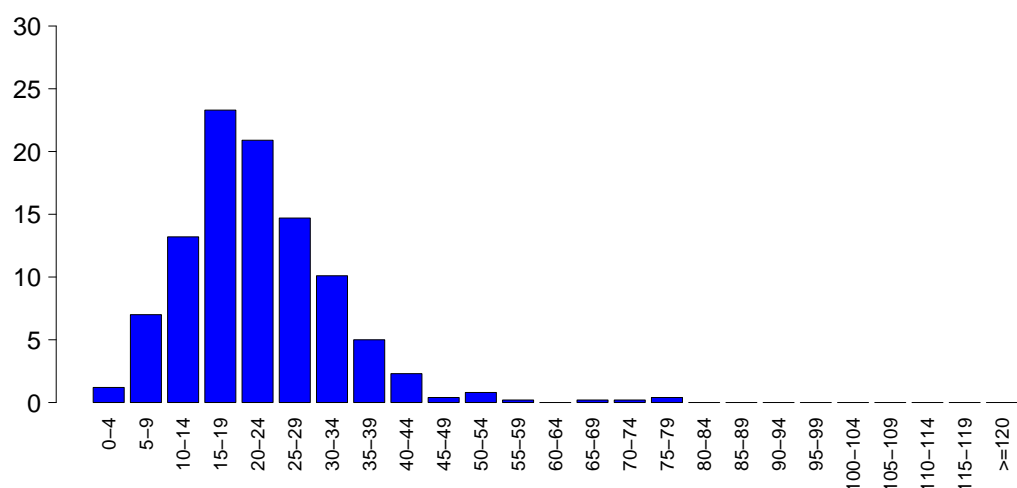


National report - Year 2015**Severity scores** - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model**Glasgow Coma Scale (%)****GCS (admission)**

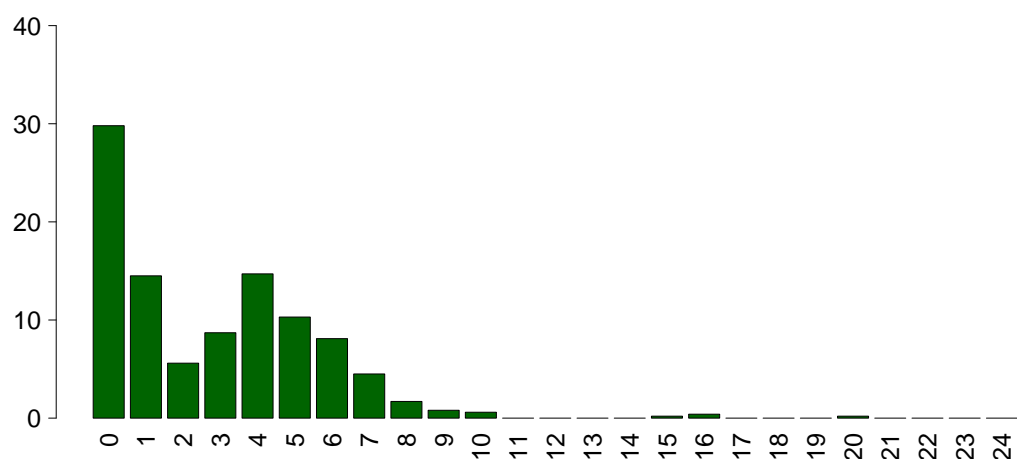
Median	15
Q1–Q3	15–15
Not evaluable	30
Missing	0

GCS (first 24 hours)

Median	15
Q1–Q3	15–15
Not evaluable	33
Missing	0

SAPS II (%)**SAPSII**

Mean	22.0
SD	10.3
Median	21
Q1–Q3	15–27.2
Not evaluable	33
Missing	0

SOFA (%)**SOFA**

Mean	2.8
SD	2.8
Median	3
Q1–Q3	0–5
Not evaluable	33
Missing	0

National report - Year 2015**Characteristics during the stay** - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Complications during the stay	N	%
No	284	54.9
Yes	233	45.1
Missing	0	

Failures during the stay	N	%
No	460	89.0
Yes	57	11.0
A: Respiratory failure	11	2.1
B: Cardiovascular failure	23	4.4
C: Neurological failure	0	0.0
D: Hepatic failure	11	2.1
E: Renal failure (AKIN)	27	5.2
F: Acute skin failure	0	0.0
G: Metabolic failure	23	4.4
H: Coagulation failure	2	0.4
Missing	0	

Failures during the stay (top 10)	N	%
E	13	2.5
G	11	2.1
B	6	1.2
BG	4	0.8
D	4	0.8
A	3	0.6
ABDEG	2	0.4
ABEG	2	0.4
BE	2	0.4
AB	1	0.2
Missing	0	

Respiratory failure occurred	N	%
None	506	97.9
Intubation for airway maint.	3	0.6
Hypoxic failure	6	1.2
Hypercapnic failure	3	0.6
Missing	0	

Cardiovascular failure occurred	N	%
None	494	95.6
Cardiogenic shock	3	0.6
Hypovolemic shock	0	0.0
Haemorrhagic/hypovolemic shock	2	0.4
Septic shock	15	2.9
Anaphylactic shock	1	0.2
Neurogenic shock	0	0.0
Other shock	3	0.6
Missing	0	

Neurological failure occurred	N	%
None	517	100.0
Cerebral coma	0	0.0
Metabolic coma	0	0.0
Postanoxic coma	0	0.0
Missing	0	

Renal failure occurred (AKIN)	N	%
None	490	94.8
Mild	17	3.3
Moderate	2	0.4
Severe	8	1.5
Missing	0	

Complications during the stay	N	%
Respiratory	39	7.5
Pleural effusion	18	3.5
Atelectasis	9	1.7
Aspiration pneumonia	6	1.2
Pneumothorax/Pneumomediastinum	5	1.0
Pulmonary embolism	3	0.6
Cardiovascular	33	6.4
Acute severe arrhythmia: tachycardias	14	2.7
Pulmonary edema	7	1.4
Left heart failure w/o pulm. edema	6	1.2
Acute severe arrhythmia: bradycardias	4	0.8
Cardiac arrest	3	0.6
Neurological	48	9.3
Drowsiness/agitation/delirium	38	7.4
New ischaemic stroke	4	0.8
CrIMyNe	2	0.4
Seizures	2	0.4
Vasospasm	2	0.4
Gastrointestinal and hepatic	56	10.8
Paralytic Ileus	36	7.0
Liver Dysfunction Syndrome	10	1.9
Anastomotic dehiscence	9	1.7
Ascites	7	1.4
Intrabdominal bleeding	4	0.8
Other	94	18.2
Other disease	72	13.9
Metabolic disorder	23	4.4
Nephro-urologic disease	13	2.5
Iatrogenic major vessels injury	3	0.6
Other skin and/or soft tissue pathology	2	0.4
Extremity compartment syndrome (severe)	1	0.2
-	0	0.0
Infections	104	20.1
Post-surgical peritonitis	39	7.5
Post-surgical skin/soft tissue infection	28	5.4
Pneumonia	13	2.5
Clinical sepsis	12	2.3
F.U.O. fever of unknown origin	6	1.2
Cholecystitis/cholangitis	4	0.8
NON-surgical secondary peritonitis	3	0.6
NON-surgical urinary tract infection	3	0.6
Catheter-related bacteremia (CR-BSI)	2	0.4
Other fungal infections	2	0.4
Missing	0	

National report - Year 2015

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

Infections	N	%
None	346	66.9
Only on admission	67	13.0
On admission and during ICU stay	20	3.9
Only during ICU stay	84	16.2
Missing	0	

Maximum severity of infection	N	%
None	346	68.0
Infection with or without SIRS	90	17.7
Severe sepsis	46	9.0
Septic shock	27	5.3
Missing	8	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock
Admission	None	346 (81.6%)	41 (9.7%)	28 (6.6%)	9 (2.1%)	424
	Infection with or without SIRS	-	49 (100.0%)	0 (0.0%)	0 (0.0%)	49
	Severe sepsis	-	-	18 (94.7%)	1 (5.3%)	19
	Septic shock	-	-	-	17 (100.0%)	17
	TOT	346	90	46	27	509

Ventil. Associat. Pneumonia (VAP)	N	%
No	512	99.0
Yes	5	1.0
Missing	0	

Incidence of VAP

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

Estimate	11.1
CI (95%)	3.6–25.9

Incidence of VAP

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

Estimate	8.9%
CI (95%)	2.9–20.7

Catheter Bacteraemia (CR-BSI)	N	%
No	515	99.6
Yes	2	0.4
Missing	0	

Incidence of CR-BSI

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

Estimate	1.0
CI (95%)	0.1–3.6

Incidence of CR-BSI

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

Estimate	1.2%
CI (95%)	0.1–4.3

National report - Year 2015
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)		513	99.2										
Procedures (antibiotics excluded)	Invasive ventilation	87	16.8	64	12.4	9	1.7	1	0-5	0	0	0-2	0
	Non invasive ventilation	110	21.3	26	5	9	1.7	2	1-4	0	0	0-0	0
	Tracheostomy	8	1.5	0	0	6	1.2	4	2-15	0	14	10-17	0
	iNO (inhaled nitric oxide)	3	0.6	0	0	0	0	1	0-12	0	1	0-4	0
	Central Venous Catheter	370	71.6	298	57.6	337	65.2	4	3-5	0	0	0-0	0
	PICC	54	10.4	40	7.7	47	9.1	3	2-4	0	0	0-1	0
	Arterial Catheter	395	76.4	329	63.6	57	11	3	2-5	0	0	0-0	0
	Vasoactive drugs	251	48.5	130	25.1	7	1.4	2	1-3	0	0	0-0	0
	Antiarrhythmics	30	5.8	7	1.4	6	1.2	2	1-4	0	1	0-3	0
	IABP	0	0.0										
	Invasive monitoring of C.O.	16	3.1	3	0.6	2	0.4	5	2-8	0	1	0-1	0
	Continuous monitoring of ScVO2	2	0.4	0	0	0	0	1	1-1	0	0	0-0	0
	Temporary pacing	0	0.0										
	Ventricular assistance	0	0.0										
	DC-shock	3	0.6								0	0-3	0
	CPR	2	0.4								2	1-3	0
	Massive blood transfusion	8	1.5								0	0-0	0
	ICP monitoring without liquor-drainage	2	0.4	2	0.4	0	0	11	10-12	0			
	ICP monitoring with liquor-drainage	0	0.0										
	External ventricular drainage without ICP	2	0.4	1	0.2	2	0.4	16	14-19	0	16	16-16	0
	Haemofiltration	1	0.2	0	0	0	0	0	0-0	0	0	0-0	0
	Haemodialysis	9	1.7	1	0.2	1	0.2	7	2-17	0	2	2-10	0
	ECMO	0	0.0										
	Hepatic clearance techniques	0	0.0										
	Clearance techniques during sepsis	1	0.2	0	0	0	0	4	4-4	0	3	3-3	0
	IAP (intra-abdominal pressure)	19	3.7										
Hypothermia	4	0.8											
Enteral nutrition	165	31.9	16	3.1	129	25	3	2-5	0	1	1-1	0	
Parenteral nutrition	407	78.7	66	12.8	292	56.5	3	2-5	0	1	0-1	0	
SDD (Topical, Topical and systemic)	2	0.4											
Patient restraint	2	0.4											
Peridural catheter	226	43.7	212	41	187	36.2	3	2-5	0	0	0-0	0	
Electrical cardioversion	0	0.0											
Vacuum therapy	2	0.4											
Antibiotics	455	88.0											
Antibiotics for surgical prophylaxis	352	68.1	291	56.3	111	21.5	1	1-3	0	0	0-0	0	
Antibiotics for medical prophylaxis	19	3.7	7	1.4	7	1.4	3	1-5	0	0	0-0	0	
Empirical antibiotic therapy	131	25.3	30	5.8	68	13.2	2	1-4	0	1	1-2	0	
Targeted antibiotic therapy	79	15.3	11	2.1	70	13.5	4	2-8	0	3	2-6	0	

National report - Year 2015**Process indicators** - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTi model

			Length (days)					
Invasive ventilation (N=87)	N	%	Mean	SD	Median	Q1-Q3	Missing	
Due to pulmonary failure	46	52.9	8.6	12.0	3	1–13.2	0	
For airway maintenance	23	26.4	3.3	5.8	1	0–2	0	
In weaning	9	10.3	0.2	0.4	0	0–0	0	
Not evaluable	9	10.3	1.3	1.9	1	0–1	0	
Reintubation within 48 hours	3	3.4	4.0	3.6	3	2–5.5	0	
Non invasive ventilation (N=110)	N	%	Number of surgical interventions					
Non invasive ventilation only	95	86.4				0	498	96.3
Non invasive ventilation failed	5	4.5				1	16	3.1
For weaning	9	8.2				2	3	0.6
Other	1	0.9				3	0	0.0
Missing	0					>3	0	0.0
						Missing	0	
Tracheostomy (N=8)	N	%	Surgical interventions					
Surgical	3	37.5	Days from admission					
Percutwist	1	12.5				Mean	6.0	
Ciaglia	0	0.0				SD	4.4	
Monodil. Ciaglia	0	0.0				Median	5	
Fantoni	0	0.0				Q1–Q3	4–7	
Griggs	1	12.5				Missing	0	
Other Kind	3	37.5						
Missing	0							
Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=8)								
	Mean	12.4						
	SD	7.9						
	Median	14						
	Q1–Q3	10–17.2						
	Missing	0						
Invasive monitoring of C.O. (N=16)	N	%						
Swan Ganz	0	0.0						
PICCO	7	43.8						
LIDCO	8	50.0						
Vigileo-PRAM	0	0.0						
Other	1	6.2						
Missing	0							
SDD (N=2)	N	%						
Topical	1	50.0						
Topical and systemic	1	50.0						
Missing	0							
Antibiotic therapy								
Pts. infected in ICU only (N=84)	N	%						
Only empirical	49	60.5						
Only targeted	8	9.9						
Targeted after empirical	22	27.2						
Other	2	2.5						
Missing	3							
Surgical interventions			N	%				
	No	498	96.3					
	Yes	19	3.7					
	Missing	0						
			Number of surgical interventions					
						0	498	96.3
						1	16	3.1
						2	3	0.6
						3	0	0.0
						>3	0	0.0
						Missing	0	
			Surgical interventions					
			Days from admission					
						Mean	6.0	
						SD	4.4	
						Median	5	
						Q1–Q3	4–7	
						Missing	0	
			Surgical interventions (top 10)					
							N	%
						Gastrointestinal surgery	12	2.3
						Neurosurgery	3	0.6
						Biliary tract surgery	2	0.4
						Hepatic surgery	1	0.2
						Nephro/Urological surgery	1	0.2
						Orthopaedic surgery	1	0.2
						Organ donation	1	0.2
						Other surgery	1	0.2
						-	0	0.0
						-	0	0.0
						Missing	0	
			Non surgical interventions					
						No	508	98.3
						Yes	9	1.7
						Missing	0	
			Non surgical interventions					
			Days from admission					
						Mean	8.7	
						SD	10.1	
						Median	5	
						Q1–Q3	3.2–9.8	
						Missing	1	
			Non surgical interventions					
							N	%
						Interventional radiology	5	1.0
						Interventional endoscopy	4	0.8
						Interventional cardiology	1	0.2
						Interventional neuroradiology	1	0.2
						Missing	0	

