GiViTI

Gruppo Italiano per la Valutazione degli Interventi In Terapia Intensiva

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Report
PROSAFE project

Year 2015

National report (5 ICUs)

HUNGARY

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PROSAFE project - **National report** (5 ICUs) - **ITALY**
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Contents

The project

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

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

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

The Petals functioning in 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.

$$\text{Occupation rate} \;=\; \frac{\text{ICU stay days}}{\text{Days} \times \text{Number of beds}} \tag{1}$$

- The **rotation index** expresses the mean number of patients 'staying' in a bed in one year. It is calculated by dividing the number of admissions by the number of beds. Data collected for less than one year have to be extrapolated.

$$\text{Rotation index} \;=\; \frac{\text{Number of patients}}{\text{Number of beds}} \tag{2}$$

- The **turnover interval** expresses the period of time in which a bed remains vacant between two consecutive patients. It is calculated by dividing the number of days with vacant beds by the number of patients admitted during the period in question, giving mean unoccupied time per bed. It is calculated by dividing the number of days with unoccupied beds by the number of patients admitted in the period in question. This gives the mean unoccupied time per bed. This indicator is expressed in hours.

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

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

Study flow-chart

The flow chart, or tree diagram, on page 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.

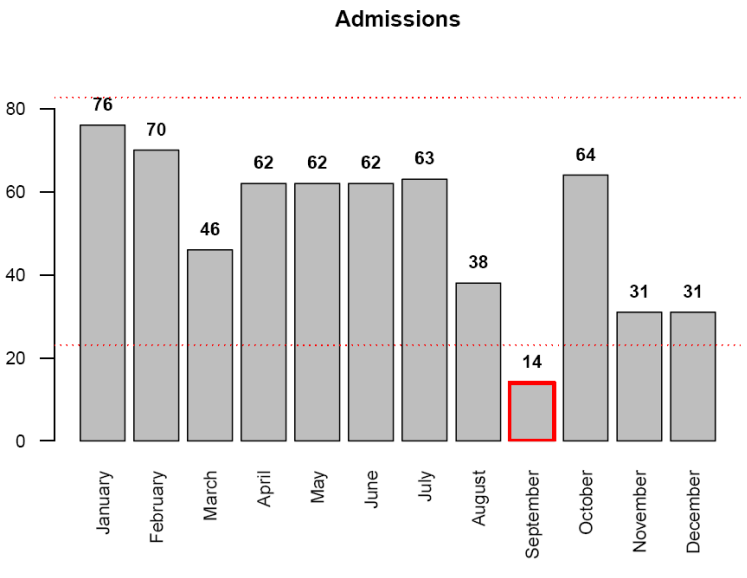
To more clearly illustrate the selection methods used in the choice of valid data, we present an extract from the data validity report of a randomly selected, anonymized ICU.

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

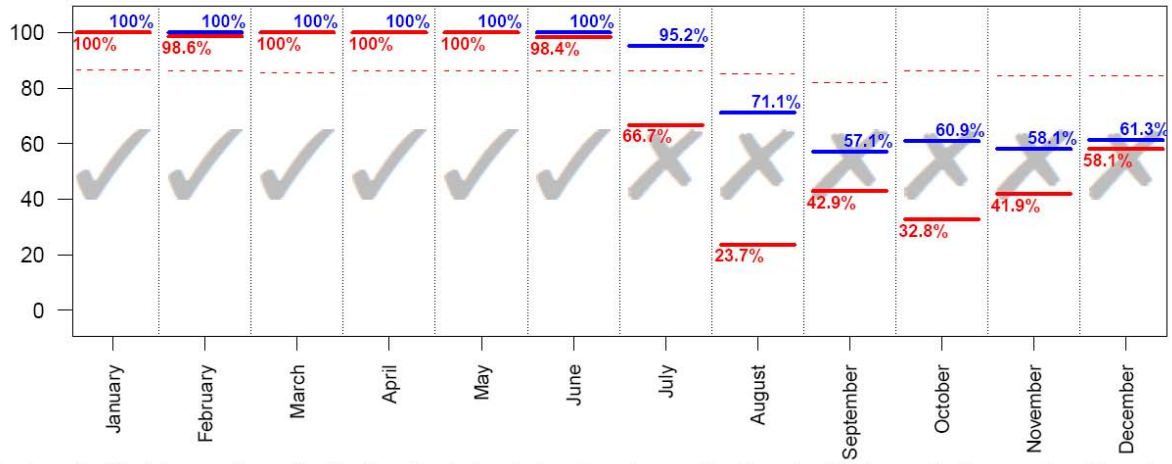


WARNING! The highligthed months have a number of patients quite different from the average. Please verify the correctness of the data and, particularly, that all consecutive patients have been registered in the Prosafe software.

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

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

The final graph shows level of data completeness in the various months. Percentages of patients with records in status 3 or 4 and in status 4 are shown in blue and red respectively.
According to our elimination criterion, the overall analysis will exclude those patients admitted in the months of August, September, October, November and December since they present a validity percentage below the defined threshold (dashed line). Accordingly, 441 patients have valid data for the analysis. Regarding analysis of hospital mortality, patients admitted in July will also be excluded (in that month the % of patients with record not in status 4 is still too hight). Hence, the analysis on hospital outcome will involve 378 patients on 619 admitted.



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

Description of patients

These sections of the report present the results of the analyses conducted on the group of patients with valid data. Patients admitted in the months with This part presents patient characteristics at ICU admission and during ICU stay, severity scores, process indicators, and outcomes for the various patient subgroups.
Absolute number, percentage and number of missing data are reported for the categorical data, while mean, standard deviation, median, interquartile range (Q1-Q3) and minimum and maximum range are reported for continuous variables. The acronym 95% CI indicates the 95% confidence interval of the estimate.
Below are a few tips on how to correctly interpret the analyses.

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

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

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

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

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

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

Surgical interventions on admission (top 10) This lists the top 10 surgical interventions, divided by elective surgery and emergency surgery patients, operated between 7 days prior to and one day after admission to the ICU. Each single intervention (even more than one per patient) is counted.

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

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

SAPSII The score cannot be calculated if GCS (first 24 hours) is unassessable.

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

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

where

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

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

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

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

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

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

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

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

Incidence of VAP Two different incidence rates are presented:

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

where the variable *mechanical ventilation days pre-VAP* corresponds to the total number of mechanical ventilation days pre-VAP of all patients admitted to the ICU. It is equal to the total duration of mechanical ventilation for patients who do not develop VAP and to the difference between the date of onset of VAP and the start date of mechanical ventilation for infected patients. The mechanical ventilation days in patients who were discharged or died within 2 days of the start of ventilation are excluded from the denominator.

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

The second rate is only a reworking of the previous one, to simplify interpretation of the data. It answers the question: 'Out of 100 patients ventilated for 8 days in the ICU, how many develop VAP?'. The 8-day cut off has been set by convention. The rates are accompanied by 95% confidence intervals.

Incidence of CR-BSI Just like VAP, two incidence rates are presented for catheter-related blood stream infections:

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

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

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 mainteinance -> invasive ventilation in a patient without respiratory failure, to support airways (e.g. coma patient);
- In weaning -> final part of invasive ventilation in a patient admitted for weaning from ventilation.

Non invasive ventilation (approach) The reported items refer to the following scenarios:

- Non invasive ventilation only -> non-invasive ventilation as the only ventilatory approach to the patient;
- Non invasive ventilation failed -> non-invasive ventilation immediately followed by patient intubation;
- For weaning -> non-invasive ventilation started within one day of the end of invasive ventilation.

Surgical interventions during stay (top 10) The surgical interventions performed from the second day of stay.

Reason of transfer to other ICU See the item 'Reason of transfer from other ICU'.

Hospital mortality Statistics on hospital outcome (indicated with an asterisk, where necessary) involve the subgroup of patients with valid data for this variable or patients admitted during the months when over a defined % of patients were in status 4, after excluding readmissions from another hospital ward.

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

Readmissions Only readmissions from other hospital wards are considered.

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

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

Patients	**Model**	**Mortality**
Adults non CS	GiViTI 2015 (GiViTI 2015 >=24h and <24h union)	Last hospital mortality
Adults non CS with LOS >=24h	GiViTI 2015, >=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

	TYPE							
Nation	General	Cardiosurgical	Surgical	Neurosurgical	Pediatrics	HDC	Other	**Total**
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=5) - **Year 2015**

Number of beds in hospital	N	%
< 300 beds	0	0.0
300 - 800 beds	1	20.0
> 800 beds	4	80.0
Missing	0	

Type of ICUs present in hospital	N	%
General	4	80.0
Medical	0	0.0
Surgical	1	20.0
Neurological/neurosurgical	1	20.0
Cardiosurgical	0	0.0
Burns	0	0.0
Post-transplantations	0	0.0
Other	0	0.0

Type of subICUs present in hospital	N	%
General	0	0.0
Surgical	2	40.0
Cardiological	3	60.0
Respiratory	1	20.0
Neurological (stroke unit)	2	40.0
Other	0	0.0

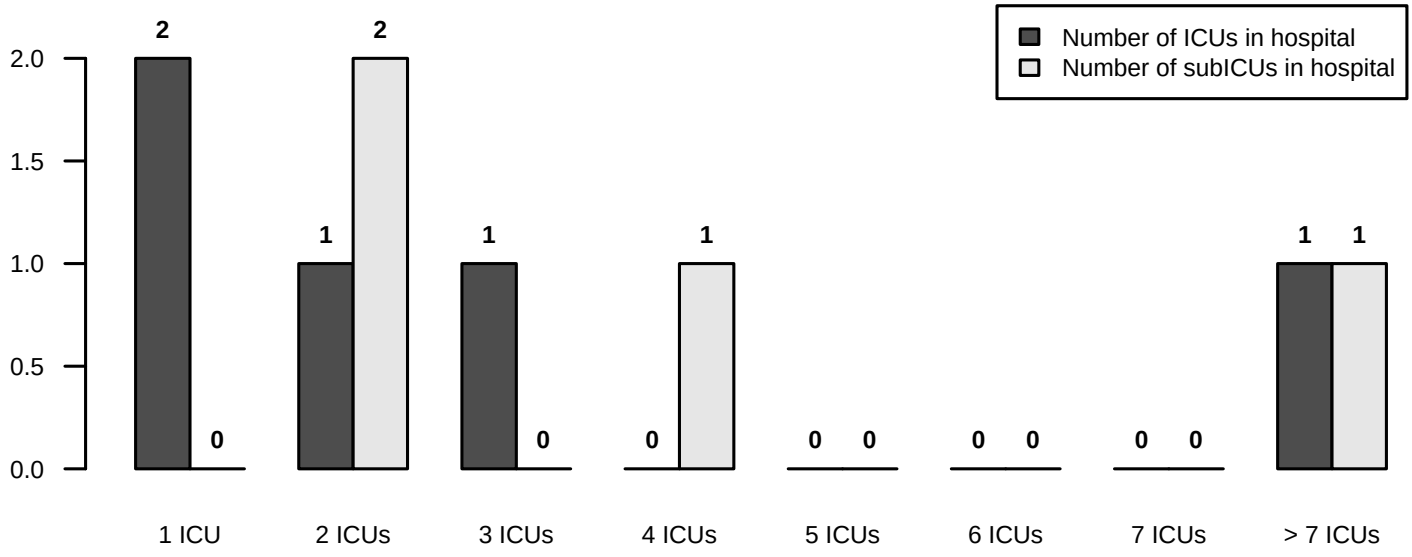
Non surgical specialties	N	%
Cardiology	4	80.0
Pulmonology	2	40.0
Nephrology	2	40.0
Infection disease	2	40.0
Pediatric	4	80.0
Neonatology	4	80.0
Neurology	4	80.0
Haematology	2	40.0
Emergency room	5	100.0
Traumatology	5	100.0
Emergency medical	4	80.0

Surgical specialties (independent ward)	N	%
Neurosurgery	5	100.0
Cardiosurgery	0	0.0
Major vascular surgery	4	80.0
Thoracic surgery	2	40.0
Pediatric surgery	4	80.0
Transplantation activities	0	0.0

Surgical specialties (procedures only)	N	%
Neurosurgery	0	0.0
Cardiosurgery	0	0.0
Major vascular surgery	1	20.0
Thoracic surgery	3	60.0
Pediatric surgery	1	20.0
Transplantation activities	1	20.0

Services/activities available in H (h24)	N	%
Neuroradiology	3	60.0
Interventional vascular radiology	2	40.0
CT scan	4	80.0
MRI	3	60.0
Interventional hemodynamic	4	80.0
Endoscopy	4	80.0
Bronchoscopy	3	60.0
Hyperbaric chamber	0	0.0
Microbiology	2	40.0

Services/activities available in H (rep.)	N	%
Neuroradiology	0	0.0
Interventional vascular radiology	2	40.0
CT scan	0	0.0
MRI	1	20.0
Interventional hemodynamic	0	0.0
Endoscopy	1	20.0
Bronchoscopy	2	40.0
Hyperbaric chamber	0	0.0
Microbiology	2	40.0



Description of ICUs (N=5) - **Year 2015**

Number of accredited beds	
Mean (SD)	15.0 (3.3)
Median (Q1−Q3)	15 (12−16)
Missing	0

Number of available beds	
Mean (SD)	15.2 (3.6)
Median (Q1−Q3)	14 (12−18)
Missing	0

University affiliation	N	%
Yes	5	100.0
No	0	0.0
Missing	0	

Square meter per bed	
Mean (SD)	8.0 (5.7)
Median (Q1−Q3)	5 (4−12)
Missing	0

Clinical psychologist	N	%
No	2	40.0
For relatives	2	40.0
For patients	2	40.0
For personnel	0	0.0

ICU Structure	N	%
NON OPEN-SPACE	3	60.0
OPEN-SPACE (or alike)	2	40.0
Missing	0	

Physicians	N	%
Dedicated to ICU only	0	0.0
Dedicated to ICU on a rotation basis	1	20.0
Dedicated to ICU only and on a rotation basis	4	80.0
Missing	0	

Available beds per physician (average)	
Mean (SD)	4.1 (0.9)
Median (Q1−Q3)	4.3 (3.2−4.8)
Missing	0

Nurses	N	%
Dedicated to ICU only	1	20.0
Dedicated to ICU on a rotation basis	0	0.0
Dedicated to ICU only and on a rotation basis	4	80.0
Missing	0	

Available beds per nurse (average)	
Mean (SD)	2.4 (0.2)
Median (Q1−Q3)	2.4 (2.4−2.5)
Missing	0

Number of hours conceeded for relatives' visits	N	%
1	1	20.0
2	2	40.0
3-4	1	20.0
5-12	1	20.0
13-20	0	0.0
>20	0	0.0
Missing	0	

Maximum number of visitors per patient	N	%
One	1	20.0
Two	4	80.0
Three or more	0	0.0
Missing	0	

Biomedical devices per available bed	Median	Q1-Q3	<5 years old (mean %)
Basic ICU monitors (ECG, NIPB, SaO2)	1.1	1.0−1.2	26.5
Advanced ICU monitors	1.0	0.8−1.1	36.5
Invasive monitoring of cardiac output (Swan-Ganz)	0.0	0.0−0.0	0.0
Invasive monitoring of cardiac output (PiCCO)	0.2	0.2−0.2	30.9
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	0.2	0.1−0.2	26.7
Both invasive and non invasive ventilators	1.0	0.8−1.0	32.4
Invasive ventilators	1.0	0.8−1.0	32.9
Non invasive ventilators	0.0	0.0−0.0	50.0
Syringe pumps	2.6	2.5−2.7	23.1
Peristaltic pumps	0.9	0.8−1.2	23.0

Biomedical equipment in ICU	N	%
Transoesophageal echo	1	20.0
Basic ultrasounds	4	80.0
Advanced ultrasounds	4	80.0
Blood-gas analyzer	5	100.0
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	0	

Description of ICUs (N=5) - **Year 2015**

Patients admitted	
Mean (SD)	589.4 (259.5)
Median	518.6
Q1−Q3	468.6−639.4
Missing	1

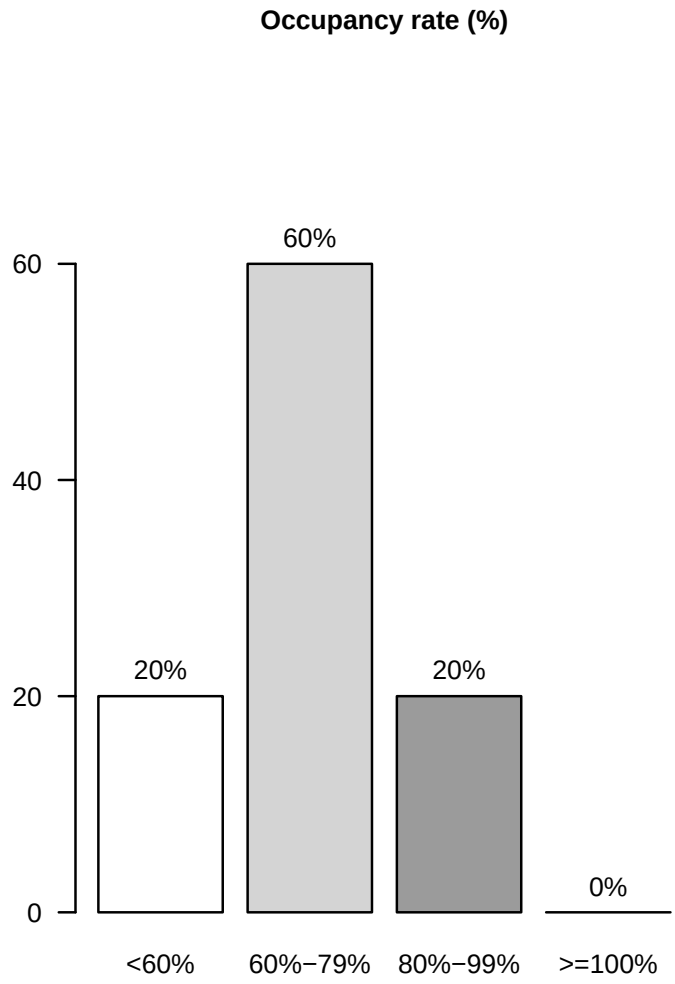
Occupancy rate (%)	
Mean (SD)	80.1 (12.1)
Median	77.7
Q1−Q3	75−82.8
Missing	1

Rotation index (patients/bed)	
Mean (SD)	37.6 (10.1)
Median	37.1
Q1−Q3	29.4−45.2
Missing	1

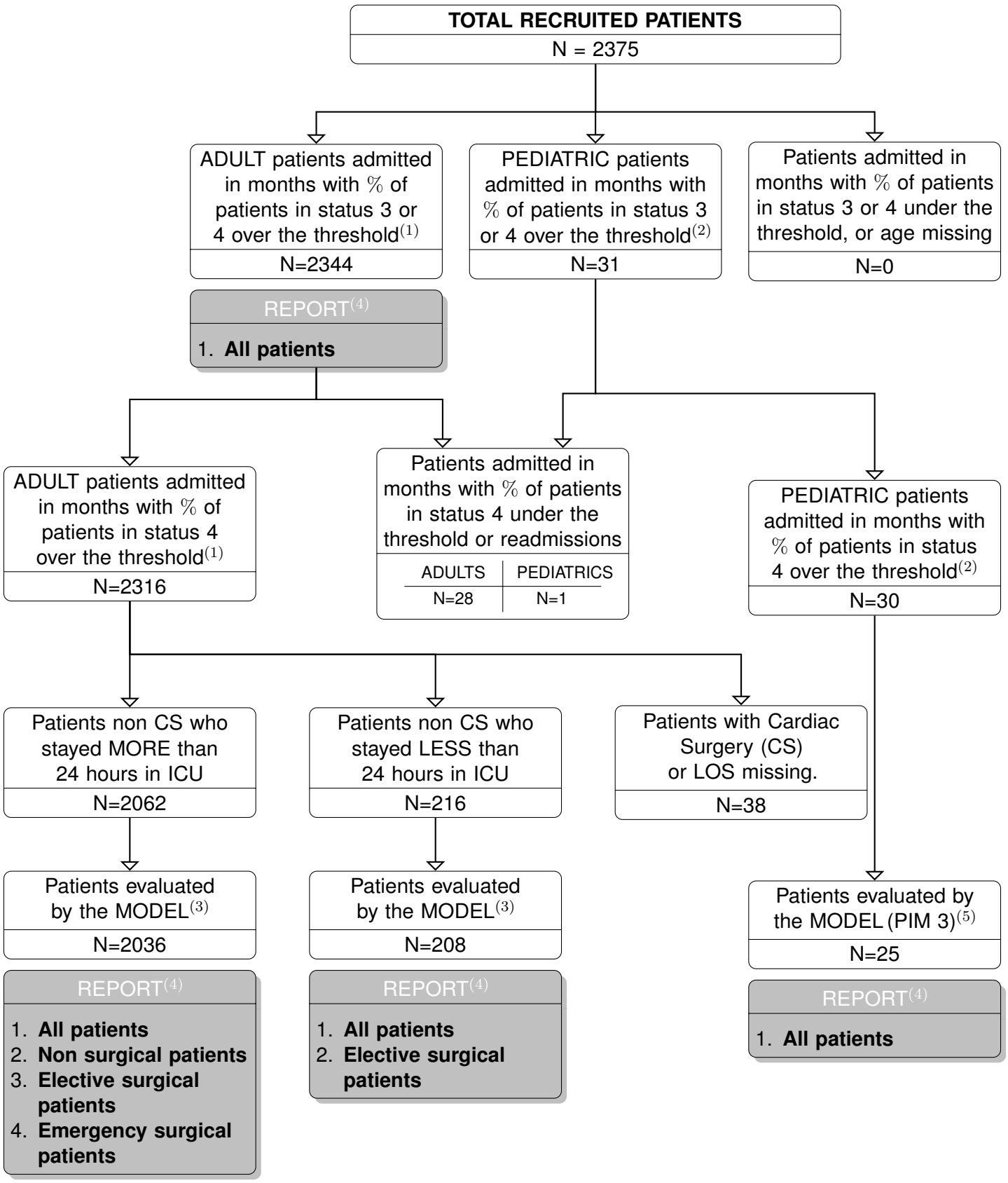
Turnover (hours)	
Mean (SD)	52.7 (37.1)
Median	56.5
Q1−Q3	33.6−75.6
Missing	1

Occupied beds per physician (average)	
Mean (SD)	2.5 (1.3)
Median	2.9
Q1−Q3	2.4−3.1
Missing	0

Occupied beds per nurse (average)	
Mean (SD)	1.6 (0.9)
Median	1.9
Q1−Q3	1.5−1.9
Missing	0



Overall population (5 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.