National report - Year 2015**Outcome indicators** - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

ICU outcome	N	%
Dead	13	2.5
Transferred to same hospital	494	95.7
Transferred to other hospital	9	1.7
Discharged home	0	0.0
Disch. terminally ill	0	0.0
Missing	1	

Transferred to (N=503)	N	%
Ward	453	90.1
Other ICU	6	1.2
High dependency care unit	44	8.7
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Reason for transfer to Other ICU (N=6)	N	%
Specialist expertise	2	33.3
Step-up care	0	0.0
Logistical/organizational reasons	3	50.0
Step-down care	1	16.7
Missing	0	

Transferred to Same hospital (N=494)	N	%
Ward	446	90.3
Other ICU	6	1.2
High dependency care unit	42	8.5
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Transferred to Other hospital (N=9)	N	%
Ward	7	77.8
Other ICU	0	0.0
High dependency care unit	2	22.2
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	503	97.5
Dead	13	2.5
Missing	1	

Timing of ICU mortality (N=13)	N	%
Daytime (08:00AM - 07:59PM)	7	53.8
Nighttime (08:00PM - 07:59AM)	6	46.2
Weekdays (Monday - Friday)	9	69.2
Weekend (Saturday - Sunday)	4	30.8
Missing	0	

Hospital mortality	N	%
Alive	485	93.8
Dead	32	6.2
Missing	0	

Timing of hosp. mortality (N=32)	N	%
In ICU	13	40.6
Within 24 hours after ICU	2	6.2
24-47 hours after ICU	1	3.1
48-71 hours after ICU	1	3.1
72-95 hours after ICU	0	0.0
After 95 hours after ICU	15	46.9
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=19)		
Mean		20.6
SD		17.3
Median		19
Q1–Q3		6.5–29.5
Missing		0

National report - Year 2015**Outcome indicators** - Adult elective surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	484	93.6
Dead	33	6.4
Missing	0	

ICU stay (days)		
	Mean	4.4
	SD	5.7
	Median	3
	Q1–Q3	2–5
	Missing	0

ICU stay (days)		
Alive (N=503)		
	Mean	4.2
	SD	4.7
	Median	3
	Q1–Q3	2–5
	Missing	0

ICU stay (days)		
Dead (N=13)		
	Mean	14.5
	SD	19.6
	Median	4
	Q1–Q3	2–24
	Missing	0

Stay after ICU (days)		
Alive (N=503)		
	Mean	10.5
	SD	17.9
	Median	6
	Q1–Q3	4–11
	Missing	0

Hospital stay (days)		
	Mean	18.6
	SD	21.8
	Median	13
	Q1–Q3	8–21
	Missing	0

Hospital stay (days)		
Alive (N=485)		
	Mean	18.0
	SD	21.5
	Median	13
	Q1–Q3	8–20
	Missing	0

Hospital stay (days)		
Dead (N=32)		
	Mean	28.5
	SD	23.1
	Median	23
	Q1–Q3	10.8–41.5
	Missing	0

National report - Year 2015

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

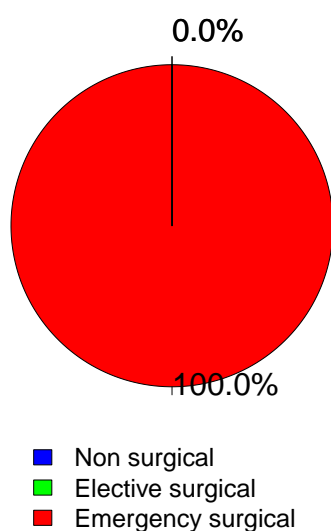
Patients (N): 589

Sex				Stay before ICU (days)			
		N	%		Mean	SD	
	Male	380	64.5				4.4
	Female	209	35.5				13.9
	Missing	0			Median		1
					Q1–Q3		0–3
					Missing		0
Age (years)				Source of admission			
		N	%		N	%	
	17-45	82	13.9	Same hospital	569	96.6	
	46-65	180	30.6	Other hospital	20	3.4	
	66-75	124	21.1	Long-term chronic care hospital	0	0.0	
	>75	203	34.5	Directly from the community	0	0.0	
	Missing	0		Missing	0		
	Mean	65.2		Ward of admission			
	SD	17.7		Hospital (N=589)			
	Median	68			N	%	
	Q1–Q3	55–79		Medical ward	43	7.3	
	Min–Max	17–96		Surgical ward	352	59.8	
Body mass Index (BMI)				Emergency room	144	24.4	
		N	%	Other ICU	26	4.4	
	Underweight	23	3.9	High dependency care unit	24	4.1	
	Normal	274	46.6	Missing	0		
	Overweight	206	35.0	Reason for transfer from			
	Obese	85	14.5	Other ICU (N=26)			
	Missing	1			N	%	
Pregnancy status				Specialist expertise	17	65.4	
Females (N=209)				Step-up care	3	11.5	
		N	%	Logistical/organizational reasons	5	19.2	
	Not fertile	122	58.4	Step-down care	1	3.8	
	Not pregnant/Unknown	86	41.1	Missing	0		
	Currently pregnant	0	0.0	Ward of admission			
	Post partum	1	0.5	Same hospital (N=569)			
	Missing	0			N	%	
Comorbidities				Medical ward	43	7.6	
		N	%	Surgical ward	347	61.0	
	No	123	20.9	Emergency room	139	24.4	
	Yes	466	79.1	Other ICU	17	3.0	
	Missing	0		High dependency care unit	23	4.0	
				Missing	0		
Comorbidities (top 10)				Ward of admission			
		N	%	Other hospital (N=20)			
	Hypertension	285	48.4		N	%	
	Arrhythmia	93	15.8	Medical ward	0	0.0	
	NYHA class II-III	79	13.4	Surgical ward	5	25.0	
	Any tumour without metastasis	73	12.4	Emergency room	5	25.0	
	Moderate or severe renal disease	73	12.4	Other ICU	9	45.0	
	Diabetes Type II without insulin tr.	71	12.1	High dependency care unit	1	5.0	
	Drug-induced coagulopathy	57	9.7	Missing	0		
	Cerebrovascular disease	47	8.0	Scheduled admission			
	Metastatic cancer	47	8.0		N	%	
	Peripheral vascular disease	45	7.6	No	588	99.8	
	Missing	0		Yes	1	0.2	
				Missing	0		

National report - Year 2015**Characteristics on admission** - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Trauma		N	%
	No	398	67.6
	Yes	191	32.4
	Multiple trauma	64	10.9
	Missing	0	

Surgical status		N	%
	Non surgical	0	0.0
	Elective surgical	0	0.0
	Emergency surgical	589	100.0
	Missing	0	

Surgical status

Source of admission		N	%
Surgical pts. (N=589)			
	Operating theatre of surgical ward	308	52.3
	Operating theatre of emergency room	106	18.0
	Surgical ward	44	7.5
	Other	131	22.2
	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=589)			
	Gastrointestinal surgery	268	45.5
	Neurosurgery	105	17.8
	Orthopaedic surgery	51	8.7
	Other surgery	45	7.6
	Nephro/Urological surgery	30	5.1
	Biliary tract surgery	22	3.7
	Plastic surgery	12	2.0
	ENT surgery	12	2.0
	Splenectomy	12	2.0
	Hepatic surgery	11	1.9
	Missing	21	

Timing		N	%
Emergency surgical (N=589)			
	From -7 to -3 days	22	3.7
	From -2 to -1 days	41	7.0
	On ICU admission day	538	91.3
	The day after ICU admission	27	4.6
	Missing	0	

Non surgical interventions		N	%
	None	563	95.6
	Elective	6	1.0
	Emergency	20	3.4
	Missing	0	

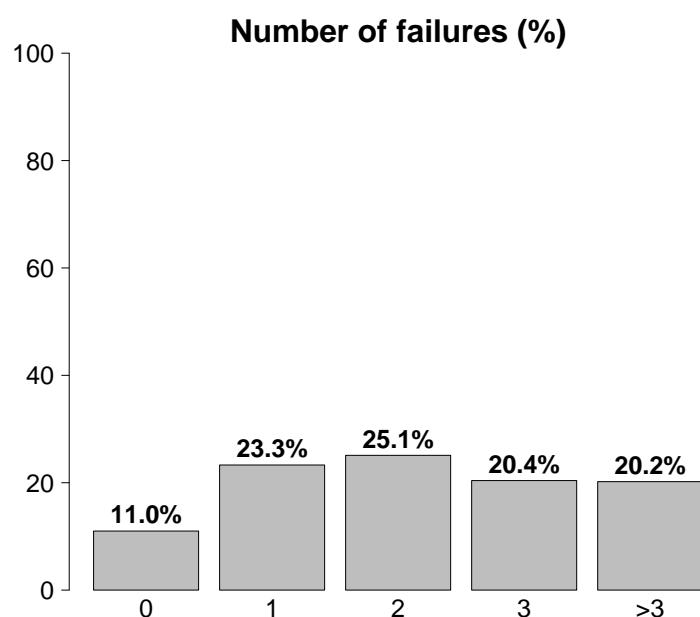
Non surgical interventions		N	%
Elective (N=6)			
	Interventional endoscopy	2	33.3
	Interventional cardiology	1	16.7
	Interventional radiology	0	0.0
	Interventional neuroradiology	0	0.0
	Missing	3	

Non surgical interventions		N	%
Emergency (N=20)			
	Interventional endoscopy	9	45.0
	Interventional radiology	6	30.0
	Interventional cardiology	1	5.0
	Interventional neuroradiology	1	5.0
	Missing	3	

National report - Year 2015

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

Reason for admission	N	%
Monitoring/Weaning	117	19.9
Post surgical weaning	18	3.1
Surgical monitoring	99	16.8
Post interventional weaning	0	0.0
Interventional monitoring	0	0.0
Non surgical monitoring	0	0.0
Missing	0	
Admission for procedures/treatments	0	0.0
Intensive Treatment	472	80.1
Only ventilatory support	134	22.8
Only cardiovascular support	44	7.5
Ventilatory and cardiovascular support	294	49.9
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	65	11.0
Yes	524	89.0
A: Respiratory failure	428	72.7
B: Cardiovascular failure	338	57.4
C: Neurological failure	44	7.5
D: Hepatic failure	8	1.4
E: Renal failure	243	41.3
F: Acute skin failure	2	0.3
G: Metabolic failure	197	33.4
H: Coagulation failure	31	5.3
Missing	0	

Failures on admission (top 10)	N	%
A	90	15.3
AB	86	14.6
ABEG	83	14.1
ABE	36	6.1
ABG	30	5.1
E	25	4.2
ABC	23	3.9
AE	18	3.1
BEG	15	2.5
B	11	1.9
Missing	0	

Respiratory failure	N	%
None	161	27.3
Only hypoxic failure	174	29.5
Only hypercapnic failure	11	1.9
Hypoxic-hypercapnic failure	48	8.1
Intubation for airway maint.	195	33.1
Missing	0	

Cardiovascular failure	N	%
None	251	42.6
Without shock	111	18.8
Cardiogenic shock	5	0.8
Septic shock	119	20.2
Haemorrhagic/hypovolemic shock	53	9.0
Hypovolemic shock	9	1.5
Anaphylactic shock	1	0.2
Neurogenic shock	23	3.9
Other shock	8	1.4
Mixed shock	9	1.5
Missing	0	

Neurologic failure	N	%
None	391	89.9
Cerebral coma	34	7.8
Metabolic coma	4	0.9
Postanoxic coma	4	0.9
Toxic coma	2	0.5
Missing or not evaluable	154	

Renal failure (AKIN)	N	%
None	346	58.7
Mild	137	23.3
Moderate	47	8.0
Severe	59	10.0
Missing	0	

Metabolic failure	N	%
None	392	66.6
pH \leq 7.3, PaCO ₂ $<$ 45 mmHg	100	17.0
Base deficit \geq 5 mmol/L, lactate $>$ 1.5x	97	16.5
Missing	0	

National report - Year 2015**Characteristics on admission** - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

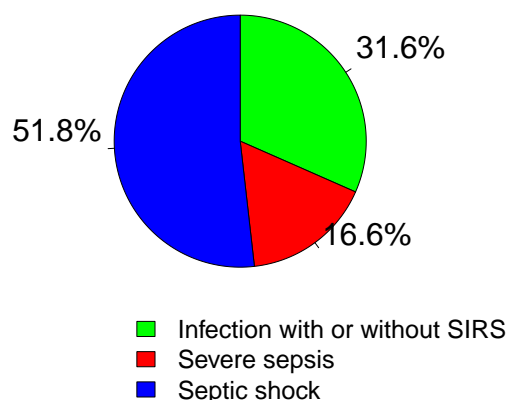
Clinical conditions on admission	N	%
Respiratory	87	14.8
Aspiration pneumonia	33	5.6
Pleural effusion	25	4.2
Atelectasis	12	2.0
Pulmonary embolism	8	1.4
Upper respiratory tract disease	7	1.2
Cardiovascular	72	12.2
Left heart failure without pulm. edema	17	2.9
Acute severe arrhythmia: tachycardias	16	2.7
Peripheral vascular disease	15	2.5
Pulmonary hypertension	12	2.0
Cardiac arrest	7	1.2
Neurological	26	4.4
Chronic Subdural haematoma	7	1.2
Cerebral artery stroke	4	0.7
Non traumatic cerebral oedema	4	0.7
Spontaneous Subarachnoid haemorrhage	4	0.7
Spontaneous Intraparenchymal bleeding	3	0.5
Gastrointestinal and hepatic	235	39.9
Intestinal occlusion	55	9.3
Paralytic Ileus	50	8.5
Digestive tract malignancy	45	7.6
Gastrointestinal perforation	44	7.5
Bowel ischaemia	19	3.2
Trauma (anatomical districts)	191	32.4
Head	114	19.4
Pelvis/bone/joint & muscle	55	9.3
Chest	46	7.8
Spine	45	7.6
Abdomen	33	5.6
Miscellaneous	5	0.8
Major vessels injury	3	0.5
Other	135	22.9
Other disease	67	11.4
Nephro-urologic disease	49	8.3
Metabolic disorder	33	5.6
Coagulation disorder	31	5.3
Haematological disease	6	1.0
Post transplantation	23	3.9
Liver transplantation	18	3.1
Renal transplantation	5	0.8
Infections	249	42.3
NON-surgical secondary peritonitis	56	9.5
Pneumonia	54	9.2
Post-surgical peritonitis	47	8.0
Clinical sepsis	23	3.9
NON-surgical urinary tract infection	22	3.7
Cholecystitis/choolangitis	21	3.6
NON-surgical skin/soft tissue infection	17	2.9
Post-surgical skin/soft tissue infection	10	1.7
NON-surgical bone and joint infection	8	1.4
Primary peritonitis	6	1.0
Missing	0	