Patients (N): 2344

Sex	N	%
Male	1369	58.4
Female	975	41.6
Missing	0	

Age (years)	N	%
17-45	360	15.4
46-65	895	38.2
66-75	593	25.3
>75	496	21.2
Missing	0	
Mean	62.1	
SD	16.0	
Median	64	
Q1−Q3	53−74	
Min−Max	17−99	

Body mass Index (BMI)	N	%
Underweight	144	6.2
Normal	973	42.2
Overweight	724	31.4
Obese	467	20.2
Missing	36	

Pregnancy status **Females** (N=975)	N	%
Not fertile	417	42.9
Not pregnant/Unknown	540	55.6
Currently pregnant	3	0.3
Post partum	12	1.2
Missing	3	

Comorbidities	N	%
No	442	19.0
Yes	1881	81.0
Missing	21	

Comorbidities (top 10)	N	%
Hypertension	1398	60.2
Peripheral vascular disease	403	17.3
Diabetes Type II without insulin tr.	378	16.3
Arrhythmia	350	15.1
NYHA class II-III	296	12.7
Cerebrovascular disease	290	12.5
Any tumour without metastasis	244	10.5
Moderate COPD	217	9.3
Myocardial infarction	205	8.8
Diabetes Type II with insulin treatment	159	6.8
Missing	21	

Stay before ICU (days)	
Mean	4.6
SD	11.1
Median	1
Q1−Q3	0−4
Missing	23

Source of admission	N	%
Same hospital	2207	95.0
Other hospital	104	4.5
Long-term chronic care hospital	12	0.5
Directly from the community	0	0.0
Missing	21	

Ward of admission **Hospital** (N=2311)	N	%
Medical ward	304	13.2
Surgical ward	1055	45.7
Emergency room	815	35.3
Other ICU	47	2.0
High dependency care unit	90	3.9
Missing	0	

Reason for transfer from **Other ICU** (N=47)	N	%
Specialist expertise	11	23.4
Step-up care	22	46.8
Logistical/organizational reasons	12	25.5
Step-down care	2	4.3
Missing	0	

Ward of admission **Same hospital** (N=2207)	N	%
Medical ward	280	12.7
Surgical ward	1047	47.4
Emergency room	782	35.4
Other ICU	15	0.7
High dependency care unit	83	3.8
Missing	0	

Ward of admission **Other hospital** (N=104)	N	%
Medical ward	24	23.1
Surgical ward	8	7.7
Emergency room	33	31.7
Other ICU	32	30.8
High dependency care unit	7	6.7
Missing	0	

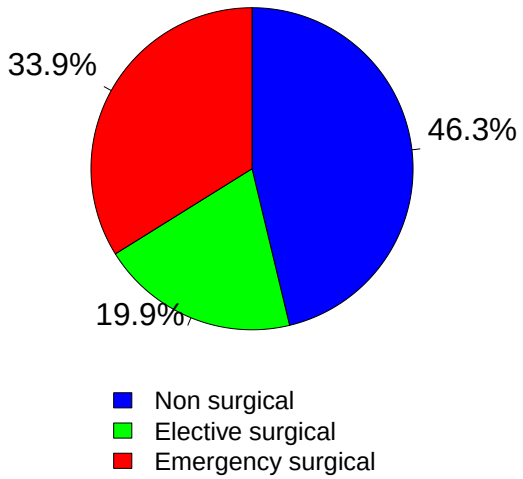
Scheduled admission	N	%
No	1969	84.8
Yes	353	15.2
Missing	22	

National report - **Year 2015**
Characteristics on admission - Adult patients

Trauma	N	%
No	1701	73.3
Yes	621	26.7
Multiple trauma	190	8.2
Missing	22	

Surgical status	N	%
Non surgical	1074	46.3
Elective surgical	461	19.9
Emergency surgical	787	33.9
Missing	22	

Surgical status



Source of admission **Surgical pts.** (N=1248)	N	%
Operating theatre of surgical ward	747	59.9
Operating theatre of emergency room	140	11.2
Surgical ward	133	10.7
Other	227	18.2
Missing	1	

Surgical interventions (top 10) **Elective surgical** (N=461)	N	%
Gastrointestinal surgery	134	29.1
Peripheral vascular surgery	102	22.1
Neurosurgery	77	16.7
Orthopaedic surgery	42	9.1
Nephro/Urological surgery	37	8.0
Hepatic surgery	19	4.1
Other surgery	17	3.7
Abdominal vascular surgery	15	3.3
Thoracic surgery	13	2.8
Biliary tract surgery	13	2.8
Missing	0	

Timing **Elective surgical** (N=461)	N	%
From -7 to -3 days	23	5.0
From -2 to -1 days	20	4.3
On ICU admission day	453	98.3
The day after ICU admission	6	1.3
Missing	1	

Surgical interventions (top 10) **Emergency surgical** (N=787)	N	%
Neurosurgery	213	27.1
Gastrointestinal surgery	204	25.9
Orthopaedic surgery	162	20.6
Peripheral vascular surgery	46	5.8
Other surgery	44	5.6
Nephro/Urological surgery	27	3.4
ENT surgery	27	3.4
Abdominal vascular surgery	27	3.4
Thoracic surgery	24	3.0
Biliary tract surgery	16	2.0
Missing	0	

Timing **Emergency surgical** (N=787)	N	%
From -7 to -3 days	42	5.3
From -2 to -1 days	85	10.8
On ICU admission day	683	86.8
The day after ICU admission	58	7.4
Missing	3	

Non surgical interventions	N	%
None	2221	95.7
Elective	11	0.5
Emergency	90	3.9
Missing	22	

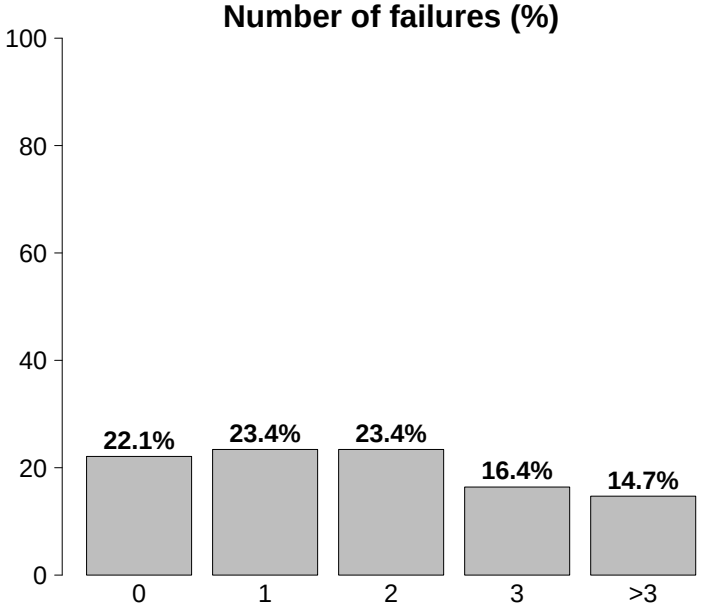
Non surgical interventions **Elective** (N=11)	N	%
Interventional neuroradiology	6	54.5
Interventional endoscopy	3	27.3
Interventional radiology	2	18.2
Interventional cardiology	0	0.0
Missing	0	

Non surgical interventions **Emergency** (N=90)	N	%
Interventional endoscopy	40	44.4
Interventional cardiology	36	40.0
Interventional neuroradiology	8	8.9
Interventional radiology	2	2.2
Missing	4	

National report - **Year 2015**
Characteristics on admission - Adult patients

Reason for admission	N	%
Monitoring/Weaning	683	29.5
Post surgical weaning	111	4.8
Surgical monitoring	378	16.3
Post interventional weaning	2	0.1
Interventional monitoring	7	0.3
Non surgical monitoring	180	7.8
Missing	5	
Admission for procedures/treatments	0	0.0
Intensive Treatment	1625	70.1
Only ventilatory support	720	31.0
Only cardiovascular support	137	5.9
Ventilatory and cardiovascular support	768	33.1
Missing	0	
Palliative Sedation	4	0.2
Diagnosis of death/Organ donation	7	0.3
Missing	25	

Number of failures (%)



Failures on admission	N	%
No	518	22.1
Yes	1826	77.9
A: Respiratory failure	1488	63.5
B: Cardiovascular failure	905	38.6
C: Neurological failure	386	16.5
D: Hepatic failure	28	1.2
E: Renal failure	663	28.3
F: Acute skin failure	4	0.2
G: Metabolic failure	726	31.0
H: Coagulation failure	63	2.7
Missing	0	

Failures on admission (top 10)	N	%
A	365	15.6
AB	207	8.8
ABEG	161	6.9
AC	123	5.2
ABG	96	4.1
E	78	3.3
ABE	76	3.2
ABC	71	3.0
AG	65	2.8
G	56	2.4
Missing	0	

Respiratory failure	N	%
None	856	36.5
Only hypoxic failure	404	17.2
Only hypercapnic failure	90	3.8
Hypoxic-hypercapnic failure	266	11.3
Intubation for airway maint.	728	31.1
Missing	0	

Cardiovascular failure	N	%
None	1439	61.4
Without shock	337	14.4
Cardiogenic shock	111	4.7
Septic shock	229	9.8
Haemorrhagic/hypovolemic shock	102	4.4
Hypovolemic shock	33	1.4
Anaphylactic shock	1	0.0
Neurogenic shock	35	1.5
Other shock	22	0.9
Mixed shock	35	1.5
Missing	0	

Neurologic failure	N	%
None	1315	77.3
Cerebral coma	267	15.7
Metabolic coma	40	2.4
Postanoxic coma	65	3.8
Toxic coma	14	0.8
Missing or not evaluable	643	

Renal failure (AKIN)	N	%
None	1650	71.3
Mild	264	11.4
Moderate	171	7.4
Severe	228	9.9
Missing	31	

Metabolic failure	N	%
None	1587	68.6
pH <= 7.3, PaCO2 < 45 mmHg	256	11.1
Base deficit >= 5 mmol/L, lactate >1.5x	470	20.3
Missing	31	

National report - **Year 2015**
Characteristics on admission - Adult patients

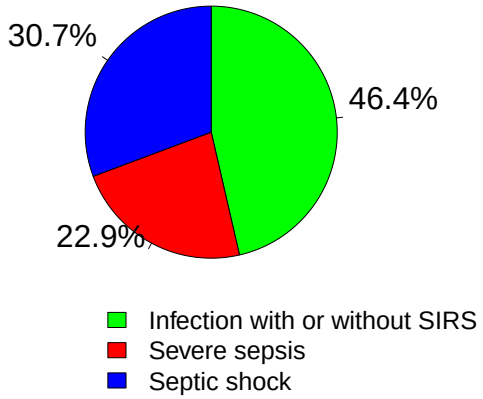
Clinical conditions on admission	N	%
Respiratory	366	15.8
Pleural effusion	97	4.2
Acute exacerbation of COPD	83	3.6
Atelectasis	72	3.1
Aspiration pneumonia	42	1.8
Pulmonary embolism	25	1.1
Cardiovascular	542	23.4
Cardiac arrest	147	6.3
Acute severe arrhythmia: tachycardias	100	4.3
Left heart failure without pulm. edema	98	4.2
Peripheral vascular disease	96	4.1
Left heart failure with pulmonary edema	75	3.2
Neurological	313	13.5
Brain tumour	77	3.3
Spontaneous Intraparenchymal bleeding	56	2.4
Seizures	51	2.2
Cerebral artery stroke	40	1.7
Spontaneous Subarachnoid haemorrhage	37	1.6
Gastrointestinal and hepatic	341	14.7
Digestive tract malignancy	88	3.8
Gastrointestinal bleeding: upper tract	43	1.9
Acute pancreatitis	39	1.7
Gastrointestinal perforation	38	1.6
Ascites	27	1.2
Trauma (anatomical districts)	621	26.8
Head	346	14.9
Pelvis/bone/joint & muscle	206	8.9
Chest	175	7.5
Spine	102	4.4
Abdomen	57	2.5
Major vessels injury	14	0.6
Miscellaneous	9	0.4
Other	541	23.3
Other disease	198	8.5
Nephro-urologic disease	115	5.0
Metabolic disorder	101	4.4
Coagulation disorder	63	2.7
Acute intoxication	38	1.6
Post transplantation	1	0.0
Renal transplantation	1	0.0
-	0	0.0
Infections	845	36.4
Pneumonia	363	15.7
Clinical sepsis	94	4.1
L.R.T.I. other than pneumonia	67	2.9
NON-surgical urinary tract infection	66	2.8
NON-surgical secondary peritonitis	50	2.2
NON-surgical skin/soft tissue infection	39	1.7
Gastroenteritis	35	1.5
Cholecystitis/cholangitis	26	1.1
Primary peritonitis	23	1.0
Post-surgical peritonitis	20	0.9
Missing	25	

Trauma (anatomical districts)	N	%
Head	346	14.9
Traumatic subarachnoid haemorrhage	142	6.1
Traumatic Subdural haematoma	132	5.7
Skull fracture	131	5.6
Maxillofacial fracture	107	4.6
Cerebral contusion/laceration	71	3.1
Spine	102	4.4
Vertebral fracture, without deficit	76	3.3
Cervical injury, incomplete deficit	16	0.7
Lumbar injury, incomplete deficit	4	0.2
Chest	175	7.5
Traum. haemothorax/pneumothorax	85	3.7
Other injuries of the chest	83	3.6
Severe lung contusion/laceration	48	2.1
Abdomen	57	2.5
Minor injuries of the abdomen	17	0.7
Liver: Moderate-Severe laceration	15	0.6
Spleen: Massive rupture	12	0.5
Pelvis/bone/joint & muscle	206	8.9
Long bone fracture	170	7.3
Multiple fracture of the pelvis	41	1.8
Massive crush/amputation	17	0.7
Major vessels injury	14	0.6
Proximal limbs vessels: transection	10	0.4
Aorta: rupture/dissection	3	0.1
Neck vessels: dissection/transection	1	0.0
Miscellaneous	9	0.4
Burns (>30% BSA)	7	0.3
Inhalation injury	2	0.1
Missing	25	

Infection severity on admission	N	%
None	1474	63.9
Infection with or without SIRS	387	16.8
Severe sepsis	191	8.3
Septic shock	256	11.1
Missing	36	

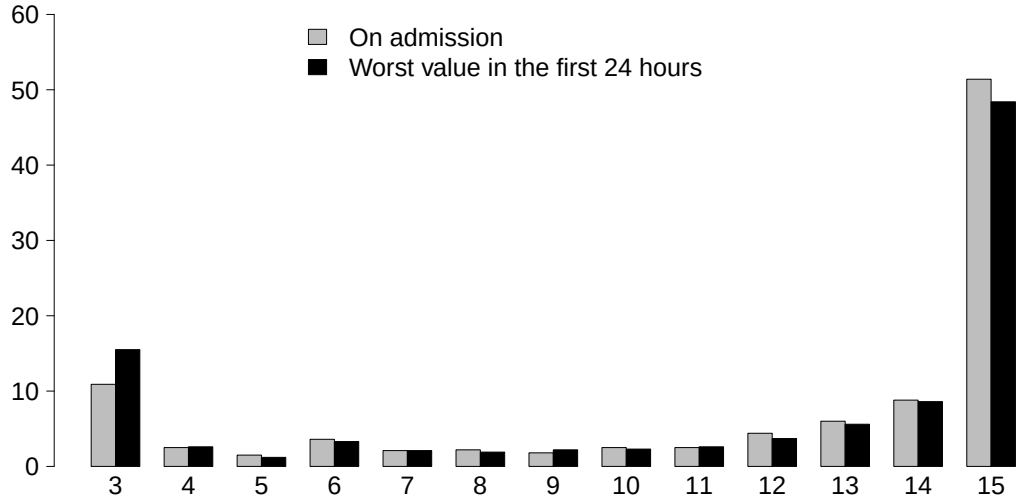
Infection severity on admission

Patients infected (N=834)



National report - **Year 2015**
Severity scores - Adult patients

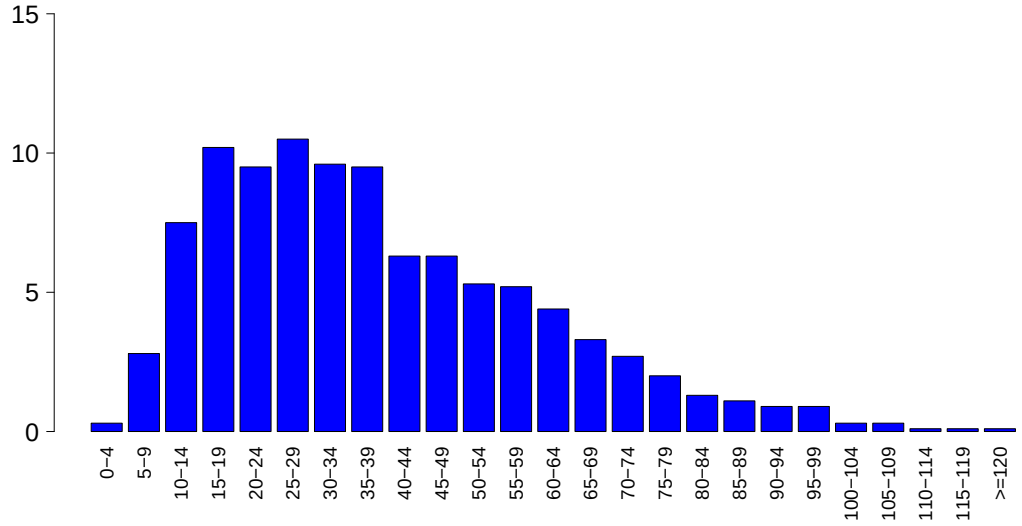
Glasgow Coma Scale (%)



GCS (admission)	
Median	15
Q1−Q3	10−15
Not evaluable	613
Missing	30

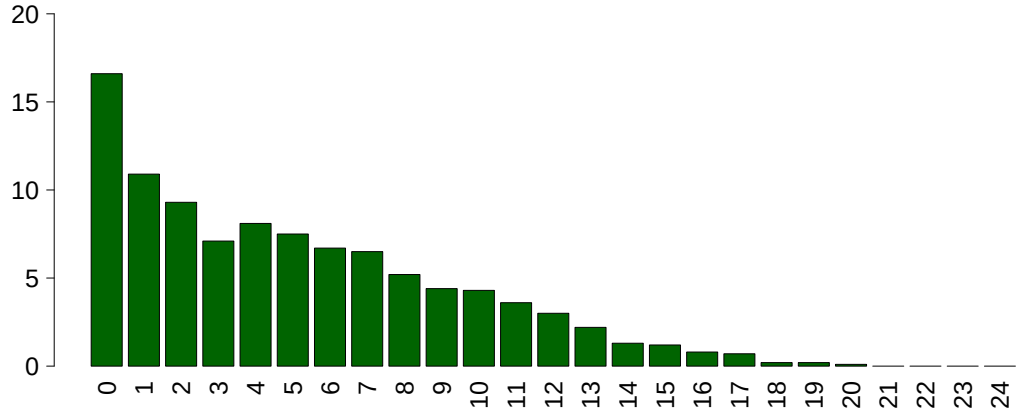
GCS (first 24 hours)	
Median	14
Q1−Q3	8−15
Not evaluable	825
Missing	31