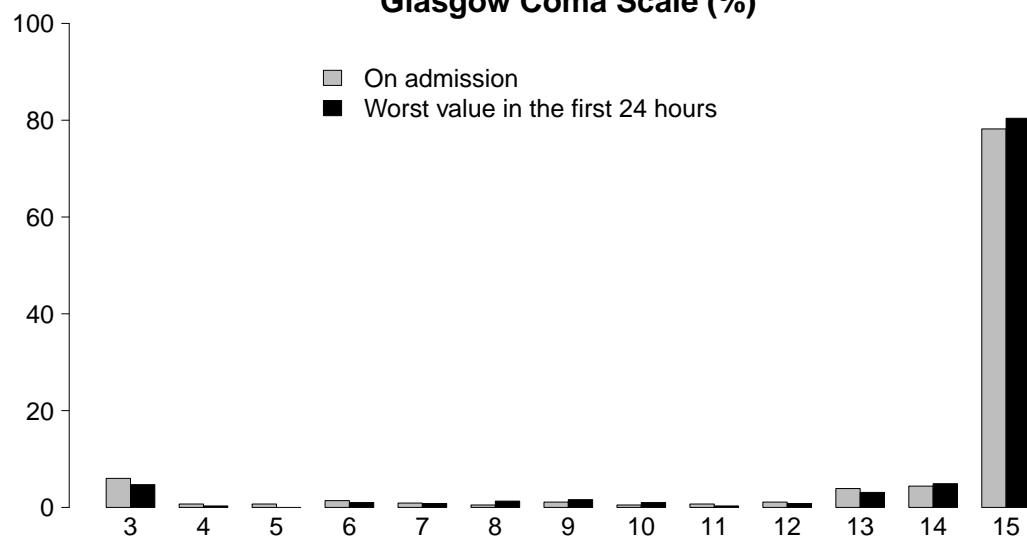
Trauma (anatomical districts)	N	%
Head	114	19.4
Traumatic Subdural haematoma	64	10.9
Traumatic subarachnoid haemorrhage	33	5.6
Skull fracture	32	5.4
Maxillofacial fracture	29	4.9
Cerebral contusion/laceration	20	3.4
Spine	45	7.6
Vertebral fracture, without deficit	27	4.6
Tetraplegia	5	0.8
Paraplegia	5	0.8
Chest	46	7.8
Traum. haemothorax/pneumothorax	29	4.9
Other injuries of the chest	19	3.2
Severe lung contusion/laceration	18	3.1
Abdomen	33	5.6
Minor injuries of the abdomen	12	2.0
Spleen: Moderate-Severe laceration	8	1.4
Liver: Moderate-Severe laceration	6	1.0
Pelvis/bone/joint & muscle	55	9.3
Long bone fracture	43	7.3
Multiple fracture of the pelvis	14	2.4
Very severe or open fracture of the pelvis	9	1.5
Major vessels injury	3	0.5
Aorta: rupture/dissection	2	0.3
Proximal limbs vessels: transection	1	0.2
-	0	0.0
Miscellaneous	5	0.8
Burns (>30% BSA)	4	0.7
Inhalation injury	2	0.3
Missing	0	

Infection severity on admission	N	%
None	340	57.9
Infection with or without SIRS	78	13.3
Severe sepsis	41	7.0
Septic shock	128	21.8
Missing	2	

Infection severity on admission

Patients infected (N=247)

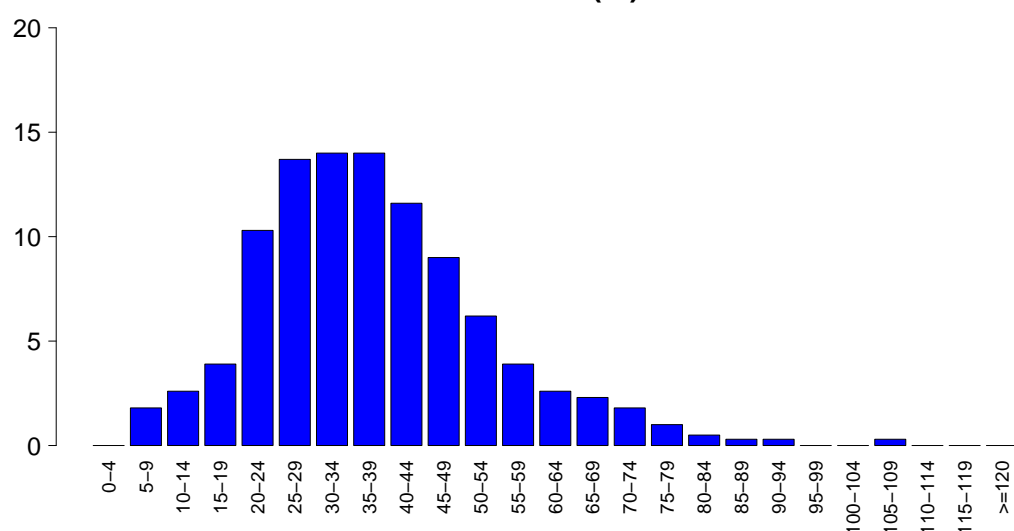


National report - Year 2015**Severity scores** - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model**Glasgow Coma Scale (%)****GCS (admission)**

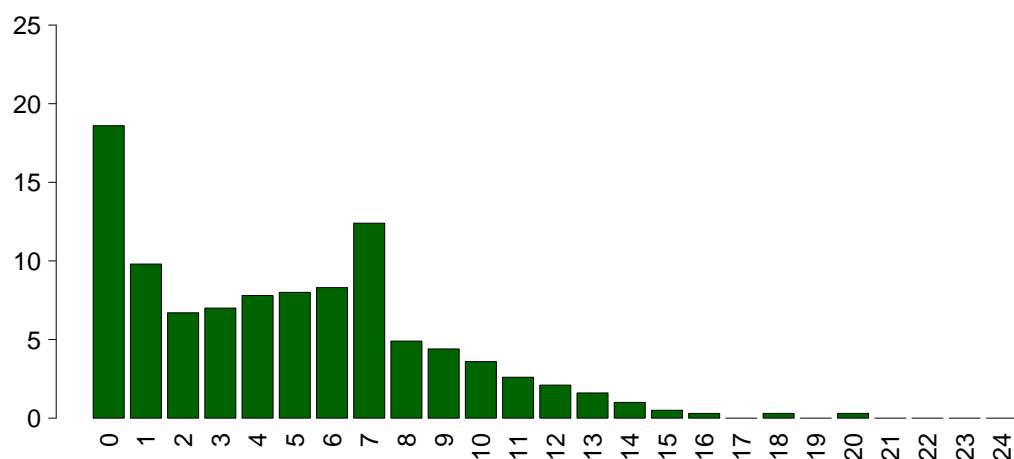
Median	15
Q1–Q3	15–15
Not evaluable	154
Missing	0

GCS (first 24 hours)

Median	15
Q1–Q3	15–15
Not evaluable	202
Missing	0

SAPS II (%)**SAPSII**

Mean	37.6
SD	15.4
Median	36
Q1–Q3	27–46
Not evaluable	202
Missing	0

SOFA (%)**SOFA**

Mean	4.8
SD	3.9
Median	5
Q1–Q3	1–7
Not evaluable	202
Missing	0

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

Complications during the stay	N	%
No	214	36.3
Yes	375	63.7
Missing	0	

Failures during the stay	N	%
No	479	81.3
Yes	110	18.7
A: Respiratory failure	40	6.8
B: Cardiovascular failure	51	8.7
C: Neurological failure	10	1.7
D: Hepatic failure	16	2.7
E: Renal failure (AKIN)	52	8.8
F: Acute skin failure	0	0.0
G: Metabolic failure	21	3.6
H: Coagulation failure	4	0.7
Missing	0	

Failures during the stay (top 10)	N	%
E	18	3.1
A	13	2.2
B	11	1.9
AB	8	1.4
BE	8	1.4
D	8	1.4
G	8	1.4
ABE	5	0.8
AE	4	0.7
ABEG	3	0.5
Missing	0	

Respiratory failure occurred	N	%
None	549	93.2
Intubation for airway maint.	10	1.7
Hypoxic failure	30	5.1
Hypercapnic failure	15	2.5
Missing	0	

Cardiovascular failure occurred	N	%
None	538	91.3
Cardiogenic shock	7	1.2
Hypovolemic shock	3	0.5
Haemorrhagic/hypovolemic shock	10	1.7
Septic shock	33	5.6
Anaphylactic shock	1	0.2
Neurogenic shock	0	0.0
Other shock	2	0.3
Missing	0	

Neurological failure occurred	N	%
None	579	98.3
Cerebral coma	5	0.8
Metabolic coma	4	0.7
Postanoxic coma	1	0.2
Missing	0	

Renal failure occurred (AKIN)	N	%
None	537	91.2
Mild	13	2.2
Moderate	8	1.4
Severe	31	5.3
Missing	0	

Complications during the stay	N	%
Respiratory	96	16.3
Pleural effusion	42	7.1
Aspiration pneumonia	33	5.6
Atelectasis	20	3.4
Pneumothorax/Pneumomediastinum	12	2.0
Severe ARDS	6	1.0
Cardiovascular	80	13.6
Acute severe arrhythmia: tachycardias	26	4.4
Cardiac arrest	15	2.5
Deep venous thrombosis	14	2.4
Acute severe arrhythmia: bradycardias	10	1.7
Hypertensive crisis	8	1.4
Neurological	124	21.1
Drowsiness/agitation/delirium	68	11.5
Intracranial hypertension	43	7.3
Brain edema	13	2.2
CrIMyNe	10	1.7
Seizures	5	0.8
Gastrointestinal and hepatic	113	19.2
Paralytic Ileus	38	6.5
Anastomotic dehiscence	19	3.2
Gastrointestinal bleeding: lower tract	15	2.5
Intrabdominal bleeding	15	2.5
Gastrointestinal perforation	13	2.2
Other	55	9.3
Other disease	27	4.6
Metabolic disorder	21	3.6
Nephro-urologic disease	20	3.4
Graft vascular thrombosis	2	0.3
Other skin and/or soft tissue pathology	2	0.3
Delayed spleen rupture	1	0.2
Severe graft dysfunction	1	0.2
Infections	193	32.8
Pneumonia	110	18.7
Post-surgical peritonitis	21	3.6
NON-surgical urinary tract infection	17	2.9
Post-surgical skin/soft tissue infection	13	2.2
L.R.T.I. other than pneumonia	9	1.5
Other fungal infections	9	1.5
Clinical sepsis	8	1.4
NON-surgical skin/soft tissue infection	8	1.4
Primary bacteraemia of unknown origin	7	1.2
Upper respiratory tract infection	7	1.2
Missing	0	

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

Infections	N	%	Maximum severity of infection	N	%
None	206	35.0	None	206	35.3
Only on admission	190	32.3	Infection with or without SIRS	176	30.1
On admission and during ICU stay	59	10.0	Severe sepsis	54	9.2
Only during ICU stay	134	22.8	Septic shock	148	25.3
Missing	0		Missing	5	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock
Admission	None	206 (61.5%)	103 (30.7%)	10 (3.0%)	16 (4.8%)	335
	Infection with or without SIRS	-	71 (91.0%)	5 (6.4%)	2 (2.6%)	78
	Severe sepsis	-	-	39 (95.1%)	2 (4.9%)	41
	Septic shock	-	-	-	128 (100.0%)	128
	TOT	206	174	54	148	582

Ventil. Associat. Pneumonia (VAP)	N	%
No	496	84.2
Yes	93	15.8
Missing	0	

Incidence of VAP

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

Estimate	36.4
CI (95%)	29.4–44.6

Incidence of VAP

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

Estimate	29.1%
CI (95%)	23.5–35.7

Catheter Bacteraemia (CR-BSI)	N	%
No	585	99.3
Yes	4	0.7
Missing	0	

Incidence of CR-BSI

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

Estimate	0.7
CI (95%)	0.2–1.9

Incidence of CR-BSI

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

Estimate	0.9%
CI (95%)	0.2–2.2

National report - Year 2015
Process indicators - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Procedures and/or treatments (Missing=0) Procedures (antibiotics excluded)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
	586	99.5										
Invasive ventilation	390	66.2	313	53.1	46	7.8	4	1-12	0	0	0-2	0
Non invasive ventilation	189	32.1	36	6.1	38	6.5	3	1-5	0	0	0-3	0
Tracheostomy	69	11.7	4	0.7	48	8.1	4	1-10	0	17	10-24	0
iNO (inhaled nitric oxide)	9	1.5	1	0.2	1	0.2	5	3-6	0	0	0-4	0
Central Venous Catheter	490	83.2	310	52.6	392	66.6	6	3-14	0	0	0-0	0
PICC	29	4.9	14	2.4	20	3.4	4	2-7	0	1	0-2	0
Arterial Catheter	494	83.9	343	58.2	240	40.7	6	3-13	0	0	0-0	0
Vasoactive drugs	408	69.3	237	40.2	30	5.1	4	2-7	0	0	0-0	0
Antiarrhythmics	60	10.2	10	1.7	11	1.9	2	1-4	0	2	1-3	0
IABP	0	0.0										
Invasive monitoring of C.O.	99	16.8	18	3.1	8	1.4	5	2-9	0	0	0-1	0
Continuous monitoring of ScVO2	1	0.2	0	0	0	0	2	2-2	0	0	0-0	0
Temporary pacing	2	0.3	1	0.2	0	0	24	20-29	0	43	43-43	0
Ventricular assistance	0	0.0										
DC-shock	8	1.4								1	1-4	0
CPR	16	2.7								4	1-10	0
Massive blood transfusion	13	2.2								0	0-3	0
ICP monitoring without liquor-drainage	79	13.4	65	11	11	1.9	6	3-14	0	0	0-0	0
ICP monitoring with liquor-drainage	6	1.0	3	0.5	2	0.3	4	2-8	0	5	2-7	0
External ventricular drainage without ICP	8	1.4	4	0.7	2	0.3	11	5-15	0	11	10-13	0
Haemofiltration	1	0.2	0	0	0	0	11	11-11	0	8	8-8	0
Haemodialysis	49	8.3	9	1.5	14	2.4	6	1-11	0	2	1-9	0
ECMO	1	0.2	0	0	1	0.2	0	0-0	0	6	6-6	0
Hepatic clearance techniques	0	0.0										
Clearance techniques during sepsis	3	0.5	0	0	0	0	3	2-15	0	3	2-4	0
IAP (intra-abdominal pressure)	94	16.0										
Hypothermia	16	2.7										
Enteral nutrition	287	48.7	14	2.4	170	28.9	6	2-14	0	1	1-2	0
Parenteral nutrition	468	79.5	59	10	258	43.8	5	2-9	0	1	0-1	0
SDD (Topical, Topical and systemic)	17	2.9										
Patient restraint	19	3.2										
Peridural catheter	8	1.4	4	0.7	5	0.8	4	3-4	0	0	0-1	0
Electrical cardioversion	1	0.2								1	1-1	0
Vacuum therapy	9	1.5										
Antibiotics	570	96.8										
Antibiotics for surgical prophylaxis	249	42.3	159	27	114	19.4	3	2-5	0	0	0-0	0
Antibiotics for medical prophylaxis	84	14.3	44	7.5	53	9	4	2-6	0	0	0-0	0
Empirical antibiotic therapy	254	43.1	127	21.6	103	17.5	3	2-6	0	0	0-2	0
Targeted antibiotic therapy	219	37.2	37	6.3	153	26	9	4-16	0	4	2-7	0