SAPS II (%)



SAPSII	
Mean	38.6
SD	21.4
Median	34
Q1−Q3	22−52
Not evaluable	825
Missing	32

SOFA (%)



SOFA	
Mean	5.1
SD	4.4
Median	4
Q1−Q3	1−8
Not evaluable	825
Missing	32

National report - **Year 2015**
Characteristics during the stay - Adult patients

Complications during the stay	N	%
No	1190	51.4
Yes	1125	48.6
Missing	29	

Failures during the stay	N	%
No	1878	80.1
Yes	466	19.9
A: Respiratory failure	193	8.2
B: Cardiovascular failure	262	11.2
C: Neurological failure	54	2.3
D: Hepatic failure	14	0.6
E: Renal failure (AKIN)	165	7.0
F: Acute skin failure	3	0.1
G: Metabolic failure	25	1.1
H: Coagulation failure	15	0.6
Missing	0	

Failures during the stay (top 10)	N	%
B	113	4.8
A	94	4.0
BE	47	2.0
E	45	1.9
AB	29	1.2
ABE	18	0.8
AE	14	0.6
C	10	0.4
ABCE	9	0.4
G	9	0.4
Missing	0	

Respiratory failure occured	N	%
None	2122	91.7
Intubation for airway maint.	60	2.6
Hypoxic failure	131	5.7
Hypercapnic failure	47	2.0
Missing	29	

Cardiovascular failure occured	N	%
None	2053	88.7
Cardiogenic shock	78	3.4
Hypovolemic shock	12	0.5
Haemorrhagic/hypovolemic shock	15	0.6
Septic shock	144	6.2
Anaphylactic shock	0	0.0
Neurogenic shock	16	0.7
Other shock	26	1.1
Missing	29	

Neurological failure occured	N	%
None	2261	97.7
Cerebral coma	27	1.2
Metabolic coma	21	0.9
Postanoxic coma	7	0.3
Missing	29	

Renal failure occured (AKIN)	N	%
None	2150	92.9
Mild	16	0.7
Moderate	44	1.9
Severe	105	4.5
Missing	29	

Complications during the stay	N	%
Respiratory	274	11.8
Atelectasis	124	5.4
Pleural effusion	78	3.4
Pneumothorax/Pneumomediastinum	37	1.6
Aspiration pneumonia	25	1.1
Upper resp. tract disease	22	1.0
Cardiovascular	270	11.7
Acute severe arrhythmia: tachycardias	108	4.7
Cardiac arrest	65	2.8
Acute severe arrhythmia: bradycardias	54	2.3
Pulmonary edema	26	1.1
Left heart failure w/o pulm. edema	24	1.0
Neurological	327	14.1
Drowsiness/agitation/delirium	137	5.9
Intracranial hypertension	116	5.0
Brain edema	78	3.4
New ischaemic stroke	31	1.3
Seizures	30	1.3
Gastrointestinal and hepatic	99	4.3
Gastrointestinal bleeding: upper tract	23	1.0
Paralytic Ileus	17	0.7
Anastomotic dehiscence	12	0.5
Gastrointestinal perforation	10	0.4
Liver Dysfunction Syndrome	10	0.4
Other	124	5.4
Other disease	37	1.6
Other skin and/or soft tissue pathology	34	1.5
Nephro-urologic disease	28	1.2
Metabolic disorder	25	1.1
Fat embolism	3	0.1
Extremity compartment syndrome (severe)	3	0.1
Iatrogenic major vessels injury	3	0.1
Infections	435	18.8
Pneumonia	115	5.0
L.R.T.I. other than pneumonia	104	4.5
F.U.O. fever of unknown origin	42	1.8
NON-surgical urinary tract infection	41	1.8
Clinical sepsis	35	1.5
Gastroenteritis	24	1.0
Upper respiratory tract infection	19	0.8
Sinusitis	15	0.6
Post-surgical peritonitis	14	0.6
NON-surgical secondary peritonitis	10	0.4
Missing	29	

National report - **Year 2015**
Characteristics during the stay - Adult patients

Infections	N	%
None	1135	49.0
Only on admission	745	32.2
On admission and during ICU stay	98	4.2
Only during ICU stay	337	14.6
Missing	29	

Maximum severity of infection	N	%
None	1135	50.0
Infection with or without SIRS	550	24.2
Severe sepsis	208	9.2
Septic shock	376	16.6
Missing	75	

Severity evolution		**During the stay**				
	N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock	TOT
Admission	None	1135 (79.0%)	209 (14.6%)	49 (3.4%)	43 (3.0%)	1436
	Infection with or without SIRS	-	341 (88.1%)	22 (5.7%)	24 (6.2%)	387
	Severe sepsis	-	-	137 (71.7%)	54 (28.3%)	191
	Septic shock	-	-	-	255 (100.0%)	255
	TOT	1135	550	208	376	2269

Ventil. Associat. Pneumonia (VAP)	N	%
No	2252	96.2
Yes	89	3.8
Missing	3	

Catheter Bacteraemia (CR-BSI)	N	%
No	2308	99.7
Yes	7	0.3
Missing	29	

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

Estimate	10.3
CI (95%)	8.3−12.7

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

Estimate	0.1
CI (95%)	0.1−0.3

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

Estimate	8.2%
CI (95%)	6.6−10.1

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

Estimate	0.2%
CI (95%)	0.1−0.4

National report - **Year 2015**
Process indicators - Adult patients

Procedures and/or treatments (Missing=29)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	2258	97.5										
Invasive ventilation	1659	71.7	1052	45.4	261	11.3	3	1–7	0	0	0–0	0
Non invasive ventilation	547	23.6	168	7.3	270	11.7	2	1–4	0	1	0–3	0
Tracheostomy	323	14.0	18	0.8	196	8.5	7	4–16	0	7	5–10	0
iNO (inhaled nitric oxide)	0	0.0										
Central Venous Catheter	1744	75.3	372	16.1	1041	45	5	2–10	0	0	0–0	0
PICC	1	0.0	0	0	0	0	16	16–16	0	7	7–7	0
Arterial Catheter	1635	70.6	415	17.9	297	12.8	4	2–7	0	0	0–0	0
Vasoactive drugs	1083	46.8	322	13.9	133	5.7	2	1–4	0	0	0–0	0
Antiarrhythmics	461	19.9	93	4	229	9.9	3	1–8	0	1	0–2	0
IABP	3	0.1	0	0	1	0	2	1–4	0	1	0–2	0
Invasive monitoring of C.O.	82	3.5	3	0.1	6	0.3	5	3–8	0	1	0–2	0
Continous monitoring of ScVO2	399	17.2	19	0.8	11	0.5	4	2–8	0	0	0–0	0
Temporary pacing	7	0.3	0	0	2	0.1	3	2–7	0	1	1–2	0
Ventricular assistance	1	0.0	0	0	0	0	0	0–0	0	0	0–0	0
DC-shock	50	2.2								0	0–1	0
CPR	73	3.2								0	0–1	0
Massive blood transfusion	51	2.2								0	0–0	0
ICP monitoring without liquor-drainage	29	1.3	15	0.6	1	0	3	2–5	0	0	0–1	0
ICP monitoring with liquor-drainage	95	4.1	26	1.1	22	1	6	3–9	0	0	0–0	0
External ventricular drainage without ICP	10	0.4	2	0.1	5	0.2	2	1–4	0	0	0–0	0
Haemofiltration	30	1.3	0	0	4	0.2	2	1–2	0	1	0–1	0
Haemodialysis	106	4.6	14	0.6	25	1.1	3	1–8	0	1	0–2	0
ECMO	0	0.0										
Hepatic clearance techniques	0	0.0										
Clearance techniques during sepsis	6	0.3	0	0	0	0	2	0–4	0	1	1–2	0
IAP (intra-abdominal pressure)	47	2.0										
Hypothermia	43	1.9										
Enteral nutrition	1385	59.8	195	8.4	818	35.3	5	2–10	0	1	0–2	0
Parenteral nutrition	652	28.2	155	6.7	296	12.8	4	2–8	0	1	0–2	0
SDD (Topical, Topical and systemic)	0	0.0										
Patient restraint	114	4.9										
Peridural catheter	131	5.7	88	3.8	66	2.9	3	2–5	0	0	0–1	0
Electrical cardioversion	7	0.3								3	2–6	0
Vacuum therapy	3	0.1										
Antibiotics	1541	66.6										
Antibiotics for surgical prophylaxis	525	22.7	238	10.3	154	6.7	2	0–3	0	0	0–0	0
Antibiotics for medical prophylaxis	98	4.2	22	1	40	1.7	4	2–6	0	0	0–1	0
Empirical antibiotic therapy	862	37.2	203	8.8	223	9.6	4	2–5	0	0	0–2	0
Targeted antibiotic therapy	532	23.0	55	2.4	240	10.4	6	3–10	0	4	1–7	0

National report - **Year 2015**
Process indicators - Adult patients

Invasive ventilation (N=1659)	N	%	Length (days) Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	764	46.0	6.7	8.8	4	1−9	0
For airway mainteinance	715	43.1	5.0	7.3	3	1−7	1
In weaning	113	6.8	0.6	0.5	1	0−1	0
Not evaluable	68	4.1	6.4	9.2	3	1−8	5
Reintubation within 48 hours	49	3.0	7.2	10.2	4	1−8	0

Non invasive ventilation (N=547)	N	%
Non invasive ventilation only	241	44.1
Non invasive ventilation failed	62	11.3
For weaning	229	41.9
Other	15	2.7
Missing	0	

Tracheostomy (N=323)	N	%
Surgical	122	37.8
Percutwist	31	9.6
Ciaglia	0	0.0
Monodil. Ciaglia	2	0.6
Fantoni	0	0.0
Griggs	159	49.2
Other Kind	8	2.5
Missing	1	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=304)	
Mean	8.2
SD	5.9
Median	7
Q1−Q3	5−10
Missing	0

Invasive monitoring of C.O. (N=82)	N	%
Swan Ganz	2	2.4
PICCO	80	97.6
LIDCO	0	0.0
Vigileo-PRAM	0	0.0
Other	0	0.0
Missing	0	

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

Antibiotic therapy Pts. infected in ICU only (N=337)	N	%
Only empirical	139	45.9
Only targeted	67	22.1
Targeted after empirical	67	22.1
Other	30	9.9
Missing	34	

Surgical interventions	N	%
No	2116	91.4
Yes	199	8.6
Missing	29	

Number of surgical interventions	N	%
0	2116	91.4
1	153	6.6
2	33	1.4
3	8	0.3
>3	5	0.2
Missing	29	

Surgical interventions Days from admission	
Mean	8.7
SD	7.6
Median	6
Q1−Q3	4−11
Missing	0

Surgical interventions (top 10)	N	%
Orthopaedic surgery	58	2.5
Gastrointestinal surgery	55	2.4
Other surgery	41	1.8
ENT surgery	35	1.5
Neurosurgery	22	1.0
Nephro/Urological surgery	12	0.5
Peripheral vascular surgery	11	0.5
Organ donation	8	0.3
Pancreatic surgery	6	0.3
Maxillo-Facial surgery	6	0.3
Missing	29	

Non surgical interventions	N	%
No	2253	97.3
Yes	62	2.7
Missing	29	

Non surgical interventions Days from admission	
Mean	10.5
SD	12.9
Median	5
Q1−Q3	3−13
Missing	2

Non surgical interventions	N	%
Interventional endoscopy	40	1.7
Interventional cardiology	13	0.6
Interventional radiology	9	0.4
Interventional neuroradiology	5	0.2
Missing	29	

National report - **Year 2015**
Outcome indicators - Adult patients

ICU outcome	N	%
Dead	564	24.5
Transferred to same hospital	1538	66.8
Transferred to other hospital	175	7.6
Discharged home	24	1.0
Disch. terminally ill	0	0.0
Missing	43	

Transferred to (N=1713)	N	%
Ward	1362	79.5
Other ICU	87	5.1
High dependency care unit	264	15.4
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Reason for transfer to **Other ICU** (N=87)	N	%
Specialist expertise	8	9.2
Step-up care	13	14.9
Logistical/organizational reasons	57	65.5
Step-down care	9	10.3
Missing	0	

Transferred to **Same hospital** (N=1538)	N	%
Ward	1274	82.8
Other ICU	12	0.8
High dependency care unit	252	16.4
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Transferred to **Other hospital** (N=175)	N	%
Ward	88	50.3
Other ICU	75	42.9
High dependency care unit	12	6.9
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	1737	75.5
Dead	564	24.5
Missing	43	

Timing of ICU mortality (N=564)	N	%
Daytime (08:00AM - 07:59PM)	317	56.2
Nigthtime (08:00PM - 07:59AM)	247	43.8
Weekdays (Monday - Friday)	410	72.7
Weekend (Saturday - Sunday)	154	27.3
Missing	0	

Hospital mortality *	N	%
Alive	1434	62.9
Dead	847	37.1
Missing	35	

Timing of hosp. mortality * (N=847)	N	%
In ICU	561	66.2
Within 24 hours after ICU	16	1.9
24-47 hours after ICU	36	4.3
48-71 hours after ICU	28	3.3
72-95 hours after ICU	22	2.6
After 95 hours after ICU	184	21.7
Missing	0	

Timing of hosp. mortality (days from ICU disch.) * **Discharged alive from ICU** (N=286)	
Mean	14.7
SD	23.0
Median	7
Q1−Q3	2−18
Missing	0

* Statistics computed on patients admitted in months with % of patients in status 4 over the threshold (readmissions excluded) (N=2316).

Last hospital mortality *	N	%
Alive	1432	62.8
Dead	849	37.2
Missing	35	

Readmission from ward	N	%
No	2316	98.8
Yes	28	1.2
Missing	0	

Number of readmissions (N=28)	N	%
1	27	96.4
2	1	3.6
>2	0	0.0
Missing	0	

Timing of readmission (N=28)	N	%
Within 48 hours	5	17.9
48-71 hours	1	3.6
72-95 hours	0	0.0
After 95 hours	22	78.6
Missing	0	

Timing readmission (days)	
N	28
Mean	10.7
SD	12.9
Median	6.1
Q1−Q3	4.3−10.3

ICU stay (days)	
Mean	7.4
SD	10.8
Median	4
Q1−Q3	2−9
Missing	33

ICU stay (days) **Alive** (N=1737)	
Mean	7.4
SD	11.0
Median	4
Q1−Q3	2−9
Missing	0

ICU stay (days) **Dead** (N=564)	
Mean	7.3
SD	10.4
Median	3
Q1−Q3	1−9
Missing	0

Stay after ICU (days) * **Alive** (N=1712)	
Mean	13.0
SD	19.8
Median	7
Q1−Q3	3−15
Missing	1

Hospital stay (days) *	
Mean	21.2
SD	24.5
Median	14
Q1−Q3	7−26
Missing	36

Hospital stay (days) * **Alive** (N=1434)	
Mean	22.8
SD	25.1
Median	15
Q1−Q3	9−28
Missing	1

Hospital stay (days) * **Dead** (N=847)	
Mean	18.4
SD	23.3
Median	11
Q1−Q3	4−23.5
Missing	0

* Statistics computed on patients admitted in months with % of patients in status 4 over the threshold (readmissions excluded) (N=2316).

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

Patients (N): 2036

Sex	N	%
Male	1189	58.4
Female	847	41.6
Missing	0	

Age (years)	N	%
17-45	321	15.8
46-65	784	38.5
66-75	515	25.3
>75	416	20.4
Missing	0	
Mean	61.8	
SD	16.1	
Median	64	
Q1−Q3	53−74	
Min−Max	17−99	

Body mass Index (BMI)	N	%
Underweight	118	5.8
Normal	860	42.2
Overweight	647	31.8
Obese	411	20.2
Missing	0	

Pregnancy status **Females** (N=847)	N	%
Not fertile	358	42.3
Not pregnant/Unknown	474	56.0
Currently pregnant	3	0.4
Post partum	12	1.4
Missing	0	

Comorbidities	N	%
No	393	19.3
Yes	1643	80.7
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	1220	59.9
Peripheral vascular disease	347	17.0
Diabetes Type II without insulin tr.	328	16.1
Arrhythmia	300	14.7
NYHA class II-III	262	12.9
Cerebrovascular disease	248	12.2
Any tumour without metastasis	213	10.5
Moderate COPD	186	9.1
Myocardial infarction	169	8.3
Diabetes Type II with insulin treatment	136	6.7
Missing	0	

Stay before ICU (days)	
Mean	4.3
SD	10.6
Median	1
Q1−Q3	0−4
Missing	0

Source of admission	N	%
Same hospital	1932	94.9
Other hospital	94	4.6
Long-term chronic care hospital	10	0.5
Directly from the community	0	0.0
Missing	0	

Ward of admission **Hospital** (N=2026)	N	%
Medical ward	259	12.8
Surgical ward	929	45.9
Emergency room	713	35.2
Other ICU	43	2.1
High dependency care unit	82	4.0
Missing	0	

Reason for transfer from **Other ICU** (N=43)	N	%
Specialist expertise	11	25.6
Step-up care	20	46.5
Logistical/organizational reasons	10	23.3
Step-down care	2	4.7
Missing	0	

Ward of admission **Same hospital** (N=1932)	N	%
Medical ward	236	12.2
Surgical ward	922	47.7
Emergency room	685	35.5
Other ICU	14	0.7
High dependency care unit	75	3.9
Missing	0	

Ward of admission **Other hospital** (N=94)	N	%
Medical ward	23	24.5
Surgical ward	7	7.4
Emergency room	28	29.8
Other ICU	29	30.9
High dependency care unit	7	7.4
Missing	0	

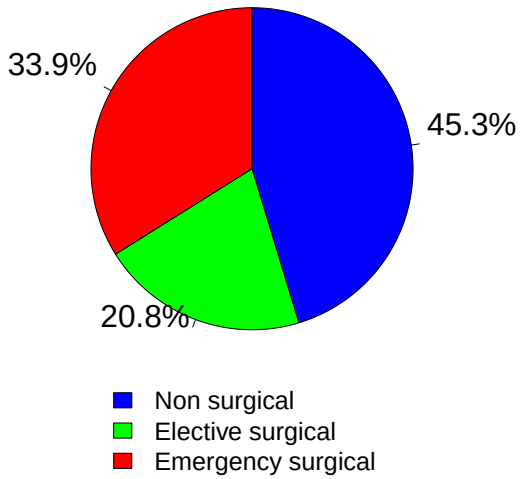
Scheduled admission	N	%
No	1704	83.7
Yes	332	16.3
Missing	0	

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

Trauma	N	%
No	1487	73.0
Yes	549	27.0
Multiple trauma	175	8.6
Missing	0	

Surgical status	N	%
Non surgical	923	45.3
Elective surgical	423	20.8
Emergency surgical	690	33.9
Missing	0	

Surgical status



Source of admission **Surgical pts.** (N=1113)	N	%
Operating theatre of surgical ward	670	60.2
Operating theatre of emergency room	127	11.4
Surgical ward	115	10.3
Other	201	18.1
Missing	0	

Surgical interventions (top 10) **Elective surgical** (N=423)	N	%
Gastrointestinal surgery	128	30.3
Peripheral vascular surgery	97	22.9
Neurosurgery	75	17.7
Nephro/Urological surgery	34	8.0
Orthopaedic surgery	31	7.3
Hepatic surgery	17	4.0
Abdominal vascular surgery	13	3.1
Pancreatic surgery	12	2.8
Thoracic surgery	12	2.8
Biliary tract surgery	12	2.8
Missing	0	

Timing **Elective surgical** (N=423)	N	%
From -7 to -3 days	15	3.5
From -2 to -1 days	18	4.3
On ICU admission day	424	100.2
The day after ICU admission	6	1.4
Missing	0	

Surgical interventions (top 10) **Emergency surgical** (N=690)	N	%
Neurosurgery	197	28.6
Gastrointestinal surgery	172	24.9
Orthopaedic surgery	148	21.4
Other surgery	41	5.9
Peripheral vascular surgery	37	5.4
ENT surgery	27	3.9
Nephro/Urological surgery	26	3.8
Thoracic surgery	19	2.8
Abdominal vascular surgery	19	2.8
Biliary tract surgery	15	2.2
Missing	0	

Timing **Emergency surgical** (N=690)	N	%
From -7 to -3 days	39	5.7
From -2 to -1 days	75	10.9
On ICU admission day	600	87.0
The day after ICU admission	52	7.5
Missing	1	