National report - Year 2015**Process indicators** - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

			Length (days)					
Invasive ventilation (N=390)	N	%	Mean	SD	Median	Q1-Q3	Missing	
Due to pulmonary failure	160	40.9	10.0	12.0	5	2–14.2	0	
For airway maintenance	193	49.4	9.2	10.6	5	2–14	0	
In weaning	19	4.9	0.5	0.5	0	0–1	0	
Not evaluable	19	4.9	6.2	9.2	3.5	0–7.8	1	
Reintubation within 48 hours	9	2.3	9.2	11.0	5	2–15	0	
Non invasive ventilation (N=189)	N	%	Number of surgical interventions					
Non invasive ventilation only	109	57.7				0	506	85.9
Non invasive ventilation failed	18	9.5				1	55	9.3
For weaning	61	32.3				2	14	2.4
Other	1	0.5				3	5	0.8
Missing	0					>3	9	1.5
						Missing	0	
Tracheostomy (N=69)	N	%	Surgical interventions					
Surgical	14	20.3	Days from admission					
Percutwist	25	36.2				Mean		10.1
Ciaglia	0	0.0				SD		9.6
Monodil. Ciaglia	2	2.9				Median		7
Fantoni	1	1.4				Q1–Q3		4–12
Griggs	2	2.9				Missing		0
Other Kind	25	36.2						
Missing	0							
Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=64)								
	Mean	17.6						
	SD	10.1						
	Median	17						
	Q1–Q3	9.8–24						
	Missing	0						
Invasive monitoring of C.O. (N=99)	N	%	Surgical interventions (top 10)					
Swan Ganz	0	0.0						
PICCO	29	29.3						
LIDCO	69	69.7						
Vigileo-PRAM	1	1.0						
Other	0	0.0						
Missing	0							
SDD (N=17)	N	%						
Topical	13	76.5						
Topical and systemic	4	23.5						
Missing	0							
Antibiotic therapy								
Pts. infected in ICU only (N=134)								
Only empirical	36	29.8						
Only targeted	35	28.9						
Targeted after empirical	43	35.5						
Other	7	5.8						
Missing	13							
Surgical interventions								
No	506	85.9						
Yes	83	14.1						
Missing	0							
			Number of surgical interventions					
			Surgical interventions					
			Days from admission					
			Surgical interventions (top 10)					

National report - Year 2015**Outcome indicators** - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

ICU outcome	N	%
Dead	72	12.2
Transferred to same hospital	496	84.2
Transferred to other hospital	20	3.4
Discharged home	1	0.2
Disch. terminally ill	0	0.0
Missing	0	

Transferred to (N=516)	N	%
Ward	258	50.0
Other ICU	17	3.3
High dependency care unit	241	46.7
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Reason for transfer to Other ICU (N=17)	N	%
Specialist expertise	3	17.6
Step-up care	2	11.8
Logistical/organizational reasons	5	29.4
Step-down care	7	41.2
Missing	0	

Transferred to Same hospital (N=496)	N	%
Ward	254	51.2
Other ICU	11	2.2
High dependency care unit	231	46.6
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Transferred to Other hospital (N=20)	N	%
Ward	4	20.0
Other ICU	6	30.0
High dependency care unit	10	50.0
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	517	87.8
Dead	72	12.2
Missing	0	

Timing of ICU mortality (N=72)	N	%
Daytime (08:00AM - 07:59PM)	43	59.7
Nighttime (08:00PM - 07:59AM)	29	40.3
Weekdays (Monday - Friday)	63	87.5
Weekend (Saturday - Sunday)	9	12.5
Missing	0	

Hospital mortality	N	%
Alive	439	74.5
Dead	150	25.5
Missing	0	

Timing of hosp. mortality (N=150)	N	%
In ICU	72	48.0
Within 24 hours after ICU	2	1.3
24-47 hours after ICU	5	3.3
48-71 hours after ICU	2	1.3
72-95 hours after ICU	6	4.0
After 95 hours after ICU	63	42.0
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=78)		
Mean		19.2
SD		22.0
Median		10
Q1–Q3		4.2–29
Missing		0

National report - Year 2015**Outcome indicators** - Adult emergency surgical patients with LOS \geq 24 hours evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	435	73.9
Dead	154	26.1
Missing	0	

ICU stay (days)		
	Mean	10.3
	SD	12.4
	Median	5
	Q1–Q3	3–13
	Missing	0

ICU stay (days)		
Alive (N=517)		
	Mean	10.0
	SD	12.0
	Median	5
	Q1–Q3	3–13
	Missing	0

ICU stay (days)		
Dead (N=72)		
	Mean	12.2
	SD	14.8
	Median	6
	Q1–Q3	3–17
	Missing	0

Stay after ICU (days)		
Alive (N=517)		
	Mean	18.3
	SD	20.4
	Median	12
	Q1–Q3	5–24
	Missing	0

Hospital stay (days)		
	Mean	30.9
	SD	28.6
	Median	22
	Q1–Q3	12–40
	Missing	0

Hospital stay (days)		
Alive (N=439)		
	Mean	31.8
	SD	29.4
	Median	22
	Q1–Q3	12–40
	Missing	0

Hospital stay (days)		
Dead (N=150)		
	Mean	28.4
	SD	25.9
	Median	21
	Q1–Q3	9–40
	Missing	0

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

Patients (N): 468

Sex	N	%
Male	296	63.2
Female	172	36.8
Missing	0	

Age (years)	N	%
17-45	67	14.3
46-65	170	36.3
66-75	108	23.1
>75	123	26.3
Missing	0	
Mean	63.8	
SD	16.4	
Median	65	
Q1–Q3	56.8–76	
Min–Max	17–94	

Body mass Index (BMI)	N	%
Underweight	13	2.8
Normal	179	38.2
Overweight	184	39.3
Obese	92	19.7
Missing	0	

Pregnancy status	N	%
Females (N=172)		
Not fertile	85	49.4
Not pregnant/Unknown	86	50.0
Currently pregnant	0	0.0
Post partum	1	0.6
Missing	0	

Comorbidities	N	%
No	93	19.9
Yes	375	80.1
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	267	57.1
Arrhythmia	69	14.7
NYHA class II-III	56	12.0
Diabetes Type II without insulin tr.	50	10.7
Myocardial infarction	46	9.8
Any tumour without metastasis	44	9.4
Moderate or severe renal disease	39	8.3
Antiplatelet therapy	35	7.5
Peripheral vascular disease	32	6.8
Cerebrovascular disease	30	6.4
Missing	0	

Stay before ICU (days)	Mean	SD	Median	Q1–Q3	Missing
	1.9	5.0	1	0–1	0

Source of admission	N	%
Same hospital	453	96.8
Other hospital	13	2.8
Long-term chronic care hospital	2	0.4
Directly from the community	0	0.0
Missing	0	

Ward of admission	N	%
Hospital (N=466)		
Medical ward	49	10.5
Surgical ward	233	50.0
Emergency room	166	35.6
Other ICU	10	2.1
High dependency care unit	8	1.7
Missing	0	

Reason for transfer from	N	%
Other ICU (N=10)		
Specialist expertise	2	20.0
Step-up care	3	30.0
Logistical/organizational reasons	5	50.0
Step-down care	0	0.0
Missing	0	

Ward of admission	N	%
Same hospital (N=453)		
Medical ward	44	9.7
Surgical ward	231	51.0
Emergency room	166	36.6
Other ICU	6	1.3
High dependency care unit	6	1.3
Missing	0	

Ward of admission	N	%
Other hospital (N=13)		
Medical ward	5	38.5
Surgical ward	2	15.4
Emergency room	0	0.0
Other ICU	4	30.8
High dependency care unit	2	15.4
Missing	0	

Scheduled admission	N	%
No	339	72.4
Yes	129	27.6
Missing	0	

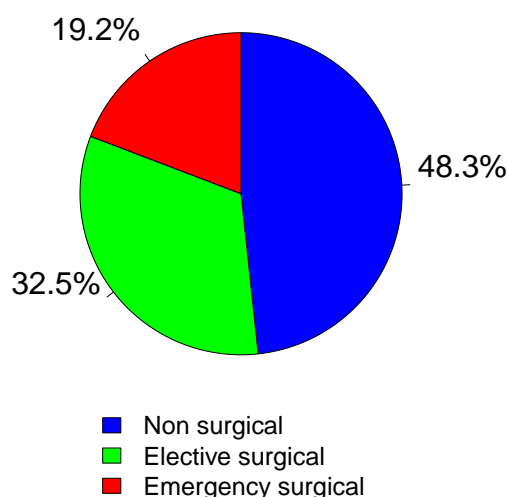
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Characteristics on admission - Adult patients with LOS<24 hours evaluated in the GiViTI model

Trauma	N	%
No	413	88.2
Yes	55	11.8
Multiple trauma	14	3.0
Missing	0	

Surgical status	N	%
Non surgical	226	48.3
Elective surgical	152	32.5
Emergency surgical	90	19.2
Missing	0	

Surgical status



Source of admission	N	%
Surgical pts. (N=242)		
Operating theatre of surgical ward	206	85.1
Operating theatre of emergency room	7	2.9
Surgical ward	6	2.5
Other	23	9.5
Missing	0	

Surgical interventions (top 10)	N	%
Elective surgical (N=152)		
Nephro/Urological surgery	61	40.1
Peripheral vascular surgery	50	32.9
Gastrointestinal surgery	14	9.2
Orthopaedic surgery	10	6.6
Other surgery	5	3.3
Thoracic surgery	4	2.6
Neurosurgery	3	2.0
ENT surgery	2	1.3
Abdominal vascular surgery	2	1.3
Pancreatic surgery	1	0.7
Missing	0	

Timing	N	%
Elective surgical (N=152)		
From -7 to -3 days	1	0.7
From -2 to -1 days	6	3.9
On ICU admission day	150	98.7
The day after ICU admission	0	0.0
Missing	0	

Surgical interventions (top 10)	N	%
Emergency surgical (N=90)		
Gastrointestinal surgery	36	40.0
Orthopaedic surgery	20	22.2
Other surgery	6	6.7
Thoracic surgery	5	5.6
Abdominal vascular surgery	4	4.4
Biliary tract surgery	4	4.4
Nephro/Urological surgery	3	3.3
ENT surgery	3	3.3
Gynaecological surgery	2	2.2
Maxillo-Facial surgery	2	2.2
Missing	5	

Timing	N	%
Emergency surgical (N=90)		
From -7 to -3 days	2	2.2
From -2 to -1 days	5	5.6
On ICU admission day	82	91.1
The day after ICU admission	2	2.2
Missing	0	

Non surgical interventions	N	%
None	439	93.8
Elective	2	0.4
Emergency	27	5.8
Missing	0	

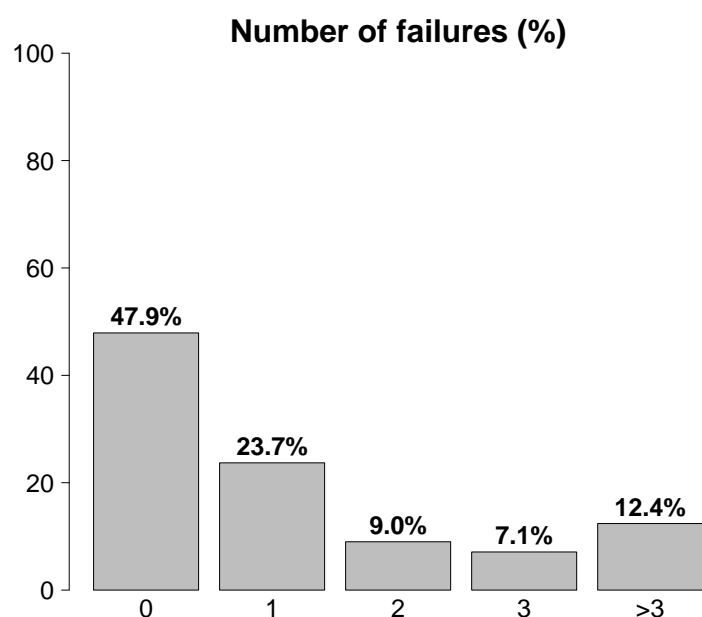
Non surgical interventions	N	%
Elective (N=2)		
Interventional radiology	1	50.0
Interventional cardiology	1	50.0
Interventional neuroradiology	0	0.0
Interventional endoscopy	0	0.0
Missing	0	

Non surgical interventions	N	%
Emergency (N=27)		
Interventional cardiology	13	48.1
Interventional endoscopy	13	48.1
Interventional neuroradiology	1	3.7
Interventional radiology	0	0.0
Missing	0	

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

Reason for admission	N	%
Monitoring/Weaning	277	59.2
Post surgical weaning	13	2.8
Surgical monitoring	116	24.8
Post interventional weaning	0	0.0
Interventional monitoring	19	4.1
Non surgical monitoring	129	27.6
Missing	0	
Admission for procedures/treatments	0	0.0
Intensive Treatment	191	40.8
Only ventilatory support	87	18.6
Only cardiovascular support	28	6.0
Ventilatory and cardiovascular support	76	16.2
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	224	47.9
Yes	244	52.1
A: Respiratory failure	163	34.8
B: Cardiovascular failure	104	22.2
C: Neurological failure	33	7.1
D: Hepatic failure	10	2.1
E: Renal failure	115	24.6
F: Acute skin failure	2	0.4
G: Metabolic failure	108	23.1
H: Coagulation failure	18	3.8
Missing	0	