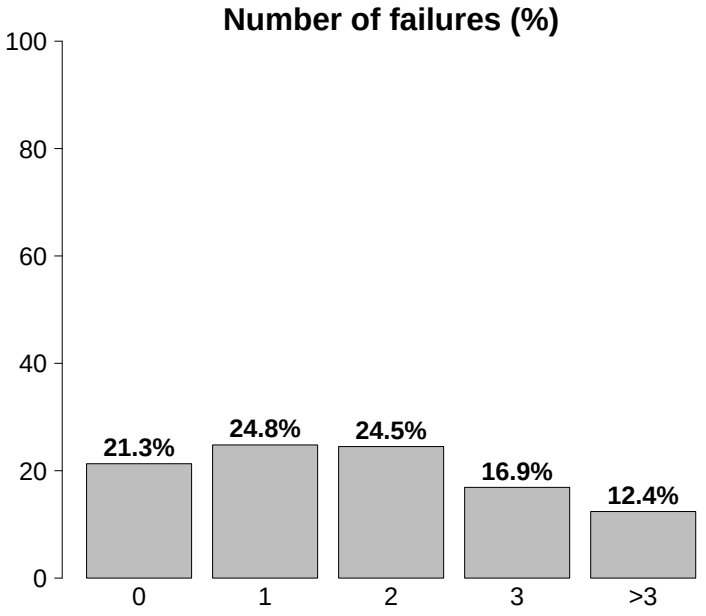
Non surgical interventions	N	%
None	1947	95.6
Elective	11	0.5
Emergency	78	3.8
Missing	0	

Non surgical interventions **Elective** (N=11)	N	%
Interventional neuroradiology	6	54.5
Interventional endoscopy	3	27.3
Interventional radiology	2	18.2
Interventional cardiology	0	0.0
Missing	0	

Non surgical interventions **Emergency** (N=78)	N	%
Interventional endoscopy	34	43.6
Interventional cardiology	30	38.5
Interventional neuroradiology	8	10.3
Interventional radiology	2	2.6
Missing	4	

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

Reason for admission	N	%
Monitoring/Weaning	614	30.2
Post surgical weaning	99	4.9
Surgical monitoring	346	17.0
Post interventional weaning	1	0.0
Interventional monitoring	7	0.3
Non surgical monitoring	161	7.9
Missing	0	
Admission for procedures/treatments	0	0.0
Intensive Treatment	1422	69.8
Only ventilatory support	664	32.6
Only cardiovascular support	121	5.9
Ventilatory and cardiovascular support	637	31.3
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	434	21.3
Yes	1602	78.7
A: Respiratory failure	1301	63.9
B: Cardiovascular failure	758	37.2
C: Neurological failure	326	16.0
D: Hepatic failure	20	1.0
E: Renal failure	545	26.8
F: Acute skin failure	4	0.2
G: Metabolic failure	599	29.4
H: Coagulation failure	48	2.4
Missing	0	

Failures on admission (top 10)	N	%
A	343	16.8
AB	188	9.2
ABEG	120	5.9
AC	112	5.5
ABG	88	4.3
E	69	3.4
ABC	67	3.3
ABE	64	3.1
AG	58	2.8
G	52	2.6
Missing	0	

Respiratory failure	N	%
None	735	36.1
Only hypoxic failure	346	17.0
Only hypercapnic failure	82	4.0
Hypoxic-hypercapnic failure	227	11.1
Intubation for airway maint.	646	31.7
Missing	0	

Cardiovascular failure	N	%
None	1278	62.8
Without shock	302	14.8
Cardiogenic shock	87	4.3
Septic shock	185	9.1
Haemorrhagic/hypovolemic shock	78	3.8
Hypovolemic shock	30	1.5
Anaphylactic shock	1	0.0
Neurogenic shock	30	1.5
Other shock	16	0.8
Mixed shock	29	1.4
Missing	0	

Neurologic failure	N	%
None	1183	78.4
Cerebral coma	230	15.2
Metabolic coma	30	2.0
Postanoxic coma	53	3.5
Toxic coma	13	0.9
Missing or not evaluable	527	

Renal failure (AKIN)	N	%
None	1491	73.2
Mild	244	12.0
Moderate	142	7.0
Severe	159	7.8
Missing	0	

Metabolic failure	N	%
None	1437	70.6
pH <= 7.3, PaCO2 < 45 mmHg	229	11.2
Base deficit >= 5 mmol/L, lactate >1.5x	370	18.2
Missing	0	

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

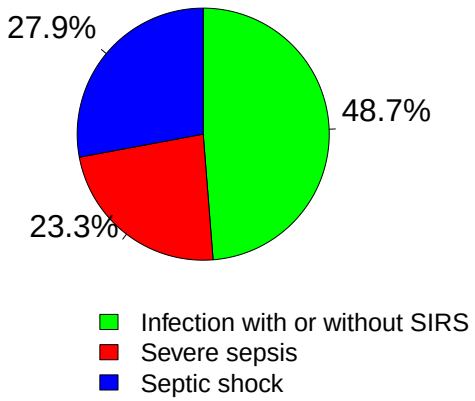
Clinical conditions on admission	N	%
Respiratory	325	16.0
Pleural effusion	87	4.3
Acute exacerbation of COPD	71	3.5
Atelectasis	64	3.1
Aspiration pneumonia	37	1.8
Upper respiratory tract disease	22	1.1
Cardiovascular	454	22.3
Cardiac arrest	111	5.5
Peripheral vascular disease	85	4.2
Left heart failure without pulm. edema	84	4.1
Acute severe arrhythmia: tachycardias	84	4.1
Left heart failure with pulmonary edema	60	2.9
Neurological	274	13.5
Brain tumour	73	3.6
Spontaneous Intraparenchymal bleeding	48	2.4
Seizures	40	2.0
Spontaneous Subarachnoid haemorrhage	33	1.6
Cerebral artery stroke	32	1.6
Gastrointestinal and hepatic	305	15.0
Digestive tract malignancy	82	4.0
Acute pancreatitis	39	1.9
Gastrointestinal bleeding: upper tract	38	1.9
Gastrointestinal perforation	32	1.6
Intestinal occlusion	24	1.2
Trauma (anatomical districts)	549	27.0
Head	309	15.2
Pelvis/bone/joint & muscle	183	9.0
Chest	157	7.7
Spine	92	4.5
Abdomen	53	2.6
Major vessels injury	10	0.5
Miscellaneous	8	0.4
Other	463	22.7
Other disease	174	8.5
Nephro-urologic disease	102	5.0
Metabolic disorder	78	3.8
Coagulation disorder	48	2.4
Acute intoxication	34	1.7
Post transplantation	1	0.0
Renal transplantation	1	0.0
-	0	0.0
Infections	752	36.9
Pneumonia	335	16.5
Clinical sepsis	74	3.6
NON-surgical urinary tract infection	63	3.1
L.R.T.I. other than pneumonia	58	2.8
NON-surgical secondary peritonitis	42	2.1
NON-surgical skin/soft tissue infection	38	1.9
Gastroenteritis	30	1.5
Cholecystitis/cholangitis	23	1.1
Primary peritonitis	19	0.9
NON-surgical CNS infection	18	0.9
Missing	0	

Trauma (anatomical districts)	N	%
Head	309	15.2
Traumatic subarachnoid haemorrhage	125	6.1
Skull fracture	117	5.7
Traumatic Subdural haematoma	116	5.7
Maxillofacial fracture	92	4.5
Cerebral contusion/laceration	66	3.2
Spine	92	4.5
Vertebral fracture, without deficit	70	3.4
Cervical injury, incomplete deficit	14	0.7
Lumbar injury, incomplete deficit	3	0.1
Chest	157	7.7
Other injuries of the chest	75	3.7
Traum. haemothorax/pneumothorax	73	3.6
Severe lung contusion/laceration	40	2.0
Abdomen	53	2.6
Minor injuries of the abdomen	17	0.8
Liver: Moderate-Severe laceration	13	0.6
Spleen: Massive rupture	10	0.5
Pelvis/bone/joint & muscle	183	9.0
Long bone fracture	149	7.3
Multiple fracture of the pelvis	37	1.8
Massive crush/amputation	13	0.6
Major vessels injury	10	0.5
Proximal limbs vessels: transection	7	0.3
Aorta: rupture/dissection	2	0.1
Neck vessels: dissection/transection	1	0.0
Miscellaneous	8	0.4
Burns (>30% BSA)	7	0.3
Inhalation injury	1	0.0
Missing	0	

Infection severity on admission	N	%
None	1284	63.4
Infection with or without SIRS	361	17.8
Severe sepsis	173	8.5
Septic shock	207	10.2
Missing	11	

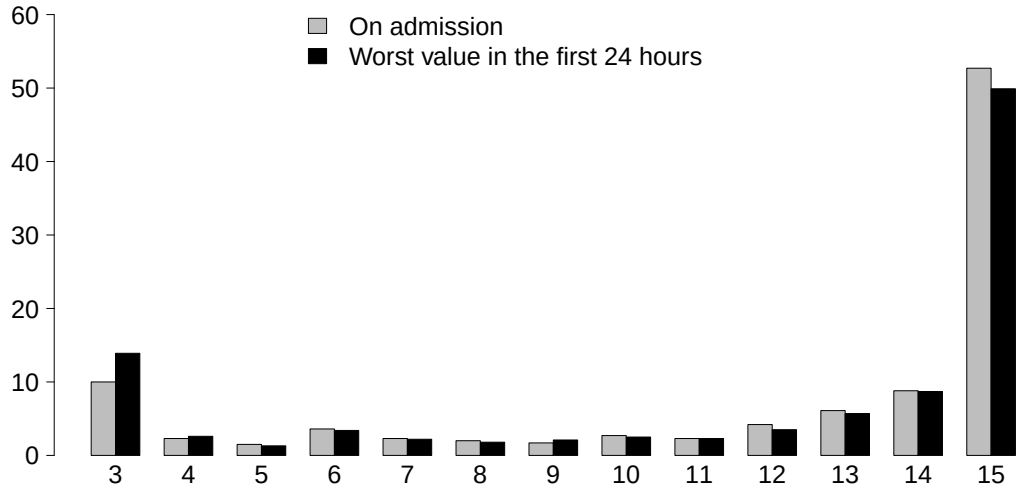
Infection severity on admission

Patients infected (N=741)



National report - **Year 2015**
Severity scores - Adult patients with LOS>=24 hours evaluated in the GiViTI model

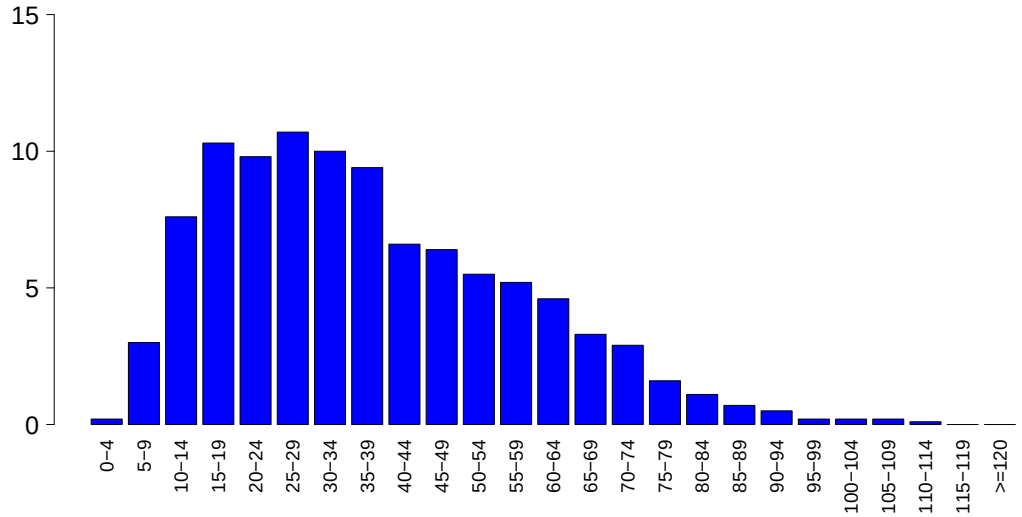
Glasgow Coma Scale (%)



GCS (admission)	
Median	15
Q1−Q3	10−15
Not evaluable	527
Missing	0

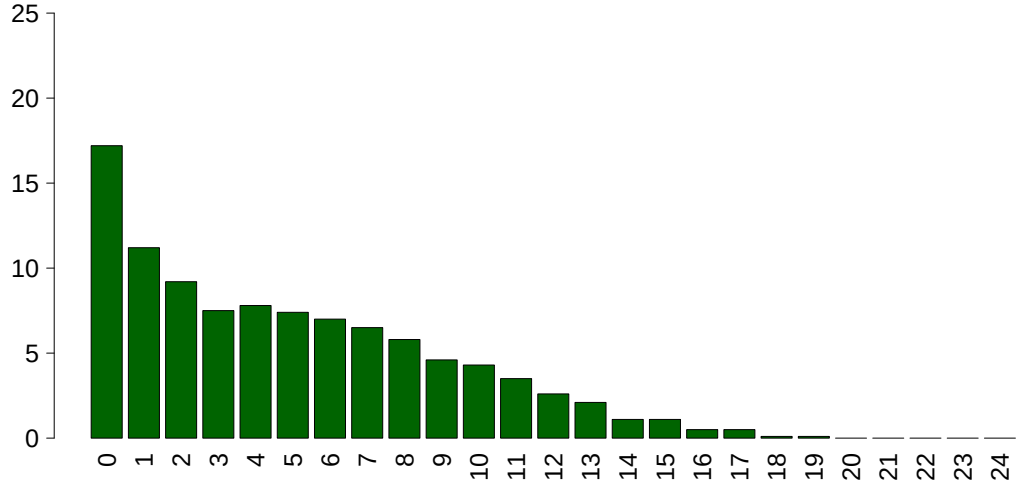
GCS (first 24 hours)	
Median	14
Q1−Q3	8−15
Not evaluable	720
Missing	0

SAPS II (%)



SAPSII	
Mean	37.2
SD	19.7
Median	34
Q1−Q3	21−50
Not evaluable	720
Missing	0

SOFA (%)



SOFA	
Mean	4.9
SD	4.2
Median	4
Q1−Q3	1−8
Not evaluable	720
Missing	0

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

Complications during the stay	N	%
No	1031	50.6
Yes	1005	49.4
Missing	0	

Failures during the stay	N	%
No	1616	79.4
Yes	420	20.6
A: Respiratory failure	180	8.8
B: Cardiovascular failure	237	11.6
C: Neurological failure	49	2.4
D: Hepatic failure	12	0.6
E: Renal failure (AKIN)	146	7.2
F: Acute skin failure	3	0.1
G: Metabolic failure	22	1.1
H: Coagulation failure	13	0.6
Missing	0	

Failures during the stay (top 10)	N	%
B	101	5.0
A	89	4.4
BE	40	2.0
E	39	1.9
AB	27	1.3
ABE	17	0.8
AE	13	0.6
C	10	0.5
ABCE	9	0.4
BC	8	0.4
Missing	0	

Respiratory failure occured	N	%
None	1856	91.2
Intubation for airway maint.	54	2.7
Hypoxic failure	122	6.0
Hypercapnic failure	44	2.2
Missing	0	

Cardiovascular failure occured	N	%
None	1799	88.4
Cardiogenic shock	67	3.3
Hypovolemic shock	11	0.5
Haemorrhagic/hypovolemic shock	15	0.7
Septic shock	132	6.5
Anaphylactic shock	0	0.0
Neurogenic shock	15	0.7
Other shock	24	1.2
Missing	0	

Neurological failure occured	N	%
None	1987	97.6
Cerebral coma	25	1.2
Metabolic coma	19	0.9
Postanoxic coma	6	0.3
Missing	0	

Renal failure occured (AKIN)	N	%
None	1890	92.8
Mild	14	0.7
Moderate	40	2.0
Severe	92	4.5
Missing	0	

Complications during the stay	N	%
Respiratory	263	12.9
Atelectasis	121	5.9
Pleural effusion	77	3.8
Pneumothorax/Pneumomediastinum	35	1.7
Aspiration pneumonia	25	1.2
Upper resp. tract disease	22	1.1
Cardiovascular	215	10.6
Acute severe arrhythmia: tachycardias	103	5.1
Cardiac arrest	40	2.0
Acute severe arrhythmia: bradycardias	32	1.6
Left heart failure w/o pulm. edema	20	1.0
Pulmonary edema	19	0.9
Neurological	306	15.0
Drowsiness/agitation/delirium	132	6.5
Intracranial hypertension	104	5.1
Brain edema	71	3.5
New ischaemic stroke	30	1.5
Seizures	26	1.3
Gastrointestinal and hepatic	89	4.4
Gastrointestinal bleeding: upper tract	21	1.0
Paralytic Ileus	16	0.8
Anastomotic dehiscence	12	0.6
Gastrointestinal perforation	9	0.4
Liver Dysfunction Syndrome	9	0.4
Other	114	5.6
Other skin and/or soft tissue pathology	34	1.7
Other disease	31	1.5
Nephro-urologic disease	27	1.3
Metabolic disorder	22	1.1
Fat embolism	3	0.1
Extremity compartment syndrome (severe)	3	0.1
Iatrogenic major vessels injury	3	0.1
Infections	416	20.4
Pneumonia	113	5.6
L.R.T.I. other than pneumonia	99	4.9
F.U.O. fever of unknown origin	41	2.0
NON-surgical urinary tract infection	38	1.9
Clinical sepsis	32	1.6
Gastroenteritis	23	1.1
Upper respiratory tract infection	19	0.9
Sinusitis	14	0.7
Post-surgical peritonitis	13	0.6
NON-surgical skin/soft tissue infection	10	0.5
Missing	0	

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

Infections	N	%
None	959	47.1
Only on admission	661	32.5
On admission and during ICU stay	91	4.5
Only during ICU stay	325	16.0
Missing	0	

Maximum severity of infection	N	%
None	959	48.2
Infection with or without SIRS	522	26.2
Severe sepsis	190	9.5
Septic shock	319	16.0
Missing	46	

Severity evolution		**During the stay**				
	N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock	TOT
Admission	None	959 (76.8%)	204 (16.3%)	45 (3.6%)	41 (3.3%)	1249
	Infection with or without SIRS	-	318 (88.1%)	20 (5.5%)	23 (6.4%)	361
	Severe sepsis	-	-	125 (72.3%)	48 (27.7%)	173
	Septic shock	-	-	-	207 (100.0%)	207
	TOT	959	522	190	319	1990

Ventil. Associat. Pneumonia (VAP)	N	%
No	1948	95.7
Yes	88	4.3
Missing	0	

Catheter Bacteraemia (CR-BSI)	N	%
No	2029	99.7
Yes	7	0.3
Missing	0	

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

Estimate	10.4
CI (95%)	8.4−12.9

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

Estimate	0.1
CI (95%)	0.1−0.3

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

Estimate	8.4%
CI (95%)	6.7−10.3

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

Estimate	0.2%
CI (95%)	0.1−0.4

National report - **Year 2015**

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

Procedures and/or treatments (Missing=0)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	1992	97.8										
Invasive ventilation	1450	71.2	911	44.7	207	10.2	3	1–8	0	0	0–0	0
Non invasive ventilation	507	24.9	155	7.6	250	12.3	2	1–4	0	1	0–4	0
Tracheostomy	313	15.4	18	0.9	189	9.3	7	4–16	0	7	5–10	0
iNO (inhaled nitric oxide)	0	0.0										
Central Venous Catheter	1570	77.1	332	16.3	936	46	6	3–11	0	0	0–0	0
PICC	1	0.0	0	0	0	0	16	16–16	0	7	7–7	0
Arterial Catheter	1477	72.5	379	18.6	245	12	4	2–8	0	0	0–0	0
Vasoactive drugs	920	45.2	255	12.5	93	4.6	3	1–5	0	0	0–0	0
Antiarrhythmics	426	20.9	82	4	215	10.6	4	1–8	0	1	0–3	0
IABP	2	0.1	0	0	1	0	4	3–6	0	2	2–2	0
Invasive monitoring of C.O.	77	3.8	2	0.1	4	0.2	5	4–8	0	1	0–2	0
Continous monitoring of ScVO2	356	17.5	14	0.7	10	0.5	4	2–8	0	0	0–0	0
Temporary pacing	7	0.3	0	0	2	0.1	3	2–7	0	1	1–2	0
Ventricular assistance	0	0.0										
DC-shock	36	1.8								1	0–2	0
CPR	50	2.5								0	0–4	0
Massive blood transfusion	41	2.0								0	0–0	0
ICP monitoring without liquor-drainage	27	1.3	13	0.6	1	0	3	2–5	0	0	0–1	0
ICP monitoring with liquor-drainage	89	4.4	26	1.3	20	1	6	3–9	0	0	0–0	0
External ventricular drainage without ICP	7	0.3	1	0	3	0.1	3	2–5	0	0	0–0	0
Haemofiltration	28	1.4	0	0	2	0.1	2	1–2	0	1	0–1	0
Haemodialysis	100	4.9	13	0.6	24	1.2	3	1–8	0	1	0–2	0
ECMO	0	0.0										
Hepatic clearance techniques	0	0.0										
Clearance techniques during sepsis	6	0.3	0	0	0	0	2	0–4	0	1	1–2	0
IAP (intra-abdominal pressure)	44	2.2										
Hypothermia	41	2.0										
Enteral nutrition	1321	64.9	180	8.8	775	38.1	5	2–10	0	1	0–2	0
Parenteral nutrition	613	30.1	141	6.9	268	13.2	4	2–8	0	1	0–2	0
SDD (Topical, Topical and systemic)	0	0.0										
Patient restraint	111	5.5										
Peridural catheter	126	6.2	84	4.1	64	3.1	3	2–5	0	0	0–1	0
Electrical cardioversion	7	0.3								3	2–6	0
Vacuum therapy	3	0.1										
Antibiotics	1411	69.3										
Antibiotics for surgical prophylaxis	476	23.4	217	10.7	138	6.8	2	0–3	0	0	0–0	0
Antibiotics for medical prophylaxis	88	4.3	20	1	34	1.7	4	2–6	0	0	0–1	0
Empirical antibiotic therapy	794	39.0	184	9	199	9.8	4	2–5	0	0	0–2	0
Targeted antibiotic therapy	511	25.1	51	2.5	231	11.3	6	3–10	0	4	1–7	0

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

Invasive ventilation (N=1450)	N	%	Length (days) Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	666	45.9	7.5	8.9	5	2−9	0
For airway mainteinance	634	43.7	5.3	7.5	3	1−7	0
In weaning	96	6.6	0.6	0.5	1	0−1	0
Not evaluable	55	3.8	6.9	9.7	4	1.5−8	4
Reintubation within 48 hours	49	3.4	7.2	10.2	4	1−8	0

Non invasive ventilation (N=507)	N	%
Non invasive ventilation only	219	43.2
Non invasive ventilation failed	56	11.0
For weaning	217	42.8
Other	15	3.0
Missing	0	

Tracheostomy (N=313)	N	%
Surgical	121	38.7
Percutwist	30	9.6
Ciaglia	0	0.0
Monodil. Ciaglia	2	0.6
Fantoni	0	0.0
Griggs	152	48.6
Other Kind	8	2.6
Missing	0	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=294)	
Mean	8.1
SD	5.9
Median	7
Q1−Q3	5−10
Missing	0

Invasive monitoring of C.O. (N=77)	N	%
Swan Ganz	2	2.6
PICCO	75	97.4
LIDCO	0	0.0
Vigileo-PRAM	0	0.0
Other	0	0.0
Missing	0	

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

Antibiotic therapy Pts. infected in ICU only (N=325)	N	%
Only empirical	133	45.5
Only targeted	66	22.6
Targeted after empirical	66	22.6
Other	27	9.2
Missing	33	

Surgical interventions	N	%
No	1842	90.5
Yes	194	9.5
Missing	0	

Number of surgical interventions	N	%
0	1842	90.5
1	149	7.3
2	33	1.6
3	7	0.3
>3	5	0.2
Missing	0	

Surgical interventions Days from admission	
Mean	8.8
SD	7.7
Median	6
Q1−Q3	4−11
Missing	0

Surgical interventions (top 10)	N	%
Orthopaedic surgery	58	2.8
Gastrointestinal surgery	52	2.6
Other surgery	40	2.0
ENT surgery	35	1.7
Neurosurgery	21	1.0
Nephro/Urological surgery	11	0.5
Peripheral vascular surgery	10	0.5
Organ donation	8	0.4
Pancreatic surgery	6	0.3
Maxillo-Facial surgery	6	0.3
Missing	0	

Non surgical interventions	N	%
No	1976	97.1
Yes	60	2.9
Missing	0	

Non surgical interventions Days from admission	
Mean	10.7
SD	13.0
Median	5
Q1−Q3	3−13
Missing	2

Non surgical interventions	N	%
Interventional endoscopy	40	2.0
Interventional cardiology	13	0.6
Interventional radiology	9	0.4
Interventional neuroradiology	3	0.1
Missing	0	

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

ICU outcome	N	%
Dead	419	20.7
Transferred to same hospital	1426	70.3
Transferred to other hospital	160	7.9
Discharged home	24	1.2
Disch. terminally ill	0	0.0
Missing	7	

Transferred to (N=1586)	N	%
Ward	1259	79.4
Other ICU	80	5.0
High dependency care unit	247	15.6
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Reason for transfer to Other ICU (N=80)	N	%
Specialist expertise	8	10.0
Step-up care	13	16.2
Logistical/organizational reasons	52	65.0
Step-down care	7	8.8
Missing	0	

Transferred to Same hospital (N=1426)	N	%
Ward	1178	82.6
Other ICU	12	0.8
High dependency care unit	236	16.5
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Transferred to Other hospital (N=160)	N	%
Ward	81	50.6
Other ICU	68	42.5
High dependency care unit	11	6.9
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	1610	79.3
Dead	419	20.7
Missing	7	

Timing of ICU mortality (N=419)	N	%
Daytime (08:00AM - 07:59PM)	232	55.4
Nigthtime (08:00PM - 07:59AM)	187	44.6
Weekdays (Monday - Friday)	306	73.0
Weekend (Saturday - Sunday)	113	27.0
Missing	0	

Hospital mortality	N	%
Alive	1341	65.9
Dead	695	34.1
Missing	0	

Timing of hosp. mortality (N=695)	N	%
In ICU	419	60.3
Within 24 hours after ICU	16	2.3
24-47 hours after ICU	33	4.7
48-71 hours after ICU	28	4.0
72-95 hours after ICU	22	3.2
After 95 hours after ICU	177	25.5
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=276)	
Mean	14.8
SD	23.3
Median	7
Q1−Q3	2−18
Missing	0

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

Last hospital mortality	N	%
Alive	1340	65.8
Dead	696	34.2
Missing	0	

ICU stay (days)	
Mean	8.0
SD	11.2
Median	4
Q1−Q3	2−9.2
Missing	0

ICU stay (days) **Alive** (N=1610)	
Mean	7.7
SD	11.3
Median	4
Q1−Q3	2−9
Missing	0

ICU stay (days) **Dead** (N=419)	
Mean	9.2
SD	11.1
Median	6
Q1−Q3	2.5−11.5
Missing	0

Stay after ICU (days) **Alive** (N=1610)	
Mean	13.0
SD	19.6
Median	7
Q1−Q3	3−15
Missing	1

Hospital stay (days)	
Mean	22.4
SD	24.4
Median	15
Q1−Q3	8−28
Missing	1

Hospital stay (days) **Alive** (N=1341)	
Mean	23.1
SD	24.5
Median	16
Q1−Q3	9−28.2
Missing	1

Hospital stay (days) **Dead** (N=695)	
Mean	21.0
SD	24.2
Median	14
Q1−Q3	7−26.5
Missing	0

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

Patients (N): 923

Sex	N	%
Male	559	60.6
Female	364	39.4
Missing	0	

Age (years)	N	%
17-45	135	14.6
46-65	382	41.4
66-75	217	23.5
>75	189	20.5
Missing	0	
Mean	61.9	
SD	15.6	
Median	64	
Q1−Q3	53−74	
Min−Max	17−93	

Body mass Index (BMI)	N	%
Underweight	64	6.9
Normal	364	39.4
Overweight	295	32.0
Obese	200	21.7
Missing	0	

Pregnancy status **Females** (N=364)	N	%
Not fertile	151	41.5
Not pregnant/Unknown	210	57.7
Currently pregnant	1	0.3
Post partum	2	0.5
Missing	0	

Comorbidities	N	%
No	167	18.1
Yes	756	81.9
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	555	60.1
Arrhythmia	159	17.2
Diabetes Type II without insulin tr.	145	15.7
Peripheral vascular disease	141	15.3
NYHA class II-III	130	14.1
Cerebrovascular disease	118	12.8
Moderate COPD	100	10.8
Severe COPD	97	10.5
NYHA class IV	92	10.0
Diabetes Type II with insulin treatment	86	9.3
Missing	0	

Stay before ICU (days)	
Mean	5.0
SD	13.2
Median	1
Q1−Q3	0−4
Missing	0

Source of admission	N	%
Same hospital	861	93.3
Other hospital	52	5.6
Long-term chronic care hospital	10	1.1
Directly from the community	0	0.0
Missing	0	

Ward of admission **Hospital** (N=913)	N	%
Medical ward	218	23.9
Surgical ward	144	15.8
Emergency room	468	51.3
Other ICU	22	2.4
High dependency care unit	61	6.7
Missing	0	

Reason for transfer from **Other ICU** (N=22)	N	%
Specialist expertise	4	18.2
Step-up care	8	36.4
Logistical/organizational reasons	8	36.4
Step-down care	2	9.1
Missing	0	

Ward of admission **Same hospital** (N=861)	N	%
Medical ward	202	23.5
Surgical ward	140	16.3
Emergency room	457	53.1
Other ICU	7	0.8
High dependency care unit	55	6.4
Missing	0	

Ward of admission **Other hospital** (N=52)	N	%
Medical ward	16	30.8
Surgical ward	4	7.7
Emergency room	11	21.2
Other ICU	15	28.8
High dependency care unit	6	11.5
Missing	0	

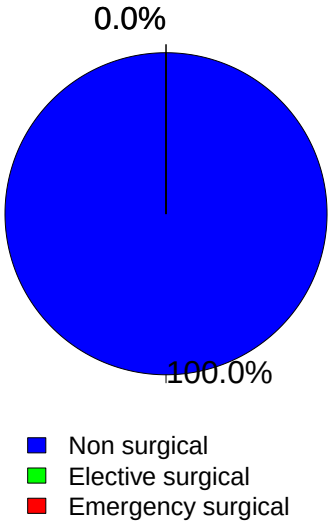
Scheduled admission	N	%
No	920	99.7
Yes	3	0.3
Missing	0	

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

Trauma	N	%
No	725	78.5
Yes	198	21.5
Multiple trauma	53	5.7
Missing	0	

Surgical status	N	%
Non surgical	923	100.0
Elective surgical	0	0.0
Emergency surgical	0	0.0
Missing	0	

Surgical status



Source of admission **Surgical pts.** (N=0)	N	%
Operating theatre of surgical ward	0	0.0
Operating theatre of emergency room	0	0.0
Surgical ward	0	0.0
Other	0	0.0
Missing	0	

Surgical interventions (top 10) **Elective surgical** (N=0)	N	%
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

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

Surgical interventions (top 10) **Emergency surgical** (N=0)	N	%
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

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

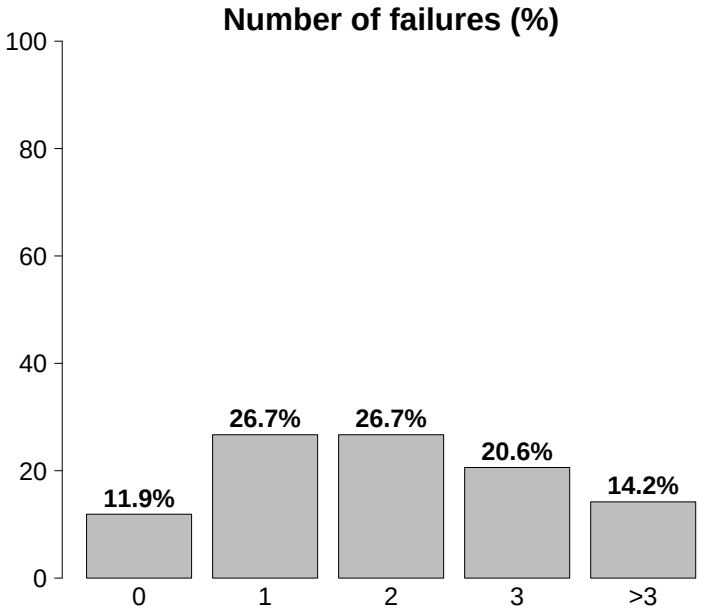
Non surgical interventions	N	%
None	865	93.7
Elective	6	0.7
Emergency	52	5.6
Missing	0	

Non surgical interventions **Elective** (N=6)	N	%
Interventional neuroradiology	4	66.7
Interventional radiology	2	33.3
Interventional endoscopy	1	16.7
Interventional cardiology	0	0.0
Missing	0	

Non surgical interventions **Emergency** (N=52)	N	%
Interventional cardiology	27	51.9
Interventional endoscopy	20	38.5
Interventional neuroradiology	4	7.7
Interventional radiology	1	1.9
Missing	0	

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

Reason for admission	N	%
Monitoring/Weaning	169	18.3
Post surgical weaning	0	0.0
Surgical monitoring	0	0.0
Post interventional weaning	1	0.1
Interventional monitoring	7	0.8
Non surgical monitoring	161	17.4
Missing	0	
Admission for procedures/treatments	0	0.0
Intensive Treatment	754	81.7
Only ventilatory support	378	41.0
Only cardiovascular support	60	6.5
Ventilatory and cardiovascular support	316	34.2
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	110	11.9
Yes	813	88.1
A: Respiratory failure	694	75.2
B: Cardiovascular failure	376	40.7
C: Neurological failure	219	23.7
D: Hepatic failure	11	1.2
E: Renal failure	271	29.4
F: Acute skin failure	2	0.2
G: Metabolic failure	267	28.9
H: Coagulation failure	18	2.0
Missing	0	

Failures on admission (top 10)	N	%
A	187	20.3
AB	86	9.3
AC	75	8.1
ABEG	53	5.7
ABC	40	4.3
ABE	38	4.1
ABG	32	3.5
AE	28	3.0
ABCG	27	2.9
E	27	2.9
Missing	0	

Respiratory failure	N	%
None	229	24.8
Only hypoxic failure	193	20.9
Only hypercapnic failure	62	6.7
Hypoxic-hypercapnic failure	175	19.0
Intubation for airway maint.	264	28.6
Missing	0	

Cardiovascular failure	N	%
None	547	59.3
Without shock	162	17.6
Cardiogenic shock	67	7.3
Septic shock	100	10.8
Haemorrhagic/hypovolemic shock	5	0.5
Hypovolemic shock	13	1.4
Anaphylactic shock	0	0.0
Neurogenic shock	7	0.8
Other shock	8	0.9
Mixed shock	14	1.5
Missing	0	

Neurologic failure	N	%
None	437	66.6
Cerebral coma	140	21.3
Metabolic coma	27	4.1
Postanoxic coma	40	6.1
Toxic coma	12	1.8
Missing or not evaluable	267	

Renal failure (AKIN)	N	%
None	652	70.6
Mild	105	11.4
Moderate	67	7.3
Severe	99	10.7
Missing	0	

Metabolic failure	N	%
None	656	71.1
pH <= 7.3, PaCO2 < 45 mmHg	99	10.7
Base deficit >= 5 mmol/L, lactate >1.5x	168	18.2
Missing	0	

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

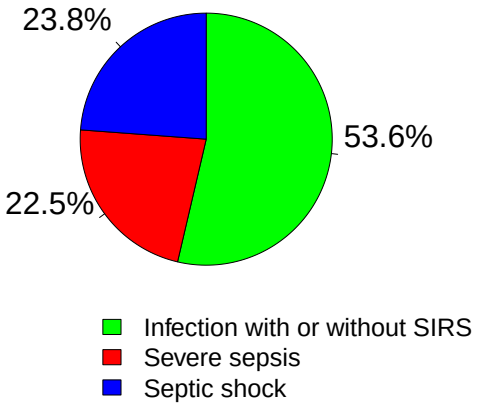
Clinical conditions on admission	N	%
Respiratory	226	24.5
Acute exacerbation of COPD	68	7.4
Pleural effusion	65	7.0
Atelectasis	27	2.9
Aspiration pneumonia	27	2.9
Upper respiratory tract disease	15	1.6
Cardiovascular	274	29.7
Cardiac arrest	92	10.0
Left heart failure without pulm. edema	59	6.4
Left heart failure with pulmonary edema	55	6.0
Acute severe arrhythmia: tachycardias	55	6.0
Right heart failure	14	1.5
Neurological	139	15.1
Seizures	33	3.6
Spontaneous Intraparenchymal bleeding	33	3.6
Cerebral artery stroke	26	2.8
Spontaneous Subarachnoid haemorrhage	18	2.0
Cerebral Aneurysm	15	1.6
Gastrointestinal and hepatic	88	9.5
Acute pancreatitis	33	3.6
Gastrointestinal bleeding: upper tract	17	1.8
Ascites	10	1.1
Digestive tract malignancy	9	1.0
Acute bile-duct disease	8	0.9
Trauma (anatomical districts)	198	21.5
Head	129	14.0
Chest	62	6.7
Pelvis/bone/joint & muscle	35	3.8
Spine	29	3.1
Abdomen	7	0.8
Miscellaneous	4	0.4
Major vessels injury	1	0.1
Other	169	18.3
Metabolic disorder	51	5.5
Nephro-urologic disease	41	4.4
Acute intoxication	30	3.3
Other disease	27	2.9
Coagulation disorder	18	2.0
Post transplantation	0	0.0
-	0	0.0
-	0	0.0
Infections	475	51.5
Pneumonia	275	29.8
L.R.T.I. other than pneumonia	44	4.8
NON-surgical urinary tract infection	44	4.8
Clinical sepsis	40	4.3
Gastroenteritis	24	2.6
NON-surgical CNS infection	13	1.4
Cholecystitis/cholangitis	10	1.1
NON-surgical skin/soft tissue infection	10	1.1
F.U.O. fever of unknown origin	9	1.0
NON-surgical endocarditis	7	0.8
Missing	0	

Trauma (anatomical districts)	N	%
Head	129	14.0
Traumatic subarachnoid haemorrhage	61	6.6
Skull fracture	51	5.5
Traumatic Subdural haematoma	41	4.4
Cerebral contusion/laceration	38	4.1
Maxillofacial fracture	38	4.1
Spine	29	3.1
Vertebral fracture, without deficit	22	2.4
Cervical injury, incomplete deficit	3	0.3
Tetraplegia	2	0.2
Chest	62	6.7
Other injuries of the chest	32	3.5
Traum. haemothorax/pneumothorax	28	3.0
Flail chest	14	1.5
Abdomen	7	0.8
Liver: Moderate-Severe laceration	3	0.3
Minor injuries of the abdomen	3	0.3
Spleen: Moderate-Severe laceration	1	0.1
Pelvis/bone/joint & muscle	35	3.8
Long bone fracture	28	3.0
Multiple fracture of the pelvis	7	0.8
Very severe or open fracture of the pelvis	3	0.3
Major vessels injury	1	0.1
Aorta: rupture/dissection	1	0.1
-	0	0.0
-	0	0.0
Miscellaneous	4	0.4
Burns (>30% BSA)	4	0.4
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	448	49.0
Infection with or without SIRS	250	27.4
Severe sepsis	105	11.5
Septic shock	111	12.1
Missing	9	

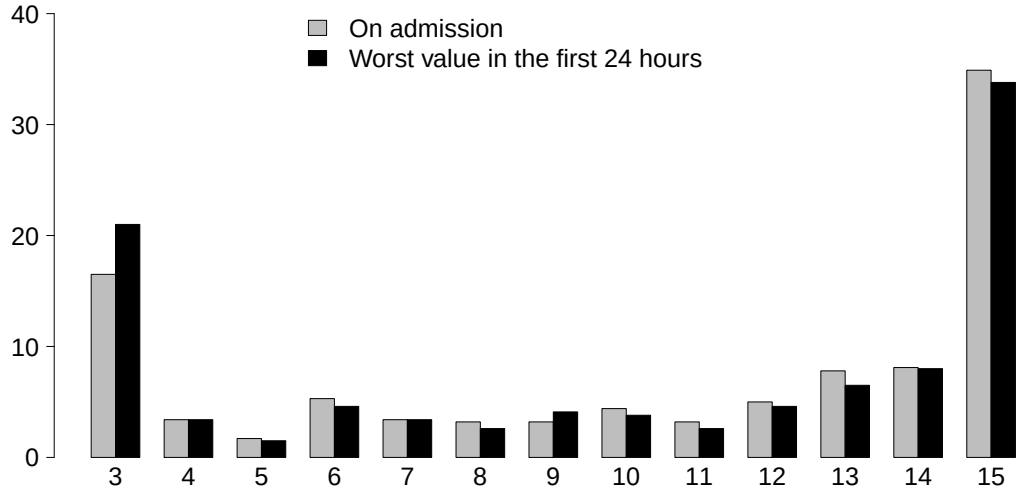
Infection severity on admission

Patients infected (N=466)



National report - **Year 2015**
Severity scores - Adult non surgical patients with LOS>=24 hours evaluated in the GiViTI model