Failures on admission (top 10)	N	%
A	66	14.1
ABEG	25	5.3
E	24	5.1
AB	10	2.1
ABCEG	10	2.1
BEG	9	1.9
EG	9	1.9
ABG	7	1.5
AE	7	1.5
AEG	7	1.5
Missing	0	

Respiratory failure	N	%
None	305	65.2
Only hypoxic failure	111	23.7
Only hypercapnic failure	4	0.9
Hypoxic-hypercapnic failure	12	2.6
Intubation for airway maint.	36	7.7
Missing	0	

Cardiovascular failure	N	%
None	364	77.8
Without shock	24	5.1
Cardiogenic shock	20	4.3
Septic shock	30	6.4
Haemorrhagic/hypovolemic shock	14	3.0
Hypovolemic shock	2	0.4
Anaphylactic shock	2	0.4
Neurogenic shock	2	0.4
Other shock	2	0.4
Mixed shock	8	1.7
Missing	0	

Neurologic failure	N	%
None	403	92.4
Cerebral coma	12	2.8
Metabolic coma	13	3.0
Postanoxic coma	6	1.4
Toxic coma	2	0.5
Missing or not evaluable	32	

Renal failure (AKIN)	N	%
None	353	75.4
Mild	49	10.5
Moderate	34	7.3
Severe	32	6.8
Missing	0	

Metabolic failure	N	%
None	360	76.9
pH ≤ 7.3, PaCO ₂ < 45 mmHg	25	5.3
Base deficit ≥ 5 mmol/L, lactate > 1.5x	83	17.7
Missing	0	

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

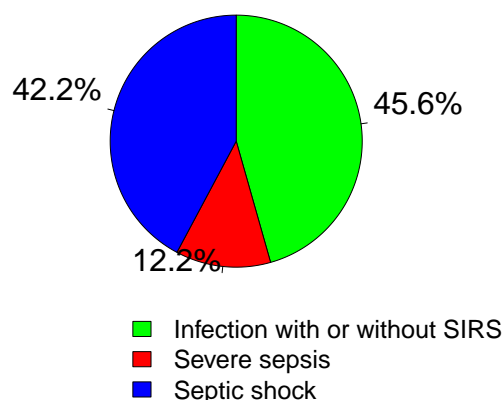
Clinical conditions on admission	N	%
Respiratory	44	9.4
Pleural effusion	11	2.4
Upper respiratory tract disease	7	1.5
Aspiration pneumonia	7	1.5
Pulmonary embolism	6	1.3
Acute exacerbation of COPD	5	1.1
Cardiovascular	155	33.1
Peripheral vascular disease	51	10.9
Acute myocardial infarction	30	6.4
Cardiac arrest	18	3.8
Left heart failure with pulmonary edema	16	3.4
Acute ischaemia	16	3.4
Neurological	44	9.4
Cerebral artery stroke	28	6.0
Seizures	6	1.3
Non traumatic cerebral oedema	2	0.4
Brain tumour	2	0.4
Spontaneous Intraparenchymal bleeding	2	0.4
Gastrointestinal and hepatic	70	15.0
Digestive tract malignancy	16	3.4
Intestinal occlusion	12	2.6
Gastrointestinal bleeding: upper tract	11	2.4
Paralytic Ileus	8	1.7
Ascites	8	1.7
Trauma (anatomical districts)	55	11.8
Pelvis/bone/joint & muscle	30	6.4
Chest	19	4.1
Spine	13	2.8
Head	12	2.6
Abdomen	5	1.1
Major vessels injury	3	0.6
Miscellaneous	1	0.2
Other	191	40.8
Nephro-urologic disease	66	14.1
Other disease	59	12.6
Metabolic disorder	54	11.5
Coagulation disorder	18	3.8
Acute intoxication	13	2.8
Post transplantation	3	0.6
Renal transplantation	2	0.4
Liver transplantation	1	0.2
Infections	92	19.7
Pneumonia	32	6.8
NON-surgical urinary tract infection	12	2.6
Clinical sepsis	10	2.1
NON-surgical secondary peritonitis	8	1.7
L.R.T.I. other than pneumonia	7	1.5
Cholecystitis/choolangitis	6	1.3
NON-surgical CNS infection	6	1.3
Post-surgical peritonitis	6	1.3
Primary peritonitis	5	1.1
NON-surgical skin/soft tissue infection	5	1.1
Missing	0	

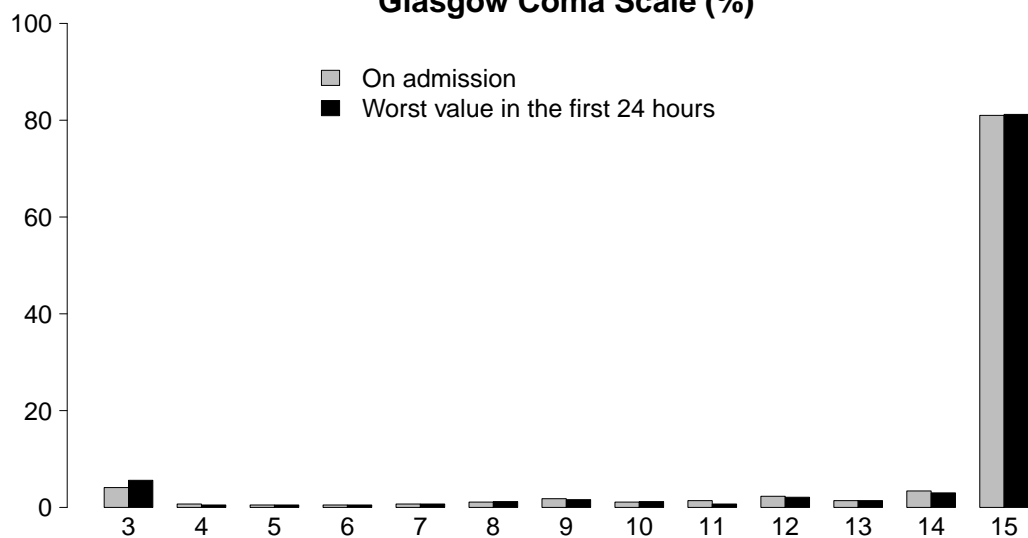
Trauma (anatomical districts)	N	%
Head	12	2.6
Maxillofacial fracture	5	1.1
Cerebral contusion/laceration	4	0.9
Skull fracture	4	0.9
Traumatic Subdural haematoma	2	0.4
Traumatic intraparenchymal bleeding	2	0.4
Spine	13	2.8
Vertebral fracture, without deficit	11	2.4
Cervical injury, incomplete deficit	1	0.2
Dorsal injury, incomplete deficit	1	0.2
Chest	19	4.1
Other injuries of the chest	10	2.1
Severe lung contusion/laceration	7	1.5
Traum. haemothorax/pneumothorax	6	1.3
Abdomen	5	1.1
Minor injuries of the abdomen	2	0.4
Spleen: Moderate-Severe laceration	1	0.2
Spleen: Massive rupture	1	0.2
Pelvis/bone/joint & muscle	30	6.4
Long bone fracture	23	4.9
Multiple fracture of the pelvis	6	1.3
Massive crush/amputation	2	0.4
Major vessels injury	3	0.6
Aorta: rupture/dissection	2	0.4
Major thoracic vessels: transection	1	0.2
-	0	0.0
Miscellaneous	1	0.2
Burns (>30% BSA)	1	0.2
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	376	80.7
Infection with or without SIRS	41	8.8
Severe sepsis	11	2.4
Septic shock	38	8.2
Missing	2	

Infection severity on admission

Patients infected (N=90)

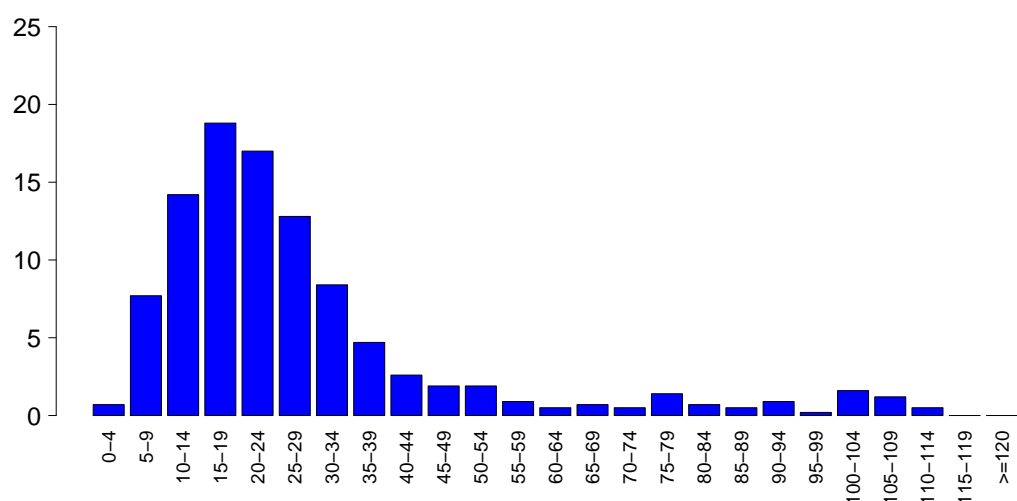


National report - Year 2015**Severity scores** - Adult patients with LOS<24 hours evaluated in the GiViTI model**Glasgow Coma Scale (%)****GCS (admission)**

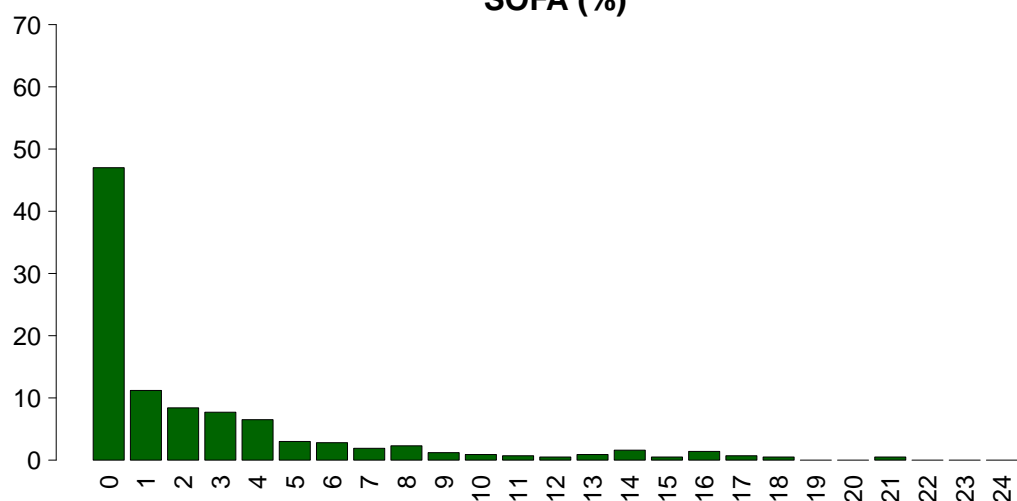
Median	15
Q1–Q3	15–15
Not evaluable	32
Missing	0

GCS (first 24 hours)

Median	15
Q1–Q3	15–15
Not evaluable	38
Missing	0

SAPS II (%)**SAPSII**

Mean	28.2
SD	21.9
Median	21.5
Q1–Q3	15–32
Not evaluable	38
Missing	0

SOFA (%)**SOFA**

Mean	2.7
SD	4.2
Median	1
Q1–Q3	0–4
Not evaluable	38
Missing	0

Neurological failure occurred	N	%
None	465	99.4
Cerebral coma	2	0.4
Metabolic coma	1	0.2
Postanoxic coma	1	0.2
Missing	0	

Complications during the stay	N	%
Respiratory	10	2.1
Aspiration pneumonia	2	0.4
Pneumothorax/Pneumomediastinum	2	0.4
Upper resp. tract disease	2	0.4
Moderate ARDS	1	0.2
Severe ARDS	1	0.2
Cardiovascular	27	5.8
Cardiac arrest	16	3.4
Acute severe arrhythmia: tachycardias	5	1.1
Hypertensive crisis	2	0.4
Left heart failure w/o pulm. edema	2	0.4
Peripheral vascular disease	2	0.4
Neurological	22	4.7
Drowsiness/agitation/delirium	18	3.8
Seizures	2	0.4
Intracranial hypertension	1	0.2
Non-surgical intracranial bleeding	1	0.2
-	0	0.0
Gastrointestinal and hepatic	5	1.1
Paralytic Ileus	2	0.4
Bowel ischaemia	1	0.2
Gastrointestinal perforation	1	0.2
Intestinal occlusion	1	0.2
Intrabdominal bleeding	1	0.2
Other	10	2.1
Metabolic disorder	6	1.3
Other disease	4	0.9
Nephro-urologic disease	2	0.4
-	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	

National report - Year 2015**Characteristics during the stay** - Adult patients with LOS<24 hours evaluated in the GiViTI model

Infections	N	%	Maximum severity of infection	N	%
None	375	80.1	None	375	80.5
Only on admission	90	19.2	Infection with or without SIRS	40	8.6
On admission and during ICU stay	2	0.4	Severe sepsis	13	2.8
Only during ICU stay	1	0.2	Septic shock	38	8.2
Missing	0		Missing	2	

Severity evolution

Severity evolution		During the stay				
		N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock
Admission	None	375 (99.7%)	0 (0.0%)	1 (0.3%)	0 (0.0%)	376
	Infection with or without SIRS	-	40 (97.6%)	1 (2.4%)	0 (0.0%)	41
	Severe sepsis	-	-	11 (100.0%)	0 (0.0%)	11
	Septic shock	-	-	-	38 (100.0%)	38
	TOT	375	40	13	38	466

National report - Year 2015
Process indicators - Adult patients with LOS<24 hours evaluated in the GiViTI model