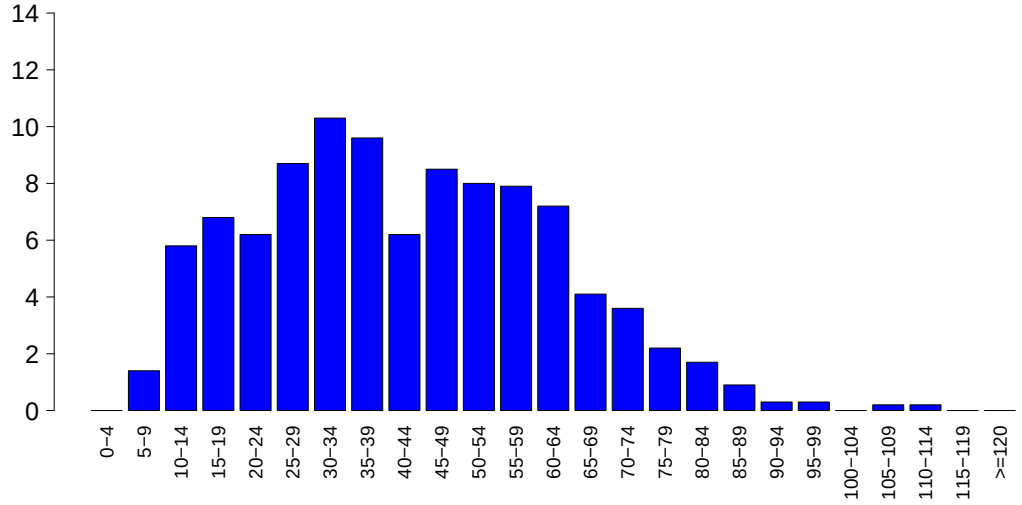
Glasgow Coma Scale (%)



GCS (admission)	
Median	13
Q1−Q3	6−15
Not evaluable	267
Missing	0

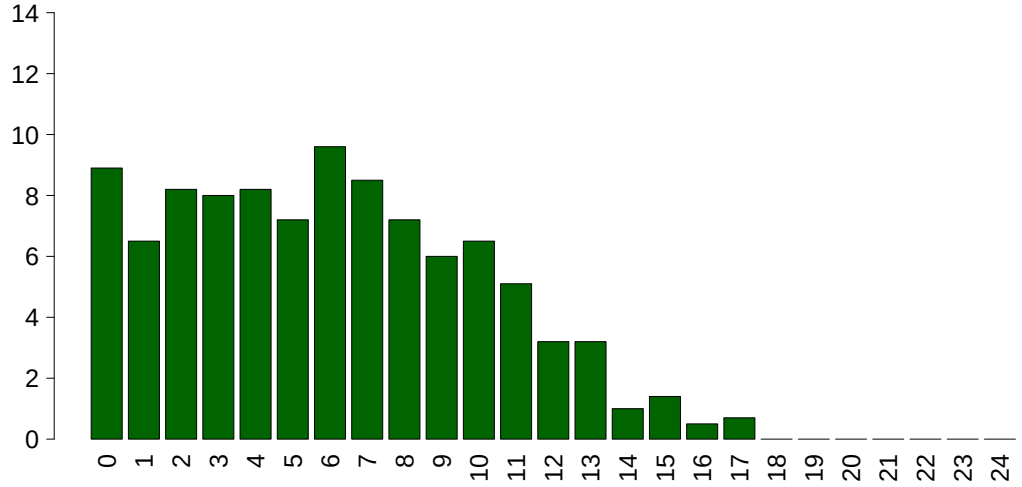
GCS (first 24 hours)	
Median	12
Q1−Q3	5−15
Not evaluable	338
Missing	0

SAPS II (%)



SAPSII	
Mean	42.6
SD	19.6
Median	40
Q1−Q3	28−56
Not evaluable	338
Missing	0

SOFA (%)



SOFA	
Mean	6.0
SD	4.0
Median	6
Q1−Q3	3−9
Not evaluable	338
Missing	0

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

Complications during the stay	N	%
No	435	47.1
Yes	488	52.9
Missing	0	

Failures during the stay	N	%
No	706	76.5
Yes	217	23.5
A: Respiratory failure	93	10.1
B: Cardiovascular failure	133	14.4
C: Neurological failure	26	2.8
D: Hepatic failure	2	0.2
E: Renal failure (AKIN)	65	7.0
F: Acute skin failure	1	0.1
G: Metabolic failure	11	1.2
H: Coagulation failure	6	0.7
Missing	0	

Failures during the stay (top 10)	N	%
B	63	6.8
A	44	4.8
AB	17	1.8
BE	16	1.7
E	15	1.6
ABE	8	0.9
AE	8	0.9
C	6	0.7
ABCE	5	0.5
BC	5	0.5
Missing	0	

Respiratory failure occured	N	%
None	830	89.9
Intubation for airway maint.	33	3.6
Hypoxic failure	61	6.6
Hypercapnic failure	25	2.7
Missing	0	

Cardiovascular failure occured	N	%
None	790	85.6
Cardiogenic shock	43	4.7
Hypovolemic shock	5	0.5
Haemorrhagic/hypovolemic shock	6	0.7
Septic shock	76	8.2
Anaphylactic shock	0	0.0
Neurogenic shock	7	0.8
Other shock	12	1.3
Missing	0	

Neurological failure occured	N	%
None	897	97.2
Cerebral coma	17	1.8
Metabolic coma	5	0.5
Postanoxic coma	4	0.4
Missing	0	

Renal failure occured (AKIN)	N	%
None	858	93.0
Mild	3	0.3
Moderate	14	1.5
Severe	48	5.2
Missing	0	

Complications during the stay	N	%
Respiratory	99	10.7
Pleural effusion	37	4.0
Atelectasis	25	2.7
Pneumothorax/Pneumomediastinum	16	1.7
Aspiration pneumonia	14	1.5
Upper resp. tract disease	9	1.0
Cardiovascular	120	13.0
Acute severe arrhythmia: tachycardias	53	5.7
Cardiac arrest	27	2.9
Acute severe arrhythmia: bradycardias	21	2.3
Pulmonary edema	17	1.8
Left heart failure w/o pulm. edema	9	1.0
Neurological	133	14.4
Drowsiness/agitation/delirium	56	6.1
Intracranial hypertension	33	3.6
Brain edema	27	2.9
Seizures	16	1.7
New ischaemic stroke	14	1.5
Gastrointestinal and hepatic	31	3.4
Gastrointestinal bleeding: upper tract	12	1.3
Ascites	5	0.5
Gastrointestinal bleeding: lower tract	4	0.4
Paralytic Ileus	4	0.4
Acute bile-duct disease	3	0.3
Other	53	5.7
Other skin and/or soft tissue pathology	19	2.1
Other disease	16	1.7
Metabolic disorder	11	1.2
Nephro-urologic disease	7	0.8
Iatrogenic major vessels injury	1	0.1
-	0	0.0
-	0	0.0
Infections	199	21.6
Pneumonia	61	6.6
L.R.T.I. other than pneumonia	46	5.0
NON-surgical urinary tract infection	25	2.7
F.U.O. fever of unknown origin	18	2.0
Gastroenteritis	17	1.8
Clinical sepsis	15	1.6
Upper respiratory tract infection	8	0.9
Sinusitis	6	0.7
Cholecystitis/cholangitis	4	0.4
NON-surgical endocarditis	4	0.4
Missing	0	

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

Infections	N	%
None	304	32.9
Only on admission	420	45.5
On admission and during ICU stay	55	6.0
Only during ICU stay	144	15.6
Missing	0	

Maximum severity of infection	N	%
None	304	33.9
Infection with or without SIRS	308	34.3
Severe sepsis	108	12.0
Septic shock	178	19.8
Missing	25	

Severity evolution		**During the stay**				
	N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock	TOT
Admission	None	304 (70.4%)	90 (20.8%)	24 (5.6%)	14 (3.2%)	432
	Infection with or without SIRS	-	218 (87.2%)	17 (6.8%)	15 (6.0%)	250
	Severe sepsis	-	-	67 (63.8%)	38 (36.2%)	105
	Septic shock	-	-	-	111 (100.0%)	111
	TOT	304	308	108	178	898

Ventil. Associat. Pneumonia (VAP)	N	%
No	872	94.5
Yes	51	5.5
Missing	0	

Catheter Bacteraemia (CR-BSI)	N	%
No	921	99.8
Yes	2	0.2
Missing	0	

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

Estimate	10.0
CI (95%)	7.5−13.2

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

Estimate	0.2
CI (95%)	0.0−0.9

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

Estimate	8.0%
CI (95%)	6.0−10.6

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

Estimate	0.3%
CI (95%)	0.0−1.1

National report - **Year 2015**

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

Procedures and/or treatments (Missing=0)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	910	98.6										
Invasive ventilation	710	76.9	383	41.5	120	13	5	2–10	0	0	0–0	0
Non invasive ventilation	219	23.7	63	6.8	94	10.2	2	1–4	0	1	0–5	0
Tracheostomy	195	21.1	14	1.5	115	12.5	8	4–15	0	7	5–11	0
iNO (inhaled nitric oxide)	0	0.0										
Central Venous Catheter	808	87.5	154	16.7	446	48.3	7	3–12	0	0	0–0	0
PICC	1	0.1	0	0	0	0	16	16–16	0	7	7–7	0
Arterial Catheter	645	69.9	78	8.5	100	10.8	5	3–9	0	0	0–0	0
Vasoactive drugs	461	49.9	113	12.2	55	6	3	1–6	0	0	0–1	0
Antiarrhythmics	211	22.9	45	4.9	94	10.2	4	2–11	0	1	0–3	0
IABP	1	0.1	0	0	0	0	7	7–7	0	3	3–3	0
Invasive monitoring of C.O.	31	3.4	1	0.1	3	0.3	5	3–9	0	1	0–4	0
Continous monitoring of ScVO2	214	23.2	6	0.7	8	0.9	5	3–9	0	0	0–0	0
Temporary pacing	5	0.5	0	0	2	0.2	2	2–3	0	1	1–1	0
Ventricular assistance	0	0.0										
DC-shock	30	3.3								0	0–2	0
CPR	36	3.9								0	0–1	0
Massive blood transfusion	4	0.4								0	0–2	0
ICP monitoring without liquor-drainage	7	0.8	2	0.2	0	0	3	3–4	0	0	0–1	0
ICP monitoring with liquor-drainage	19	2.1	5	0.5	2	0.2	6	2–8	0	0	0–1	0
External ventricular drainage without ICP	0	0.0										
Haemofiltration	17	1.8	0	0	2	0.2	2	1–3	0	0	0–1	0
Haemodialysis	72	7.8	9	1	14	1.5	3	1–7	0	1	0–2	0
ECMO	0	0.0										
Hepatic clearance techniques	0	0.0										
Clearance techniques during sepsis	2	0.2	0	0	0	0	4	3–4	0	1	0–2	0
IAP (intra-abdominal pressure)	10	1.1										
Hypothermia	35	3.8										
Enteral nutrition	691	74.9	138	15	375	40.6	6	3–12	0	1	0–2	0
Parenteral nutrition	265	28.7	84	9.1	104	11.3	5	3–10	0	1	0–2	0
SDD (Topical, Topical and systemic)	0	0.0										
Patient restraint	46	5.0										
Peridural catheter	21	2.3	5	0.5	6	0.7	7	2–11	0	0	0–0	0
Electrical cardioversion	5	0.5								4	3–7	0
Vacuum therapy	1	0.1										
Antibiotics	656	71.1										
Antibiotics for surgical prophylaxis	34	3.7	8	0.9	9	1	3	2–5	0	0	0–2	0
Antibiotics for medical prophylaxis	64	6.9	14	1.5	23	2.5	4	2–7	0	0	0–1	0
Empirical antibiotic therapy	471	51.0	130	14.1	96	10.4	4	3–5	0	0	0–1	0
Targeted antibiotic therapy	310	33.6	30	3.3	129	14	6	3–10	0	4	1–7	0

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

Invasive ventilation (N=710)	N	%	Length (days) Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	429	60.3	8.2	9.7	5	2−10	0
For airway mainteinance	259	36.4	6.0	5.8	4	2−9	0
In weaning	1	0.1	0.0		0	0−0	0
Not evaluable	22	3.1	7.9	6.7	5.5	2.8−12	2
Reintubation within 48 hours	22	3.1	8.7	12.0	4.5	2.25−9	0

Non invasive ventilation (N=219)	N	%
Non invasive ventilation only	92	42.0
Non invasive ventilation failed	39	17.8
For weaning	80	36.5
Other	8	3.7
Missing	0	

Tracheostomy (N=195)	N	%
Surgical	90	46.2
Percutwist	23	11.8
Ciaglia	0	0.0
Monodil. Ciaglia	1	0.5
Fantoni	0	0.0
Griggs	76	39.0
Other Kind	5	2.6
Missing	0	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=180)	
Mean	8.5
SD	6.7
Median	7
Q1−Q3	5−10.2
Missing	0

Invasive monitoring of C.O. (N=31)	N	%
Swan Ganz	1	3.2
PICCO	30	96.8
LIDCO	0	0.0
Vigileo-PRAM	0	0.0
Other	0	0.0
Missing	0	

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

Antibiotic therapy Pts. infected in ICU only (N=144)	N	%
Only empirical	51	38.3
Only targeted	34	25.6
Targeted after empirical	29	21.8
Other	19	14.3
Missing	11	

Surgical interventions	N	%
No	838	90.8
Yes	85	9.2
Missing	0	

Number of surgical interventions	N	%
0	838	90.8
1	69	7.5
2	13	1.4
3	2	0.2
>3	1	0.1
Missing	0	

Surgical interventions Days from admission	
Mean	9.4
SD	8.9
Median	6
Q1−Q3	3−11
Missing	0

Surgical interventions (top 10)	N	%
ENT surgery	20	2.2
Orthopaedic surgery	16	1.7
Gastrointestinal surgery	15	1.6
Other surgery	13	1.4
Nephro/Urological surgery	7	0.8
Neurosurgery	6	0.7
Pancreatic surgery	5	0.5
Peripheral vascular surgery	5	0.5
Organ donation	5	0.5
Thoracic surgery	4	0.4
Missing	0	

Non surgical interventions	N	%
No	885	95.9
Yes	38	4.1
Missing	0	

Non surgical interventions Days from admission	
Mean	10.3
SD	13.0
Median	5
Q1−Q3	3−13
Missing	0

Non surgical interventions	N	%
Interventional endoscopy	28	3.0
Interventional cardiology	6	0.7
Interventional radiology	5	0.5
Interventional neuroradiology	2	0.2
Missing	0	

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

ICU outcome	N	%
Dead	264	28.8
Transferred to same hospital	543	59.2
Transferred to other hospital	92	10.0
Discharged home	18	2.0
Disch. terminally ill	0	0.0
Missing	6	

Transferred to (N=635)	N	%
Ward	502	79.1
Other ICU	38	6.0
High dependency care unit	95	15.0
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Reason for transfer to Other ICU (N=38)	N	%
Specialist expertise	6	15.8
Step-up care	6	15.8
Logistical/organizational reasons	25	65.8
Step-down care	1	2.6
Missing	0	

Transferred to Same hospital (N=543)	N	%
Ward	450	82.9
Other ICU	6	1.1
High dependency care unit	87	16.0
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Transferred to Other hospital (N=92)	N	%
Ward	52	56.5
Other ICU	32	34.8
High dependency care unit	8	8.7
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	653	71.2
Dead	264	28.8
Missing	6	

Timing of ICU mortality (N=264)	N	%
Daytime (08:00AM - 07:59PM)	150	56.8
Nigthtime (08:00PM - 07:59AM)	114	43.2
Weekdays (Monday - Friday)	196	74.2
Weekend (Saturday - Sunday)	68	25.8
Missing	0	

Hospital mortality	N	%
Alive	516	55.9
Dead	407	44.1
Missing	0	

Timing of hosp. mortality (N=407)	N	%
In ICU	264	64.9
Within 24 hours after ICU	11	2.7
24-47 hours after ICU	23	5.7
48-71 hours after ICU	17	4.2
72-95 hours after ICU	15	3.7
After 95 hours after ICU	77	18.9
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=143)	
Mean	10.4
SD	15.3
Median	4
Q1−Q3	2−13.5
Missing	0

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

Last hospital mortality	N	%
Alive	516	55.9
Dead	407	44.1
Missing	0	

ICU stay (days)	
Mean	9.9
SD	12.9
Median	6
Q1−Q3	3−12
Missing	0

ICU stay (days) **Alive** (N=653)	
Mean	9.8
SD	13.4
Median	6
Q1−Q3	3−11
Missing	0

ICU stay (days) **Dead** (N=264)	
Mean	10.0
SD	11.6
Median	7
Q1−Q3	3−13
Missing	0

Stay after ICU (days) **Alive** (N=653)	
Mean	12.7
SD	18.7
Median	7
Q1−Q3	1−16
Missing	1

Hospital stay (days)	
Mean	23.4
SD	25.0
Median	16
Q1−Q3	8−28
Missing	1

Hospital stay (days) **Alive** (N=516)	
Mean	25.7
SD	27.1
Median	18
Q1−Q3	9.5−31
Missing	1

Hospital stay (days) **Dead** (N=407)	
Mean	20.5
SD	21.7
Median	14
Q1−Q3	7−26
Missing	0

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

Patients (N): 423

Sex	N	%
Male	241	57.0
Female	182	43.0
Missing	0	

Age (years)	N	%
17-45	24	5.7
46-65	173	40.9
66-75	141	33.3
>75	85	20.1
Missing	0	
Mean	65.7	
SD	12.1	
Median	67	
Q1−Q3	58−74	
Min−Max	17−94	

Body mass Index (BMI)	N	%
Underweight	22	5.2
Normal	173	40.9
Overweight	147	34.8
Obese	81	19.1
Missing	0	

Pregnancy status **Females** (N=182)	N	%
Not fertile	81	44.5
Not pregnant/Unknown	99	54.4
Currently pregnant	1	0.5
Post partum	1	0.5
Missing	0	

Comorbidities	N	%
No	24	5.7
Yes	399	94.3
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	305	72.1
Peripheral vascular disease	123	29.1
Any tumour without metastasis	102	24.1
Diabetes Type II without insulin tr.	82	19.4
NYHA class II-III	69	16.3
Cerebrovascular disease	61	14.4
Myocardial infarction	52	12.3
Metastatic cancer	51	12.1
Moderate COPD	47	11.1
Arrhythmia	46	10.9
Missing	0	

Stay before ICU (days)	
Mean	5.1
SD	9.1
Median	3
Q1−Q3	1−5
Missing	0

Source of admission	N	%
Same hospital	420	99.3
Other hospital	3	0.7
Long-term chronic care hospital	0	0.0
Directly from the community	0	0.0
Missing	0	

Ward of admission **Hospital** (N=423)	N	%
Medical ward	4	0.9
Surgical ward	413	97.6
Emergency room	3	0.7
Other ICU	0	0.0
High dependency care unit	3	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 **Same hospital** (N=420)	N	%
Medical ward	4	1.0
Surgical ward	412	98.1
Emergency room	1	0.2
Other ICU	0	0.0
High dependency care unit	3	0.7
Missing	0	

Ward of admission **Other hospital** (N=3)	N	%
Medical ward	0	0.0
Surgical ward	1	33.3
Emergency room	2	66.7
Other ICU	0	0.0
High dependency care unit	0	0.0
Missing	0	

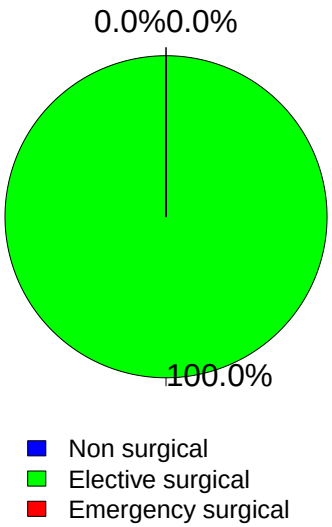
Scheduled admission	N	%
No	94	22.2
Yes	329	77.8
Missing	0	

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

Trauma	N	%
No	405	95.7
Yes	18	4.3
Multiple trauma	1	0.2
Missing	0	

Surgical status	N	%
Non surgical	0	0.0
Elective surgical	423	100.0
Emergency surgical	0	0.0
Missing	0	

Surgical status



Source of admission		
Surgical pts. (N=423)	N	%
Operating theatre of surgical ward	380	89.8
Operating theatre of emergency room	0	0.0
Surgical ward	33	7.8
Other	10	2.4
Missing	0	

Surgical interventions (top 10)		
Elective surgical (N=423)	N	%
Gastrointestinal surgery	128	30.3
Peripheral vascular surgery	97	22.9
Neurosurgery	75	17.7
Nephro/Urological surgery	34	8.0
Orthopaedic surgery	31	7.3
Hepatic surgery	17	4.0
Abdominal vascular surgery	13	3.1
Pancreatic surgery	12	2.8
Thoracic surgery	12	2.8
Biliary tract surgery	12	2.8
Missing	0	

Timing		
Elective surgical (N=423)	N	%
From -7 to -3 days	15	3.5
From -2 to -1 days	18	4.3
On ICU admission day	424	100.2
The day after ICU admission	6	1.4
Missing	0	

Surgical interventions (top 10)		
Emergency surgical (N=0)	N	%
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Timing		
Emergency surgical (N=0)	N	%
From -7 to -3 days	0	0.0
From -2 to -1 days	0	0.0
On ICU admission day	0	0.0
The day after ICU admission	0	0.0
Missing	0	

Non surgical interventions	N	%
None	414	97.9
Elective	5	1.2
Emergency	4	0.9
Missing	0	

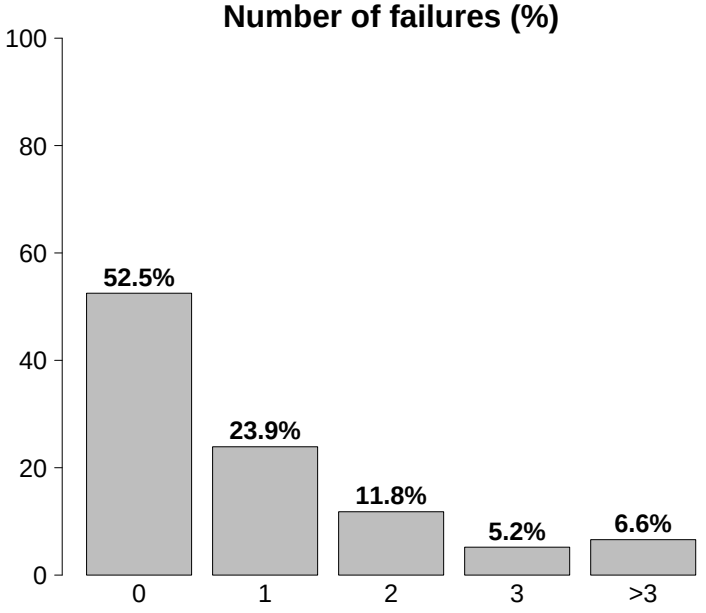
Non surgical interventions		
Elective (N=5)	N	%
Interventional neuroradiology	2	40.0
Interventional endoscopy	2	40.0
Interventional radiology	0	0.0
Interventional cardiology	0	0.0
Missing	1	

Non surgical interventions		
Emergency (N=4)	N	%
Interventional cardiology	2	50.0
Interventional endoscopy	2	50.0
Interventional radiology	0	0.0
Interventional neuroradiology	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	283	66.9
Post surgical weaning	61	14.4
Surgical monitoring	222	52.5
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	140	33.1
Only ventilatory support	53	12.5
Only cardiovascular support	18	4.3
Ventilatory and cardiovascular support	69	16.3
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	

Number of failures (%)



Failures on admission	N	%
No	222	52.5
Yes	201	47.5
A: Respiratory failure	122	28.8
B: Cardiovascular failure	87	20.6
C: Neurological failure	7	1.7
D: Hepatic failure	2	0.5
E: Renal failure	78	18.4
F: Acute skin failure	0	0.0
G: Metabolic failure	83	19.6
H: Coagulation failure	7	1.7
Missing	0	

Failures on admission (top 10)	N	%
A	39	9.2
E	31	7.3
AB	26	6.1
G	24	5.7
ABEG	17	4.0
ABG	14	3.3
B	7	1.7
AG	6	1.4
EG	6	1.4
AE	4	0.9
Missing	0	

Respiratory failure	N	%
None	301	71.2
Only hypoxic failure	30	7.1
Only hypercapnic failure	4	0.9
Hypoxic-hypercapnic failure	14	3.3
Intubation for airway maint.	74	17.5
Missing	0	

Cardiovascular failure	N	%
None	336	79.4
Without shock	45	10.6
Cardiogenic shock	8	1.9
Septic shock	11	2.6
Haemorrhagic/hypovolemic shock	16	3.8
Hypovolemic shock	6	1.4
Anaphylactic shock	0	0.0
Neurogenic shock	0	0.0
Other shock	1	0.2
Mixed shock	0	0.0
Missing	0	

Neurologic failure	N	%
None	358	98.1
Cerebral coma	4	1.1
Metabolic coma	0	0.0
Postanoxic coma	3	0.8
Toxic coma	0	0.0
Missing or not evaluable	58	

Renal failure (AKIN)	N	%
None	345	81.6
Mild	46	10.9
Moderate	23	5.4
Severe	9	2.1
Missing	0	

Metabolic failure	N	%
None	340	80.4
pH <= 7.3, PaCO2 < 45 mmHg	44	10.4
Base deficit >= 5 mmol/L, lactate >1.5x	39	9.2
Missing	0	

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

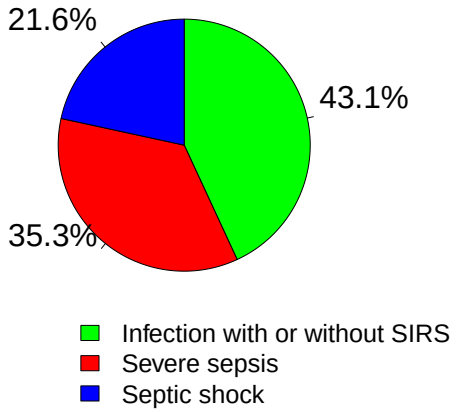
Clinical conditions on admission	N	%
Respiratory	32	7.6
Atelectasis	8	1.9
Lung cancer	8	1.9
Pleural effusion	4	0.9
Upper respiratory tract disease	3	0.7
Acute asthma/bronchospasm	2	0.5
Cardiovascular	95	22.5
Peripheral vascular disease	52	12.3
Acute severe arrhythmia: tachycardias	12	2.8
Left heart failure without pulm. edema	9	2.1
Systemic hypertensive crisis	7	1.7
Cardiac arrest	7	1.7
Neurological	58	13.7
Brain tumour	46	10.9
Cerebral artery stroke	3	0.7
Seizures	3	0.7
CNS degenerative disease	2	0.5
Neuropathy/myopathy	2	0.5
Gastrointestinal and hepatic	96	22.7
Digestive tract malignancy	62	14.7
Hepatic malignancy	13	3.1
Acute bile-duct disease	6	1.4
Pancreatic malignancy	4	0.9
Ascites	4	0.9
Trauma (anatomical districts)	18	4.3
Pelvis/bone/joint & muscle	9	2.1
Spine	6	1.4
Head	3	0.7
Chest	2	0.5
Miscellaneous	1	0.2
-	0	0.0
-	0	0.0
Other	171	40.4
Other disease	111	26.2
Nephro-urologic disease	30	7.1
Metabolic disorder	8	1.9
Coagulation disorder	7	1.7
ENT/maxillofacial disease	7	1.7
Post transplantation	0	0.0
-	0	0.0
-	0	0.0
Infections	52	12.3
Pneumonia	15	3.5
Clinical sepsis	6	1.4
Post-surgical peritonitis	5	1.2
NON-surgical secondary peritonitis	4	0.9
Cholecystitis/cholangitis	3	0.7
L.R.T.I. other than pneumonia	3	0.7
NON-surgical skin/soft tissue infection	3	0.7
NON-surgical urinary tract infection	3	0.7
Post-surgical bone and joint infection	2	0.5
NON-surgical CNS infection	2	0.5
Missing	0	

Trauma (anatomical districts)	N	%
Head	3	0.7
Traumatic Subdural haematoma	2	0.5
Traumatic subarachnoid haemorrhage	1	0.2
Maxillofacial fracture	1	0.2
-	0	0.0
-	0	0.0
Spine	6	1.4
Vertebral fracture, without deficit	5	1.2
Cervical injury, incomplete deficit	1	0.2
-	0	0.0
Chest	2	0.5
Flail chest	1	0.2
Other injuries of the chest	1	0.2
-	0	0.0
Abdomen	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Pelvis/bone/joint & muscle	9	2.1
Long bone fracture	7	1.7
Multiple fracture of the pelvis	3	0.7
-	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	371	87.9
Infection with or without SIRS	22	5.2
Severe sepsis	18	4.3
Septic shock	11	2.6
Missing	1	

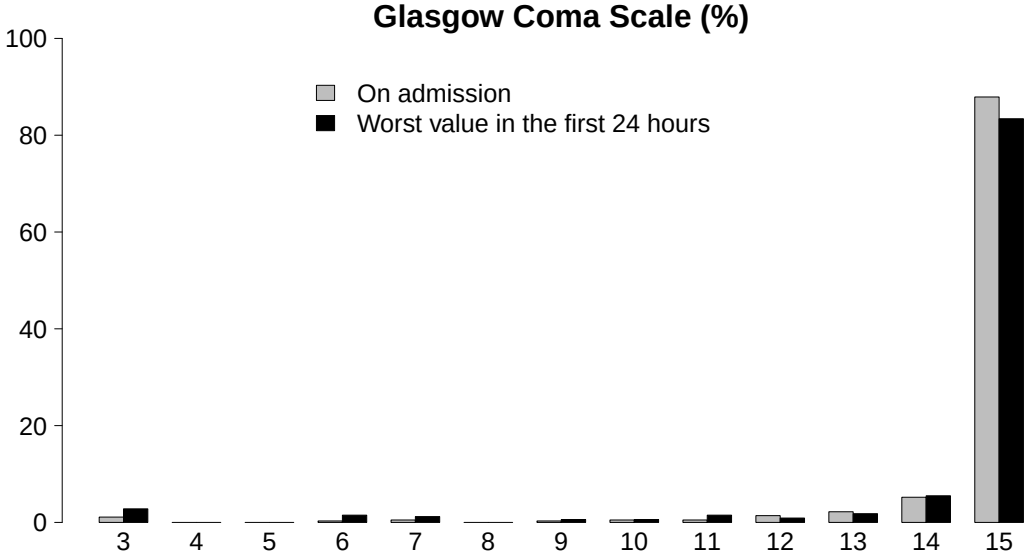
Infection severity on admission

Patients infected (N=51)



National report - **Year 2015**
Severity scores - Adult elective surgical patients with LOS>=24 hours evaluated in the GiViTI model

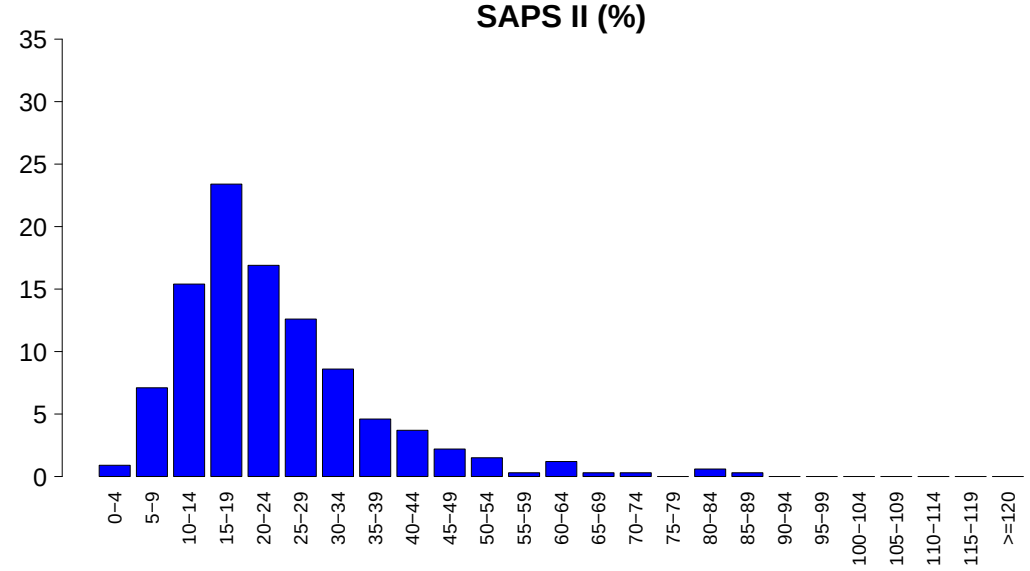
Glasgow Coma Scale (%)



GCS (admission)	
Median	15
Q1−Q3	15−15
Not evaluable	58
Missing	0

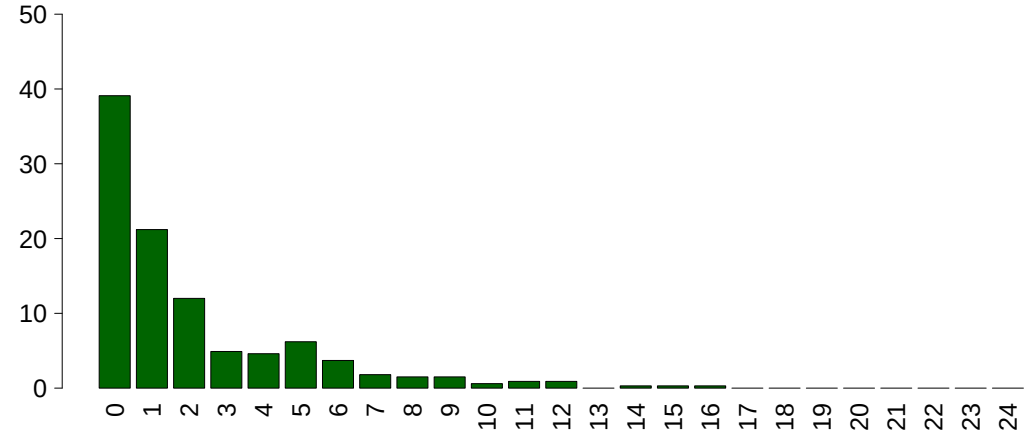
GCS (first 24 hours)	
Median	15
Q1−Q3	15−15
Not evaluable	98
Missing	0

SAPS II (%)



SAPSII	
Mean	23.5
SD	13.3
Median	21
Q1−Q3	15−29
Not evaluable	98
Missing	0

SOFA (%)



SOFA	
Mean	2.1
SD	2.9
Median	1
Q1−Q3	0−3
Not evaluable	98
Missing	0

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

Complications during the stay	N	%
No	319	75.4
Yes	104	24.6
Missing	0	

Failures during the stay	N	%
No	377	89.1
Yes	46	10.9
A: Respiratory failure	19	4.5
B: Cardiovascular failure	17	4.0
C: Neurological failure	6	1.4
D: Hepatic failure	4	0.9
E: Renal failure (AKIN)	17	4.0
F: Acute skin failure	0	0.0
G: Metabolic failure	3	0.7
H: Coagulation failure	0	0.0
Missing	0	

Failures during the stay (top 10)	N	%
A	11	2.6
B	10	2.4
E	10	2.4
D	3	0.7
ABCE	2	0.5
AC	2	0.5
BE	2	0.5
ABC	1	0.2
ABDEG	1	0.2
ABE	1	0.2
Missing	0	

Respiratory failure occured	N	%
None	404	95.5
Intubation for airway maint.	4	0.9
Hypoxic failure	15	3.5
Hypercapnic failure	5	1.2
Missing	0	

Cardiovascular failure occured	N	%
None	406	96.0
Cardiogenic shock	5	1.2
Hypovolemic shock	2	0.5
Haemorrhagic/hypovolemic shock	2	0.5
Septic shock	8	1.9
Anaphylactic shock	0	0.0
Neurogenic shock	0	0.0
Other shock	2	0.5
Missing	0	

Neurological failure occured	N	%
None	417	98.6
Cerebral coma	1	0.2
Metabolic coma	5	1.2
Postanoxic coma	0	0.0
Missing	0	

Renal failure occured (AKIN)	N	%
None	406	96.0
Mild	1	0.2
Moderate	7	1.7
Severe	9	2.1
Missing	0	

Complications during the stay	N	%
Respiratory	28	6.6
Pleural effusion	13	3.1
Atelectasis	8	1.9
Pneumothorax/Pneumomediastinum	4	0.9
Upper resp. tract disease	4	0.9
Pulmonary embolism	2	0.5
Cardiovascular	37	8.7
Acute severe arrhythmia: tachycardias	18	4.3
Acute severe arrhythmia: bradycardias	7	1.7
Left heart failure w/o pulm. edema	5	1.2
Cardiac arrest	3	0.7
Peripheral vascular disease	3	0.7
Neurological	22	5.2
Drowsiness/agitation/delirium	12	2.8
New ischaemic stroke	6	1.4
Brain edema	4	0.9
Seizures	4	0.9
Intracranial hypertension	3	0.7
Gastrointestinal and hepatic	9	2.1
Anastomotic dehiscence	4	0.9
Liver Dysfunction Syndrome	3	0.7
Acute bile-duct disease	2	0.5
Ascites	1	0.2
Gastrointestinal bleeding: upper tract	1	0.2
Other	15	3.5
Nephro-urologic disease	4	0.9
Other disease	4	0.9
Other skin and/or soft tissue pathology	4	0.9
Metabolic disorder	3	0.7
Severe graft dysfunction	1	0.2
-	0	0.0
-	0	0.0
Infections	39	9.2
Pneumonia	10	2.4
F.U.O. fever of unknown origin	8	1.9
L.R.T.I. other than pneumonia	6	1.4
Post-surgical peritonitis	4	0.9
NON-surgical urinary tract infection	3	0.7
Gastroenteritis	2	0.5
Upper respiratory tract infection	2	0.5
Burn infection	1	0.2
Clinical sepsis	1	0.2
Orthopaedic prosthesis infection	1	0.2
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	%
None	338	79.9
Only on admission	46	10.9
On admission and during ICU stay	6	1.4
Only during ICU stay	33	7.8
Missing	0	

Maximum severity of infection	N	%
None	338	81.4
Infection with or without SIRS	39	9.4
Severe sepsis	19	4.6
Septic shock	19	4.6
Missing	8	

Severity evolution		**During the stay**				
	N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock	TOT
Admission	None	338 (92.9%)	18 (4.9%)	3 (0.8%)	5 (1.4%)	364
	Infection with or without SIRS	-	21 (95.5%)	0 (0.0%)	1 (4.5%)	22
	Severe sepsis	-	-	16 (88.9%)	2 (11.1%)	18
	Septic shock	-	-	-	11 (100.0%)	11
	TOT	338	39	19	19	415

Ventil. Associat. Pneumonia (VAP)	N	%
No	417	98.6
Yes	6	1.4
Missing	0	

Catheter Bacteraemia (CR-BSI)	N	%
No	423	100.0
Yes	0	0.0
Missing	0	

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

Estimate	13.4
CI (95%)	4.9−29.3

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

Estimate	0.0
CI (95%)	0.0−3.4

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

Estimate	10.8%
CI (95%)	4.0−23.4

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

Estimate	0.0%
CI (95%)	0.0−4.1

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)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	402	95.0										
Invasive ventilation	196	46.3	156	36.9	8	1.9	1	1–2	0	0	0–0	0
Non invasive ventilation	128	30.3	58	13.7	79	18.7	1	1–2	0	1	0–1	0
Tracheostomy	20	4.7	2	0.5	12	2.8	6	4–8	0	9	5–12	0
iNO (inhaled nitric oxide)	0	0.0										
Central Venous Catheter	204	48.2	70	16.5	152	35.9	3	2–6	0	0	0–0	0
PICC	0	0.0										
Arterial Catheter	315	74.5	176	41.6	59	13.9	2	1–3	0	0	0–0	0
Vasoactive drugs	110	26.0	38	9	4	0.9	2	1–4	0	0	0–0	0
Antiarrhythmics	86	20.3	14	3.3	57	13.5	2	1–4	0	1	0–2	0
IABP	0	0.0										
Invasive monitoring of C.O.	8	1.9	0	0	0	0	4	1–6	0	0	0–1	0
Continous monitoring of ScVO2	52	12.3	4	0.9	0	0	2	2–4	0	0	0–0	0
Temporary pacing	1	0.2	0	0	0	0	5	5–5	0	2	2–2	0
Ventricular assistance	0	0.0										
DC-shock	2	0.5								0	0–1	0
CPR	4	0.9								6	4–6	0
Massive blood transfusion	4	0.9								0	0–0	0
ICP monitoring without liquor-drainage	1	0.2	1	0.2	0	0	3	3–3	0			
ICP monitoring with liquor-drainage	5	1.2	1	0.2	2	0.5	6	5–7	0	0	0–0	0
External ventricular drainage without ICP	1	0.2	1	0.2	1	0.2	1	1–1	0			
Haemofiltration	4	0.9	0	0	0	0	1	1–1	0	1	1–1	0
Haemodialysis	4	0.9	0	0	0	0	6	2–12	0	2	1–4	0
ECMO	0	0.0										
Hepatic clearance techniques	0	0.0										
Clearance techniques during sepsis	2	0.5	0	0	0	0	1	0–2	0	2	2–3	0
IAP (intra-abdominal pressure)	5	1.2										
Hypothermia	1	0.2										
Enteral nutrition	171	40.4	16	3.8	115	27.2	2	1–5	0	1	0–2	0
Parenteral nutrition	119	28.1	24	5.7	71	16.8	2	1–5	0	0	0–1	0
SDD (Topical, Topical and systemic)	0	0.0										
Patient restraint	4	0.9										
Peridural catheter	77	18.2	71	16.8	48	11.3	2	2–4	0	0	0–0	0
Electrical cardioversion	2	0.5								2	1–2	0
Vacuum therapy	1	0.2										
Antibiotics	194	45.9										
Antibiotics for surgical prophylaxis	130	30.7	77	18.2	57	13.5	2	1–2	0	0	0–0	0
Antibiotics for medical prophylaxis	5	1.2	3	0.7	4	0.9	3	1–4	0	0	0–0	0
Empirical antibiotic therapy	61	14.4	6	1.4	22	5.2	3	2–5	0	1	0–3	0
Targeted antibiotic therapy	27	6.4	4	0.9	15	3.5	8	4–12	0	4	3–8	0