Procedures and/or treatments (Missing=0) Procedures (antibiotics excluded)	Use		On admission		On discharge		Length (days)		Days from admission	
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median
	344	73.5								
Invasive ventilation	105	22.4	64	13.7	18	3.8				
Non invasive ventilation	102	21.8	25	5.3	16	3.4				
Tracheostomy	0	0.0								
iNO (inhaled nitric oxide)	0	0.0								
Central Venous Catheter	130	27.8	67	14.3	80	17.1				
PICC	31	6.6	8	1.7	25	5.3				
Arterial Catheter	228	48.7	140	29.9	64	13.7				
Vasoactive drugs	121	25.9	48	10.3	28	6				
Antiarrhythmics	22	4.7	6	1.3	5	1.1				
IABP	0	0.0								
Invasive monitoring of C.O.	8	1.7	3	0.6	3	0.6				
Continuous monitoring of ScVO2	4	0.9	0	0	0	0				
Temporary pacing	1	0.2	0	0	0	0				
Ventricular assistance	0	0.0								
DC-shock	4	0.9								
CPR	19	4.1								
Massive blood transfusion	8	1.7								
ICP monitoring without liquor-drainage	2	0.4	1	0.2	1	0.2				
ICP monitoring with liquor-drainage	0	0.0								
External ventricular drainage without ICP	0	0.0								
Haemofiltration	0	0.0								
Haemodialysis	10	2.1	4	0.9	4	0.9				
ECMO	0	0.0								
Hepatic clearance techniques	1	0.2								
Clearance techniques during sepsis	0	0.0								
IAP (intra-abdominal pressure)	6	1.3								
Hypothermia	2	0.4								
Enteral nutrition	18	3.8	1	0.2	11	2.4				
Parenteral nutrition	123	26.3	28	6	63	13.5				
SDD (Topical, Topical and systemic)	9	1.9								
Patient restraint	6	1.3								
Peridural catheter	8	1.7	8	1.7	8	1.7				
Electrical cardioversion	0	0.0								
Vacuum therapy	0	0.0								
Antibiotics	249	53.2								
Antibiotics for surgical prophylaxis	142	30.3	98	20.9	80	17.1				
Antibiotics for medical prophylaxis	33	7.1	18	3.8	18	3.8				
Empirical antibiotic therapy	63	13.5	28	6	46	9.8				
Targeted antibiotic therapy	11	2.4	9	1.9	6	1.3				

National report - Year 2015**Process indicators** - Adult patients with LOS<24 hours evaluated in the GiViTI model

Invasive ventilation (N=105)	N	%
Due to pulmonary failure	55	52.4
For airway maintenance	36	34.3
In weaning	13	12.4
Not evaluable	1	1.0
Reintubation within 48 hours	0	0.0

Non invasive ventilation (N=102)	N	%
Non invasive ventilation only	96	94.1
Non invasive ventilation failed	2	2.0
For weaning	4	3.9
Other	0	0.0
Missing	0	

Tracheostomy (N=0)	N	%
Surgical	0	0.0
Percutwist	0	0.0
Ciaglia	0	0.0
Monodil. Ciaglia	0	0.0
Fantoni	0	0.0
Griggs	0	0.0
Other Kind	0	0.0
Missing	0	

Invasive monitoring of C.O. (N=8)	N	%
Swan Ganz	1	12.5
PICCO	4	50.0
LIDCO	2	25.0
Vigileo-PRAM	0	0.0
Other	1	12.5
Missing	0	

SDD (N=9)	N	%
Topical	9	100.0
Topical and systemic	0	0.0
Missing	0	

National report - Year 2015**Outcome indicators** - Adult patients with LOS<24 hours evaluated in the GiViTI model

ICU outcome	N	%
Dead	65	13.9
Transferred to same hospital	348	74.4
Transferred to other hospital	50	10.7
Discharged home	5	1.1
Disch. terminally ill	0	0.0
Missing	0	

Transferred to (N=398)	N	%
Ward	319	80.2
Other ICU	32	8.0
High dependency care unit	47	11.8
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Reason for transfer to Other ICU (N=32)	N	%
Specialist expertise	10	31.2
Step-up care	12	37.5
Logistical/organizational reasons	8	25.0
Step-down care	2	6.2
Missing	0	

Transferred to Same hospital (N=348)	N	%
Ward	294	84.5
Other ICU	15	4.3
High dependency care unit	39	11.2
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Transferred to Other hospital (N=50)	N	%
Ward	25	50.0
Other ICU	17	34.0
High dependency care unit	8	16.0
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	403	86.1
Dead	65	13.9
Missing	0	

Timing of ICU mortality (N=65)	N	%
Daytime (08:00AM - 07:59PM)	31	47.7
Nighttime (08:00PM - 07:59AM)	34	52.3
Weekdays (Monday - Friday)	45	69.2
Weekend (Saturday - Sunday)	20	30.8
Missing	0	

Hospital mortality	N	%
Alive	393	84.0
Dead	75	16.0
Missing	0	

Timing of hosp. mortality (N=75)	N	%
In ICU	65	86.7
Within 24 hours after ICU	1	1.3
24-47 hours after ICU	0	0.0
48-71 hours after ICU	1	1.3
72-95 hours after ICU	0	0.0
After 95 hours after ICU	8	10.7
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=10)		
Mean		19.8
SD		21.5
Median		14.5
Q1–Q3		7–20.8
Missing		0

National report - Year 2015**Outcome indicators** - Adult patients with LOS<24 hours evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	392	83.8
Dead	76	16.2
Missing	0	

Stay after ICU (days)		
Alive (N=403)		
	Mean	9.0
	SD	13.2
	Median	5
	Q1–Q3	2–11
	Missing	0

Hospital stay (days)		
	Mean	10.1
	SD	14.2
	Median	5
	Q1–Q3	2–11
	Missing	0

Hospital stay (days)		
Alive (N=393)		
	Mean	11.1
	SD	14.4
	Median	6
	Q1–Q3	3–12
	Missing	0

Hospital stay (days)		
Dead (N=75)		
	Mean	5.1
	SD	11.5
	Median	1
	Q1–Q3	0–4
	Missing	0

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

Patients (N): 152

Sex	N	%
Male	112	73.7
Female	40	26.3
Missing	0	

Age (years)	N	%
17-45	8	5.3
46-65	66	43.4
66-75	50	32.9
>75	28	18.4
Missing	0	
Mean	65.3	
SD	11.3	
Median	66	
Q1–Q3	60–73.2	
Min–Max	20–88	

Body mass Index (BMI)	N	%
Underweight	7	4.6
Normal	54	35.5
Overweight	61	40.1
Obese	30	19.7
Missing	0	

Pregnancy status	N	%
Females (N=40)		
Not fertile	16	40.0
Not pregnant/Unknown	24	60.0
Currently pregnant	0	0.0
Post partum	0	0.0
Missing	0	

Comorbidities	N	%
No	20	13.2
Yes	132	86.8
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	98	64.5
Any tumour without metastasis	27	17.8
Peripheral vascular disease	20	13.2
Arrhythmia	14	9.2
Diabetes Type II without insulin tr.	14	9.2
Diabetes Type II with insulin treatment	12	7.9
Myocardial infarction	10	6.6
Cerebrovascular disease	9	5.9
NYHA class II-III	9	5.9
Metastatic cancer	9	5.9
Missing	0	

Stay before ICU (days)	Mean	SD	Median	Q1–Q3	Missing
	2.3	4.2	1	1–1	0

Source of admission	N	%
Same hospital	152	100.0
Other hospital	0	0.0
Long-term chronic care hospital	0	0.0
Directly from the community	0	0.0
Missing	0	

Ward of admission	N	%
Hospital (N=152)		
Medical ward	2	1.3
Surgical ward	149	98.0
Emergency room	0	0.0
Other ICU	0	0.0
High dependency care unit	1	0.7
Missing	0	

Reason for transfer from 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	

Ward of admission	N	%
Same hospital (N=152)		
Medical ward	2	1.3
Surgical ward	149	98.0
Emergency room	0	0.0
Other ICU	0	0.0
High dependency care unit	1	0.7
Missing	0	

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

Scheduled admission	N	%
No	23	15.1
Yes	129	84.9
Missing	0	

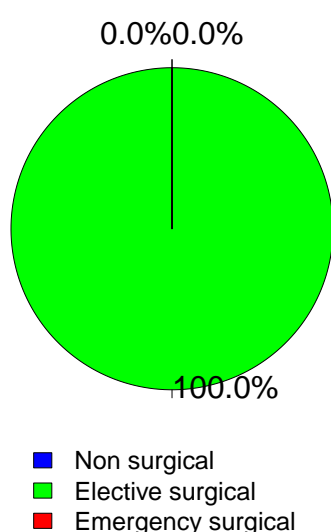
National report - Year 2015

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

Trauma	N	%
No	146	96.1
Yes	6	3.9
Multiple trauma	1	0.7
Missing	0	

Surgical status	N	%
Non surgical	0	0.0
Elective surgical	152	100.0
Emergency surgical	0	0.0
Missing	0	

Surgical status



Source of admission	N	%
Surgical pts. (N=152)		
Operating theatre of surgical ward	147	96.7
Operating theatre of emergency room	0	0.0
Surgical ward	2	1.3
Other	3	2.0
Missing	0	

Surgical interventions (top 10)	N	%
Elective surgical (N=152)		
Nephro/Urological surgery	61	40.1
Peripheral vascular surgery	50	32.9
Gastrointestinal surgery	14	9.2
Orthopaedic surgery	10	6.6
Other surgery	5	3.3
Thoracic surgery	4	2.6
Neurosurgery	3	2.0
ENT surgery	2	1.3
Abdominal vascular surgery	2	1.3
Pancreatic surgery	1	0.7
Missing	0	

Timing	N	%
Elective surgical (N=152)		
From -7 to -3 days	1	0.7
From -2 to -1 days	6	3.9
On ICU admission day	150	98.7
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	151	99.3
Elective	1	0.7
Emergency	0	0.0
Missing	0	

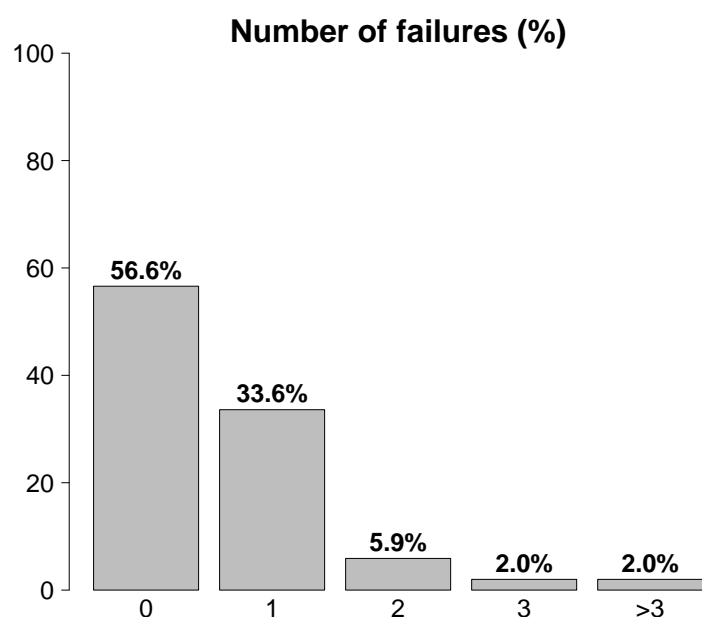
Non surgical interventions	N	%
Elective (N=1)		
Interventional cardiology	1	100.0
Interventional radiology	0	0.0
Interventional neuroradiology	0	0.0
Interventional endoscopy	0	0.0
Missing	0	

Non surgical interventions	N	%
Emergency (N=0)		
Interventional radiology	0	0.0
Interventional cardiology	0	0.0
Interventional neuroradiology	0	0.0
Interventional endoscopy	0	0.0
Missing	0	

National report - Year 2015

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

Reason for admission	N	%
Monitoring/Weaning	94	61.8
Post surgical weaning	8	5.3
Surgical monitoring	86	56.6
Post interventional weaning	0	0.0
Interventional monitoring	0	0.0
Non surgical monitoring	0	0.0
Missing	0	
Admission for procedures/treatments	0	0.0
Intensive Treatment	58	38.2
Only ventilatory support	46	30.3
Only cardiovascular support	5	3.3
Ventilatory and cardiovascular support	7	4.6
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	86	56.6
Yes	66	43.4
A: Respiratory failure	53	34.9
B: Cardiovascular failure	12	7.9
C: Neurological failure	1	0.7
D: Hepatic failure	1	0.7
E: Renal failure	14	9.2
F: Acute skin failure	0	0.0
G: Metabolic failure	10	6.6
H: Coagulation failure	1	0.7
Missing	0	

Failures on admission (top 10)	N	%
A	43	28.3
E	4	2.6
AB	3	2.0
AE	2	1.3
B	2	1.3
EG	2	1.3
ABCEG	1	0.7
ABDEG	1	0.7
ABEG	1	0.7
ABG	1	0.7
Missing	0	

Respiratory failure	N	%
None	99	65.1
Only hypoxic failure	47	30.9
Only hypercapnic failure	0	0.0
Hypoxic-hypercapnic failure	1	0.7
Intubation for airway maint.	5	3.3
Missing	0	

Cardiovascular failure	N	%
None	140	92.1
Without shock	5	3.3
Cardiogenic shock	1	0.7
Septic shock	2	1.3
Haemorrhagic/hypovolemic shock	1	0.7
Hypovolemic shock	0	0.0
Anaphylactic shock	1	0.7
Neurogenic shock	0	0.0
Other shock	1	0.7
Mixed shock	1	0.7
Missing	0	

Neurologic failure	N	%
None	148	99.3
Cerebral coma	0	0.0
Metabolic coma	0	0.0
Postanoxic coma	1	0.7
Toxic coma	0	0.0
Missing or not evaluable	3	

Renal failure (AKIN)	N	%
None	138	90.8
Mild	11	7.2
Moderate	1	0.7
Severe	2	1.3
Missing	0	

Metabolic failure	N	%
None	142	93.4
pH <= 7.3, PaCO ₂ < 45 mmHg	3	2.0
Base deficit >= 5 mmol/L, lactate >1.5x	7	4.6
Missing	0	

National report - Year 2015**Characteristics on admission** - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

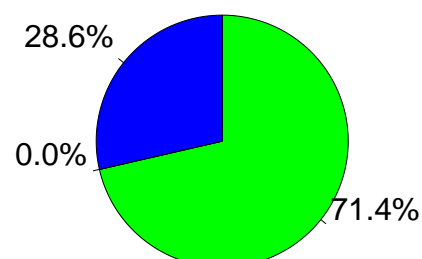
Clinical conditions on admission	N	%
Respiratory	4	2.6
Acute asthma/bronchospasm	1	0.7
Lung cancer	1	0.7
Pneumothorax/Pneumomediastinum	1	0.7
Airways bleeding	1	0.7
-	0	0.0
Cardiovascular	57	37.5
Peripheral vascular disease	48	31.6
Left heart failure without pulm. edema	2	1.3
Acute severe arrhythmia: tachycardias	2	1.3
Cardiac arrest	2	1.3
Acute ischaemia	1	0.7
Neurological	3	2.0
Non traumatic cerebral oedema	1	0.7
Seizures	1	0.7
Cerebral Aneurysm	1	0.7
-	0	0.0
-	0	0.0
Gastrointestinal and hepatic	11	7.2
Digestive tract malignancy	9	5.9
Hepatic malignancy	2	1.3
Pancreatic malignancy	1	0.7
Acute bile-duct disease	1	0.7
Liver Dysfunction Syndrome	1	0.7
Trauma (anatomical districts)	6	3.9
Pelvis/bone/joint & muscle	5	3.3
Spine	1	0.7
Chest	1	0.7
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Other	80	52.6
Nephro-urologic disease	51	33.6
Other disease	22	14.5
Orthopaedic disease	2	1.3
Other skin and/or soft tissue pathology	2	1.3
Coagulation disorder	1	0.7
Post transplantation	1	0.7
Renal transplantation	1	0.7
-	0	0.0
Infections	7	4.6
Pneumonia	2	1.3
NON-surgical CNS infection	1	0.7
L.R.T.I. other than pneumonia	1	0.7
Post-surgical peritonitis	1	0.7
Primary peritonitis	1	0.7
Post-surg. gynecological inf.	1	0.7
NON-surgical skin/soft tissue infection	1	0.7
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Trauma (anatomical districts)	N	%
Head	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Spine	1	0.7
Vertebral fracture, without deficit	1	0.7
-	0	0.0
-	0	0.0
Chest	1	0.7
Other injuries of the chest	1	0.7
-	0	0.0
-	0	0.0
Abdomen	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Pelvis/bone/joint & muscle	5	3.3
Long bone fracture	5	3.3
-	0	0.0
-	0	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
Missing	0	

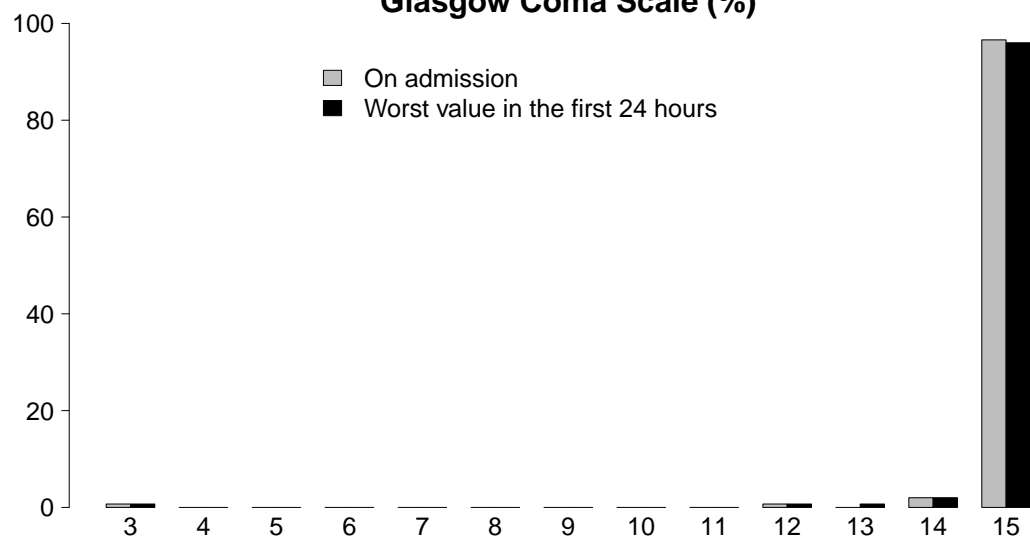
Infection severity on admission	N	%
None	145	95.4
Infection with or without SIRS	5	3.3
Severe sepsis	0	0.0
Septic shock	2	1.3
Missing	0	

Infection severity on admission

Patients infected (N=7)



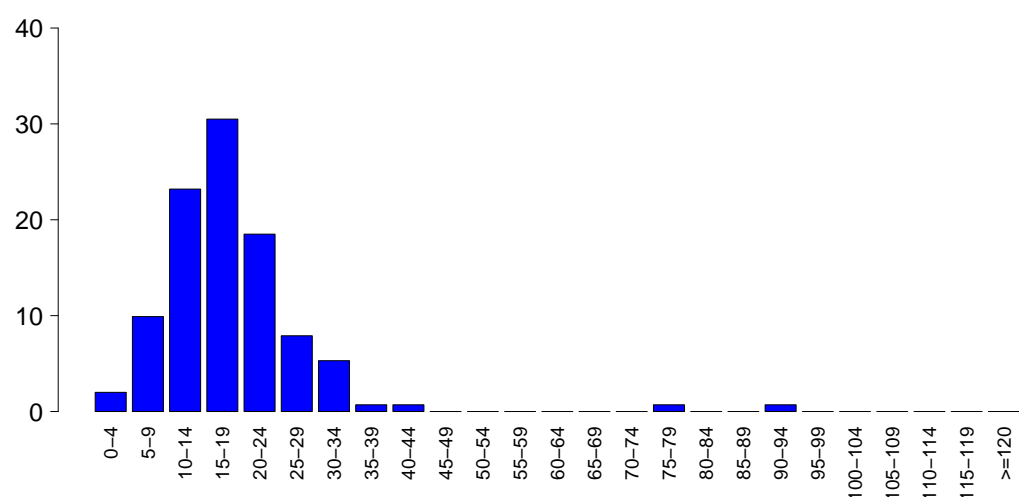
- Infection with or without SIRS
- Severe sepsis
- Septic shock

National report - Year 2015**Severity scores** - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model**Glasgow Coma Scale (%)****GCS (admission)**

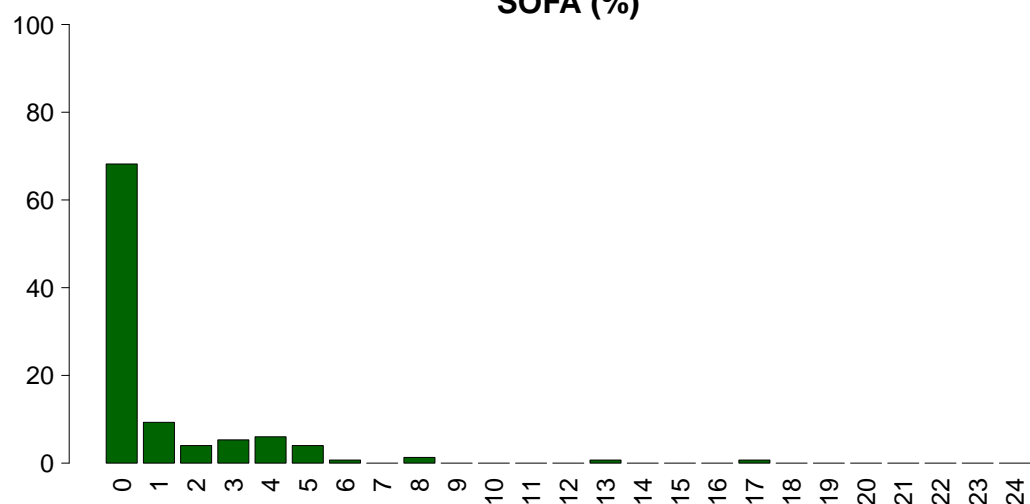
Median	15
Q1–Q3	15–15
Not evaluable	3
Missing	0

GCS (first 24 hours)

Median	15
Q1–Q3	15–15
Not evaluable	1
Missing	0

SAPS II (%)**SAPSII**

Mean	18.2
SD	10.7
Median	18
Q1–Q3	12–21
Not evaluable	1
Missing	0

SOFA (%)**SOFA**

Mean	1.1
SD	2.4
Median	0
Q1–Q3	0–1
Not evaluable	1
Missing	0

National report - Year 2015**Characteristics during the stay** - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

Infections	N	%	Maximum severity of infection	N	%
None	145	95.4	None	145	95.4
Only on admission	6	3.9	Infection with or without SIRS	5	3.3
On admission and during ICU stay	1	0.7	Severe sepsis	0	0.0
Only during ICU stay	0	0.0	Septic shock	2	1.3
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	145 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	145
	Infection with or without SIRS	-	5 (100.0%)	0 (0.0%)	0 (0.0%)	5
	Severe sepsis	-	-	0 (0.0%)	0 (0.0%)	0
	Septic shock	-	-	-	2 (100.0%)	2
	TOT	145	5	0	2	152

National report - Year 2015
Process indicators - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

Procedures and/or treatments (Missing=0) Procedures (antibiotics excluded)	Use		On admission		On discharge		Length (days)			Days from admission	
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3
	143	94.1									
Invasive ventilation	15	9.9	15	9.9	2	1.3					
Non invasive ventilation	59	38.8	15	9.9	4	2.6					
Tracheostomy	0	0.0									
iNO (inhaled nitric oxide)	0	0.0									
Central Venous Catheter	30	19.7	28	18.4	27	17.8					
PICC	7	4.6	4	2.6	7	4.6					
Arterial Catheter	105	69.1	88	57.9	17	11.2					
Vasoactive drugs	21	13.8	14	9.2	5	3.3					
Antiarrhythmics	3	2.0	1	0.7	1	0.7					
IABP	0	0.0									
Invasive monitoring of C.O.	2	1.3	2	1.3	1	0.7					
Continuous monitoring of ScVO2	3	2.0	0	0	0	0					
Temporary pacing	0	0.0									
Ventricular assistance	0	0.0									
DC-shock	0	0.0									
CPR	1	0.7									
Massive blood transfusion	1	0.7									
ICP monitoring without liquor-drainage	0	0.0									
ICP monitoring with liquor-drainage	0	0.0									
External ventricular drainage without ICP	0	0.0									
Haemofiltration	0	0.0									
Haemodialysis	0	0.0									
ECMO	0	0.0									
Hepatic clearance techniques	0	0.0									
Clearance techniques during sepsis	0	0.0									
IAP (intra-abdominal pressure)	3	2.0									
Hypothermia	0	0.0									
Enteral nutrition	6	3.9	0	0	5	3.3					
Parenteral nutrition	75	49.3	18	11.8	35	23					
SDD (Topical, Topical and systemic)	2	1.3									
Patient restraint	1	0.7									
Peridural catheter	8	5.3	8	5.3	8	5.3					
Electrical cardioversion	0	0.0									
Vacuum therapy	0	0.0									
Antibiotics	115	75.7									
Antibiotics for surgical prophylaxis	102	67.1	73	48	51	33.6					
Antibiotics for medical prophylaxis	6	3.9	4	2.6	1	0.7					
Empirical antibiotic therapy	5	3.3	4	2.6	5	3.3					
Targeted antibiotic therapy	2	1.3	2	1.3	1	0.7					

National report - Year 2015**Process indicators** - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTi model

Invasive ventilation (N=15)	N	%
Due to pulmonary failure	2	13.3
For airway maintenance	5	33.3
In weaning	8	53.3
Not evaluable	0	0.0
Reintubation within 48 hours	0	0.0

Non invasive ventilation (N=59)	N	%
Non invasive ventilation only	57	96.6
Non invasive ventilation failed	1	1.7
For weaning	1	1.7
Other	0	0.0
Missing	0	

Tracheostomy (N=0)	N	%
Surgical	0	0.0
Percutwist	0	0.0
Ciaglia	0	0.0
Monodil. Ciaglia	0	0.0
Fantoni	0	0.0
Griggs	0	0.0
Other Kind	0	0.0
Missing	0	

Invasive monitoring of C.O. (N=2)	N	%
Swan Ganz	0	0.0
PICCO	0	0.0
LIDCO	1	50.0
Vigileo-PRAM	0	0.0
Other	1	50.0
Missing	0	

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

National report - Year 2015**Outcome indicators** - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

ICU outcome	N	%
Dead	3	2.0
Transferred to same hospital	148	97.4
Transferred to other hospital	1	0.7
Discharged home	0	0.0
Disch. terminally ill	0	0.0
Missing	0	

Transferred to (N=149)	N	%
Ward	131	87.9
Other ICU	4	2.7
High dependency care unit	14	9.4
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Reason for transfer to Other ICU (N=4)	N	%
Specialist expertise	1	25.0
Step-up care	1	25.0
Logistical/organizational reasons	1	25.0
Step-down care	1	25.0
Missing	0	

Transferred to Same hospital (N=148)	N	%
Ward	131	88.5
Other ICU	3	2.0
High dependency care unit	14	9.5
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Transferred to Other hospital (N=1)	N	%
Ward	0	0.0
Other ICU	1	100.0
High dependency care unit	0	0.0
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	149	98.0
Dead	3	2.0
Missing	0	

Timing of ICU mortality (N=3)	N	%
Daytime (08:00AM - 07:59PM)	2	66.7
Nighttime (08:00PM - 07:59AM)	1	33.3
Weekdays (Monday - Friday)	3	100.0
Weekend (Saturday - Sunday)	0	0.0
Missing	0	

Hospital mortality	N	%
Alive	146	96.1
Dead	6	3.9
Missing	0	

Timing of hosp. mortality (N=6)	N	%
In ICU	3	50.0
Within 24 hours after ICU	0	0.0
24-47 hours after ICU	0	0.0
48-71 hours after ICU	0	0.0
72-95 hours after ICU	0	0.0
After 95 hours after ICU	3	50.0
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=3)		
Mean	16.3	
SD	3.2	
Median	15	
Q1–Q3	14.5–17.5	
Missing	0	

National report - Year 2015**Outcome indicators** - Adult elective surgical patients with LOS<24 hours evaluated in the GiViTI model

Last hospital mortality	N	%
Alive	146	96.1
Dead	6	3.9
Missing	0	

Stay after ICU (days)		
Alive (N=149)		
	Mean	6.4
	SD	9.3
	Median	3
	Q1–Q3	2–7
	Missing	0

Hospital stay (days)		
	Mean	9.6
	SD	11.4
	Median	6
	Q1–Q3	4–10
	Missing	0

Hospital stay (days)		
Alive (N=146)		
	Mean	9.4
	SD	11.3
	Median	6
	Q1–Q3	4–10
	Missing	0

Hospital stay (days)		
Dead (N=6)		
	Mean	15.2
	SD	12.7
	Median	12.5
	Q1–Q3	4.5–24.2
	Missing	0

National report - Year 2015**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.

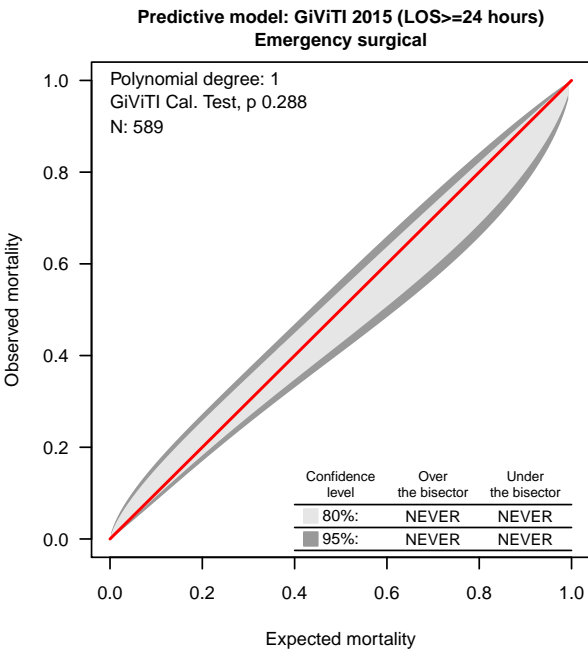
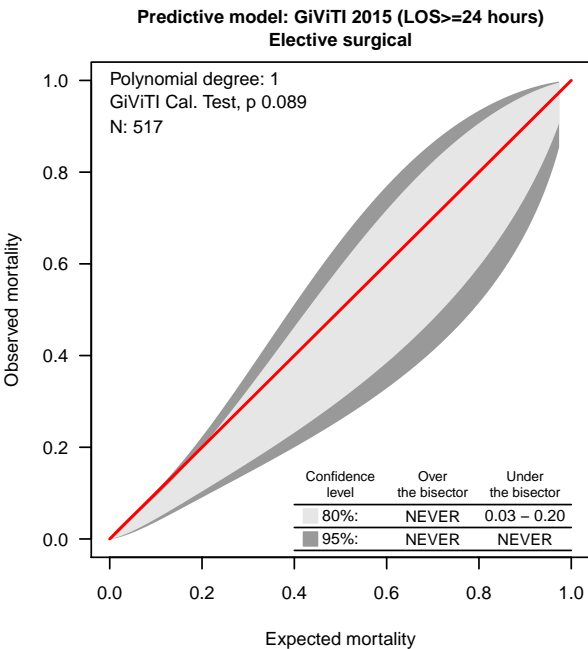
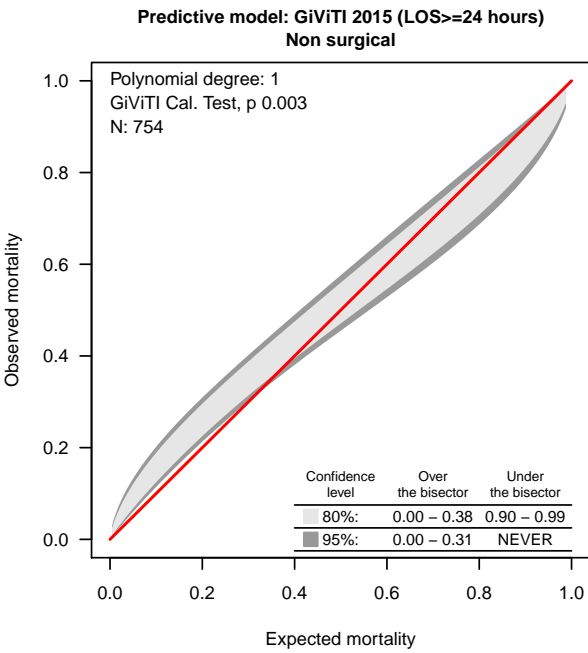
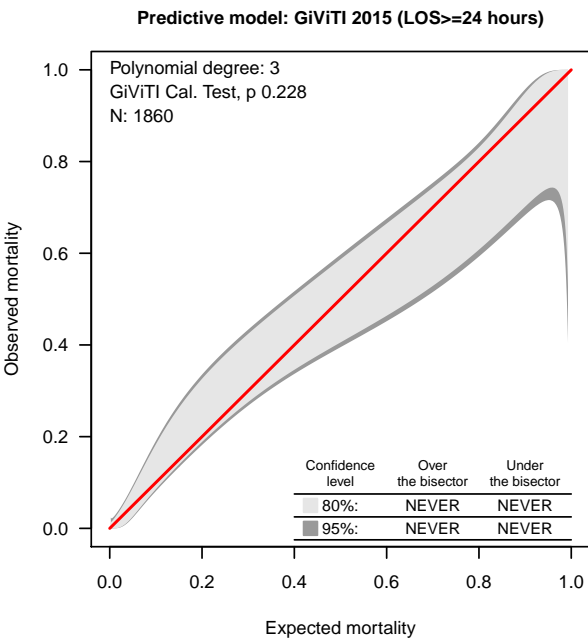
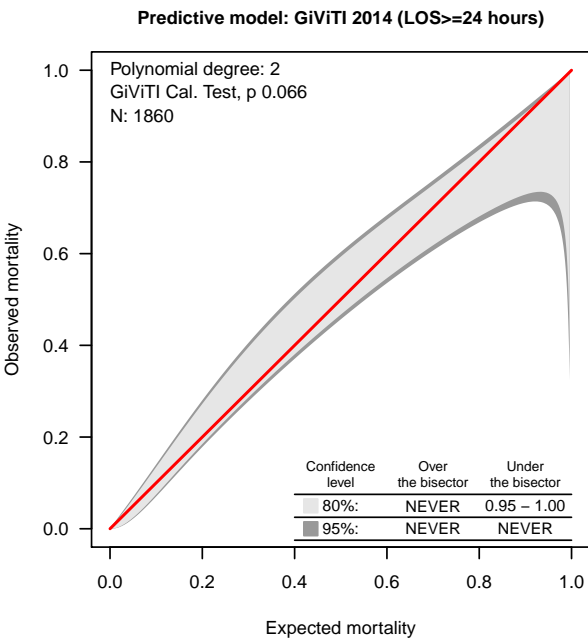
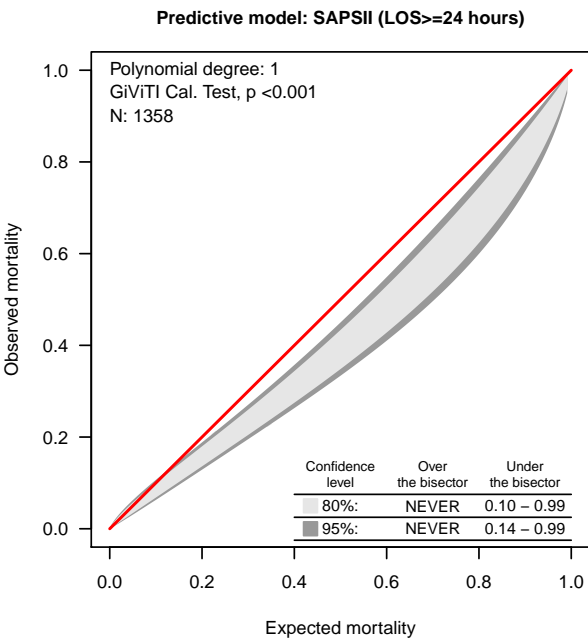
These pages show the calibration belts built on 2015 data using PIM 2, PIM 3, PELOD, SAPSII, and GiViTI 2015 prognostic models. The latter are reported for both the overall population and the subgroups presented in the report, according to length of stay of more or less than 24 hours.

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 and PELOD and, accordingly, these should be used with caution to assess the performance of individual ICUs.

Moreover, the calibration belts built on 2015 data using the GiViTI 2014 models are reported. The aim of these belts is to investigate 2014 to 2015 difference in terms of performance of the GiViTI general ICUs.

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

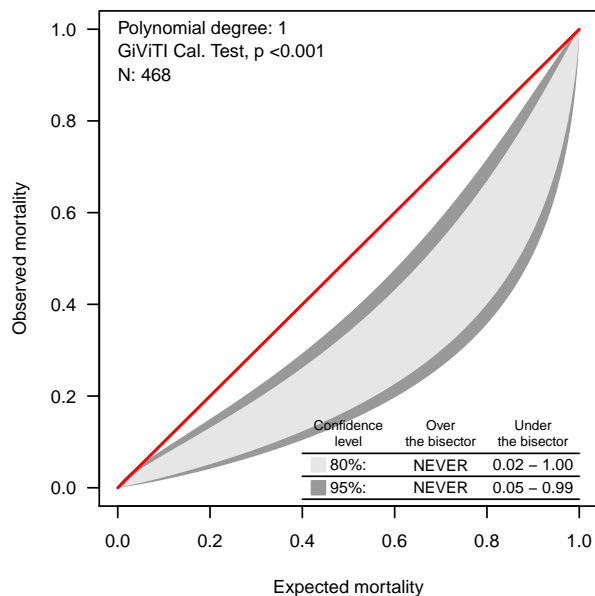
National report - Year 2015
Validity of the models - Calibration belts



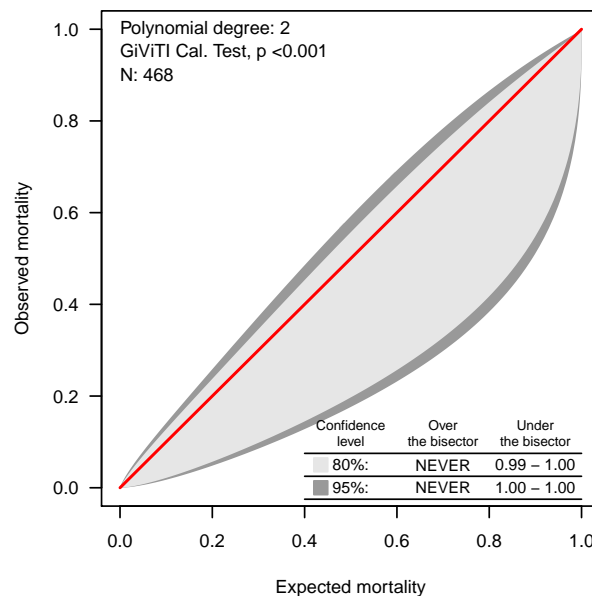
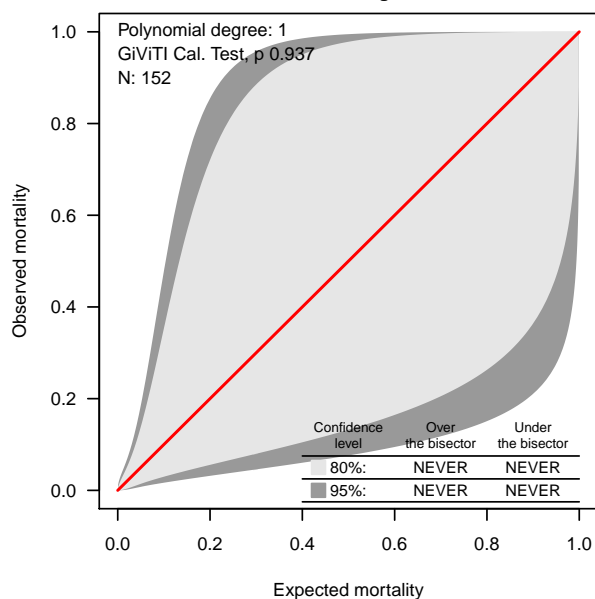
National report - Year 2015

Validity of the models - Calibration belts

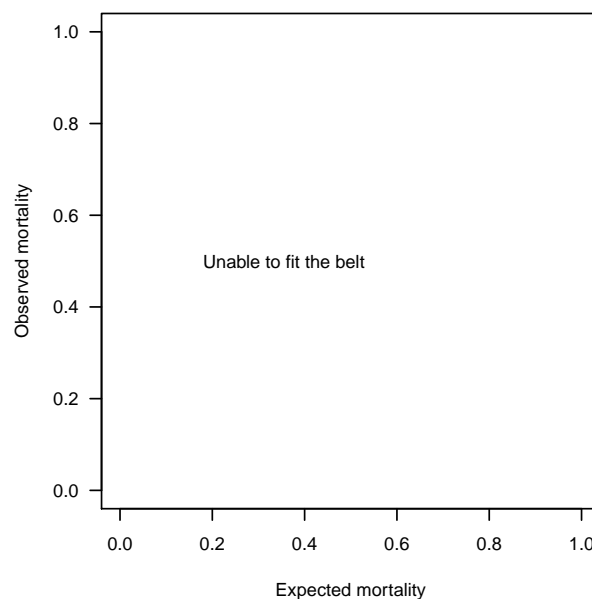
Predictive model: GiViTI 2014 (LOS<24 hours)



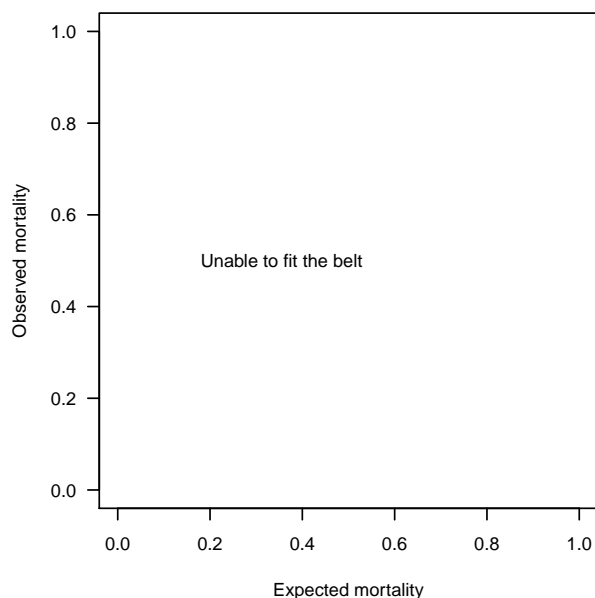
Predictive model: GiViTI 2015 (LOS<24 hours)

Predictive model: GiViTI 2015 (LOS<24 hours)
Elective surgical

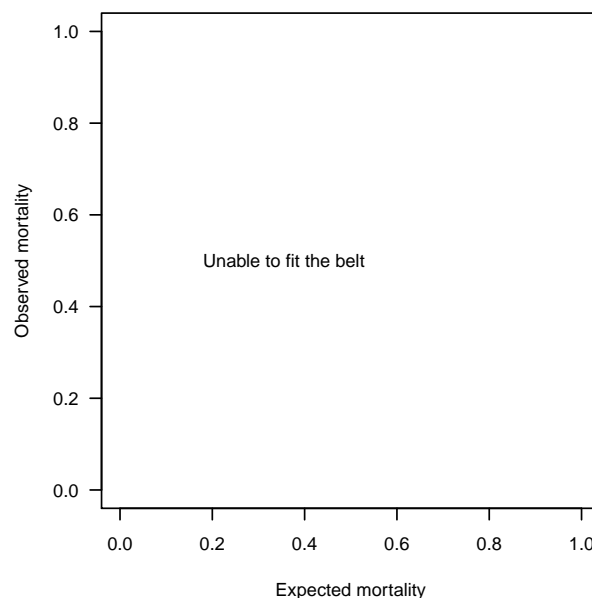
Predictive model : PELOD



Predictive model: PIM2



Predictive model: PIM3



Appendix

Coauthors

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