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

Invasive ventilation (N=196)	N	%	Length (days) Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	56	28.7	4.4	4.9	2.5	1−6	0
For airway mainteinance	73	37.4	2.8	4.7	1	1−3	0
In weaning	58	29.7	0.6	0.5	1	0−1	0
Not evaluable	8	4.1	2.9	3.3	1	0.8−5.5	0
Reintubation within 48 hours	3	1.5	5.7	6.0	5	2.5−8.5	0

Non invasive ventilation (N=128)	N	%
Non invasive ventilation only	78	60.9
Non invasive ventilation failed	4	3.1
For weaning	45	35.2
Other	1	0.8
Missing	0	

Tracheostomy (N=20)	N	%
Surgical	7	35.0
Percutwist	0	0.0
Ciaglia	0	0.0
Monodil. Ciaglia	0	0.0
Fantoni	0	0.0
Griggs	12	60.0
Other Kind	1	5.0
Missing	0	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=18)	
Mean	9.4
SD	6.5
Median	9
Q1−Q3	5.2−12
Missing	0

Invasive monitoring of C.O. (N=8)	N	%
Swan Ganz	1	12.5
PICCO	7	87.5
LIDCO	0	0.0
Vigileo-PRAM	0	0.0
Other	0	0.0
Missing	0	

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

Antibiotic therapy Pts. infected in ICU only (N=33)	N	%
Only empirical	21	72.4
Only targeted	3	10.3
Targeted after empirical	5	17.2
Other	0	0.0
Missing	4	

Surgical interventions	N	%
No	407	96.2
Yes	16	3.8
Missing	0	

Number of surgical interventions	N	%
0	407	96.2
1	13	3.1
2	2	0.5
3	1	0.2
>3	0	0.0
Missing	0	

Surgical interventions Days from admission	
Mean	8.9
SD	7.9
Median	7
Q1−Q3	4.5−11.5
Missing	0

Surgical interventions (top 10)	N	%
Gastrointestinal surgery	5	1.2
ENT surgery	4	0.9
Peripheral vascular surgery	3	0.7
Neurosurgery	3	0.7
Other surgery	3	0.7
Thoracic surgery	2	0.5
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Non surgical interventions	N	%
No	419	99.1
Yes	4	0.9
Missing	0	

Non surgical interventions Days from admission	
Mean	4.6
SD	2.1
Median	5
Q1−Q3	3−6
Missing	0

Non surgical interventions	N	%
Interventional cardiology	5	1.2
Interventional radiology	0	0.0
Interventional neuroradiology	0	0.0
Interventional endoscopy	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	23	5.4
Transferred to same hospital	391	92.4
Transferred to other hospital	6	1.4
Discharged home	3	0.7
Disch. terminally ill	0	0.0
Missing	0	

Transferred to (N=397)	N	%
Ward	358	90.2
Other ICU	3	0.8
High dependency care unit	36	9.1
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Reason for transfer to Other ICU (N=3)	N	%
Specialist expertise	0	0.0
Step-up care	0	0.0
Logistical/organizational reasons	3	100.0
Step-down care	0	0.0
Missing	0	

Transferred to Same hospital (N=391)	N	%
Ward	356	91.0
Other ICU	0	0.0
High dependency care unit	35	9.0
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Transferred to Other hospital (N=6)	N	%
Ward	2	33.3
Other ICU	3	50.0
High dependency care unit	1	16.7
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	400	94.6
Dead	23	5.4
Missing	0	

Timing of ICU mortality (N=23)	N	%
Daytime (08:00AM - 07:59PM)	13	56.5
Nigthtime (08:00PM - 07:59AM)	10	43.5
Weekdays (Monday - Friday)	17	73.9
Weekend (Saturday - Sunday)	6	26.1
Missing	0	

Hospital mortality	N	%
Alive	370	87.5
Dead	53	12.5
Missing	0	

Timing of hosp. mortality (N=53)	N	%
In ICU	23	43.4
Within 24 hours after ICU	3	5.7
24-47 hours after ICU	2	3.8
48-71 hours after ICU	1	1.9
72-95 hours after ICU	1	1.9
After 95 hours after ICU	23	43.4
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=30)	
Mean	25.0
SD	35.4
Median	17.5
Q1−Q3	6.5−24.8
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	370	87.5
Dead	53	12.5
Missing	0	

ICU stay (days)	
Mean	3.7
SD	4.9
Median	2
Q1−Q3	2−3
Missing	0

ICU stay (days) **Alive** (N=400)	
Mean	3.5
SD	4.8
Median	2
Q1−Q3	2−3
Missing	0

ICU stay (days) **Dead** (N=23)	
Mean	7.2
SD	6.1
Median	5
Q1−Q3	2−11
Missing	0

Stay after ICU (days) **Alive** (N=400)	
Mean	11.9
SD	21.8
Median	7
Q1−Q3	4−12
Missing	0

Hospital stay (days)	
Mean	19.8
SD	25.6
Median	13
Q1−Q3	8−21
Missing	0

Hospital stay (days) **Alive** (N=370)	
Mean	18.4
SD	23.7
Median	12
Q1−Q3	8−20
Missing	0

Hospital stay (days) **Dead** (N=53)	
Mean	29.9
SD	34.6
Median	20
Q1−Q3	9−37
Missing	0

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

Patients (N): 690

Sex	N	%
Male	389	56.4
Female	301	43.6
Missing	0	

Age (years)	N	%
17-45	162	23.5
46-65	229	33.2
66-75	157	22.8
>75	142	20.6
Missing	0	
Mean	59.2	
SD	18.3	
Median	62	
Q1−Q3	47−73.8	
Min−Max	17−99	

Body mass Index (BMI)	N	%
Underweight	32	4.6
Normal	323	46.8
Overweight	205	29.7
Obese	130	18.8
Missing	0	

Pregnancy status **Females** (N=301)	N	%
Not fertile	126	41.9
Not pregnant/Unknown	165	54.8
Currently pregnant	1	0.3
Post partum	9	3.0
Missing	0	

Comorbidities	N	%
No	202	29.3
Yes	488	70.7
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	360	52.2
Diabetes Type II without insulin tr.	101	14.6
Arrhythmia	95	13.8
Peripheral vascular disease	83	12.0
Cerebrovascular disease	69	10.0
NYHA class II-III	63	9.1
Any tumour without metastasis	44	6.4
Moderate COPD	39	5.7
Metastatic cancer	34	4.9
Moderate or severe renal disease	33	4.8
Missing	0	

Stay before ICU (days)	
Mean	3.0
SD	6.5
Median	1
Q1−Q3	0−3
Missing	0

Source of admission	N	%
Same hospital	651	94.3
Other hospital	39	5.7
Long-term chronic care hospital	0	0.0
Directly from the community	0	0.0
Missing	0	

Ward of admission **Hospital** (N=690)	N	%
Medical ward	37	5.4
Surgical ward	372	53.9
Emergency room	242	35.1
Other ICU	21	3.0
High dependency care unit	18	2.6
Missing	0	

Reason for transfer from **Other ICU** (N=21)	N	%
Specialist expertise	7	33.3
Step-up care	12	57.1
Logistical/organizational reasons	2	9.5
Step-down care	0	0.0
Missing	0	

Ward of admission **Same hospital** (N=651)	N	%
Medical ward	30	4.6
Surgical ward	370	56.8
Emergency room	227	34.9
Other ICU	7	1.1
High dependency care unit	17	2.6
Missing	0	

Ward of admission **Other hospital** (N=39)	N	%
Medical ward	7	17.9
Surgical ward	2	5.1
Emergency room	15	38.5
Other ICU	14	35.9
High dependency care unit	1	2.6
Missing	0	

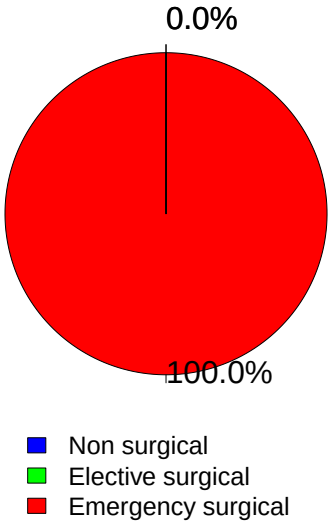
Scheduled admission	N	%
No	690	100.0
Yes	0	0.0
Missing	0	

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

Trauma	N	%
No	357	51.7
Yes	333	48.3
Multiple trauma	121	17.5
Missing	0	

Surgical status	N	%
Non surgical	0	0.0
Elective surgical	0	0.0
Emergency surgical	690	100.0
Missing	0	

Surgical status



Source of admission **Surgical pts.** (N=690)	N	%
Operating theatre of surgical ward	290	42.0
Operating theatre of emergency room	127	18.4
Surgical ward	82	11.9
Other	191	27.7
Missing	0	

Surgical interventions (top 10) **Elective surgical** (N=0)	N	%
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

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

Surgical interventions (top 10) **Emergency surgical** (N=690)	N	%
Neurosurgery	197	28.6
Gastrointestinal surgery	172	24.9
Orthopaedic surgery	148	21.4
Other surgery	41	5.9
Peripheral vascular surgery	37	5.4
ENT surgery	27	3.9
Nephro/Urological surgery	26	3.8
Thoracic surgery	19	2.8
Abdominal vascular surgery	19	2.8
Biliary tract surgery	15	2.2
Missing	0	

Timing **Emergency surgical** (N=690)	N	%
From -7 to -3 days	39	5.7
From -2 to -1 days	75	10.9
On ICU admission day	600	87.0
The day after ICU admission	52	7.5
Missing	1	

Non surgical interventions	N	%
None	668	96.8
Elective	0	0.0
Emergency	22	3.2
Missing	0	

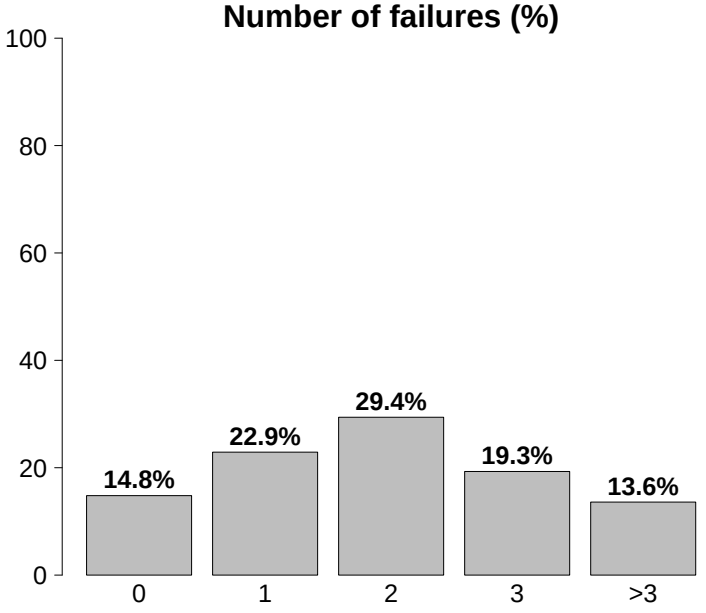
Non surgical interventions **Elective** (N=0)	N	%
Interventional radiology	0	0.0
Interventional cardiology	0	0.0
Interventional neuroradiology	0	0.0
Interventional endoscopy	0	0.0
Missing	0	

Non surgical interventions **Emergency** (N=22)	N	%
Interventional endoscopy	12	54.5
Interventional neuroradiology	4	18.2
Interventional radiology	1	4.5
Interventional cardiology	1	4.5
Missing	4	

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

Reason for admission	N	%
Monitoring/Weaning	162	23.5
Post surgical weaning	38	5.5
Surgical monitoring	124	18.0
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	528	76.5
Only ventilatory support	233	33.8
Only cardiovascular support	43	6.2
Ventilatory and cardiovascular support	252	36.5
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	

Number of failures (%)



Failures on admission	N	%
No	102	14.8
Yes	588	85.2
A: Respiratory failure	485	70.3
B: Cardiovascular failure	295	42.8
C: Neurological failure	100	14.5
D: Hepatic failure	7	1.0
E: Renal failure	196	28.4
F: Acute skin failure	2	0.3
G: Metabolic failure	249	36.1
H: Coagulation failure	23	3.3
Missing	0	

Failures on admission (top 10)	N	%
A	117	17.0
AB	76	11.0
ABEG	50	7.2
ABG	42	6.1
AC	36	5.2
AG	31	4.5
ABC	26	3.8
EG	25	3.6
ABE	23	3.3
G	19	2.8
Missing	0	

Respiratory failure	N	%
None	205	29.7
Only hypoxic failure	123	17.8
Only hypercapnic failure	16	2.3
Hypoxic-hypercapnic failure	38	5.5
Intubation for airway maint.	308	44.6
Missing	0	

Cardiovascular failure	N	%
None	395	57.2
Without shock	95	13.8
Cardiogenic shock	12	1.7
Septic shock	74	10.7
Haemorrhagic/hypovolemic shock	57	8.3
Hypovolemic shock	11	1.6
Anaphylactic shock	1	0.1
Neurogenic shock	23	3.3
Other shock	7	1.0
Mixed shock	15	2.2
Missing	0	

Neurologic failure	N	%
None	388	79.5
Cerebral coma	86	17.6
Metabolic coma	3	0.6
Postanoxic coma	10	2.0
Toxic coma	1	0.2
Missing or not evaluable	202	

Renal failure (AKIN)	N	%
None	494	71.6
Mild	93	13.5
Moderate	52	7.5
Severe	51	7.4
Missing	0	

Metabolic failure	N	%
None	441	63.9
pH <= 7.3, PaCO2 < 45 mmHg	86	12.5
Base deficit >= 5 mmol/L, lactate >1.5x	163	23.6
Missing	0	

National report - **Year 2015**

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

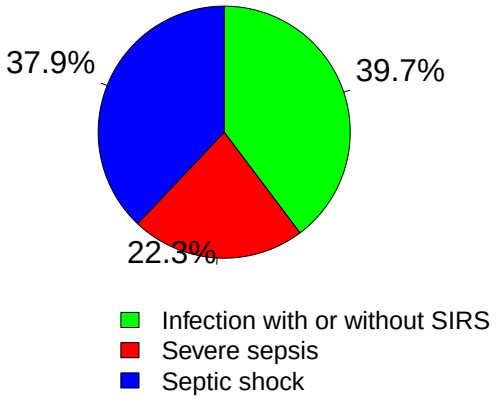
Clinical conditions on admission	N	%
Respiratory	67	9.7
Atelectasis	29	4.2
Pleural effusion	18	2.6
Aspiration pneumonia	8	1.2
Pulmonary embolism	7	1.0
Upper respiratory tract disease	4	0.6
Cardiovascular	85	12.3
Peripheral vascular disease	23	3.3
Acute severe arrhythmia: tachycardias	17	2.5
Left heart failure without pulm. edema	16	2.3
Cardiac arrest	12	1.7
Ruptured or fissured aneurysm	8	1.2
Neurological	77	11.2
Brain tumour	20	2.9
Spontaneous Intraparenchymal bleeding	15	2.2
Spontaneous Subarachnoid haemorrhage	14	2.0
Intracranial hypertension	12	1.7
Chronic Subdural haematoma	9	1.3
Gastrointestinal and hepatic	121	17.5
Gastrointestinal perforation	30	4.3
Gastrointestinal bleeding: upper tract	20	2.9
Intestinal occlusion	19	2.8
Digestive tract malignancy	11	1.6
Paralytic Ileus	9	1.3
Trauma (anatomical districts)	333	48.3
Head	177	25.7
Pelvis/bone/joint & muscle	139	20.1
Chest	93	13.5
Spine	57	8.3
Abdomen	46	6.7
Major vessels injury	9	1.3
Miscellaneous	3	0.4
Other	123	17.8
Other disease	36	5.2
Nephro-urologic disease	31	4.5
Coagulation disorder	23	3.3
Metabolic disorder	19	2.8
ENT/maxillofacial disease	6	0.9
Post transplantation	1	0.1
Renal transplantation	1	0.1
-	0	0.0
Infections	225	32.6
Pneumonia	45	6.5
NON-surgical secondary peritonitis	37	5.4
Clinical sepsis	28	4.1
NON-surgical skin/soft tissue infection	25	3.6
NON-surgical urinary tract infection	16	2.3
Primary peritonitis	13	1.9
L.R.T.I. other than pneumonia	11	1.6
Cholecystitis/cholangitis	10	1.4
Post-surgical peritonitis	10	1.4
Post-surgical skin/soft tissue infection	8	1.2
Missing	0	

Trauma (anatomical districts)	N	%
Head	177	25.7
Traumatic Subdural haematoma	73	10.6
Skull fracture	66	9.6
Traumatic subarachnoid haemorrhage	63	9.1
Maxillofacial fracture	53	7.7
Cerebral contusion/laceration	28	4.1
Spine	57	8.3
Vertebral fracture, without deficit	43	6.2
Cervical injury, incomplete deficit	10	1.4
Lumbar injury, incomplete deficit	2	0.3
Chest	93	13.5
Traum. haemothorax/pneumothorax	45	6.5
Other injuries of the chest	42	6.1
Severe lung contusion/laceration	28	4.1
Abdomen	46	6.7
Minor injuries of the abdomen	14	2.0
Liver: Moderate-Severe laceration	10	1.4
Spleen: Massive rupture	9	1.3
Pelvis/bone/joint & muscle	139	20.1
Long bone fracture	114	16.5
Multiple fracture of the pelvis	27	3.9
Massive crush/amputation	13	1.9
Major vessels injury	9	1.3
Proximal limbs vessels: transection	7	1.0
Neck vessels: dissection/transection	1	0.1
Aorta: rupture/dissection	1	0.1
Miscellaneous	3	0.4
Burns (>30% BSA)	2	0.3
Inhalation injury	1	0.1
Missing	0	

Infection severity on admission	N	%
None	465	67.5
Infection with or without SIRS	89	12.9
Severe sepsis	50	7.3
Septic shock	85	12.3
Missing	1	

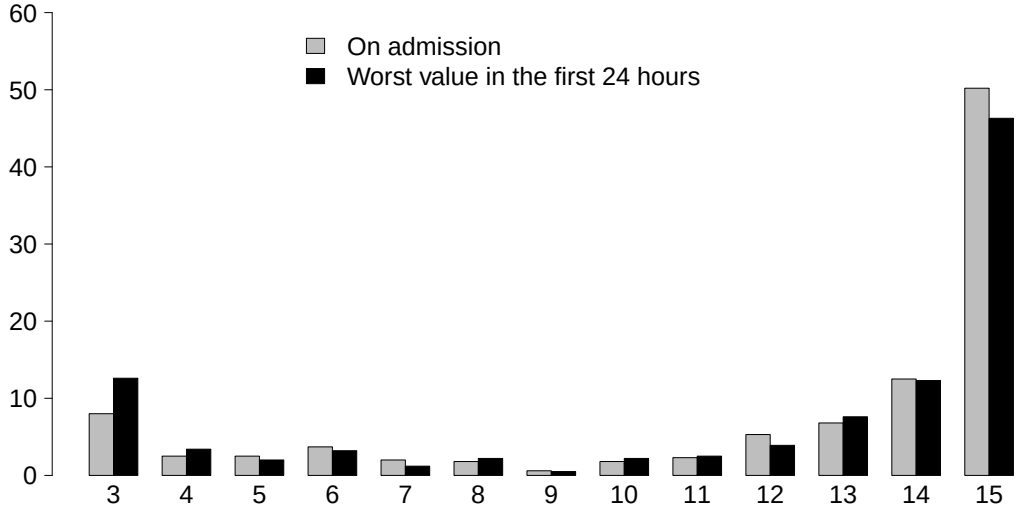
Infection severity on admission

Patients infected (N=224)



National report - **Year 2015**
Severity scores - Adult emergency surgical patients with LOS>=24 hours evaluated in the GiViTI model

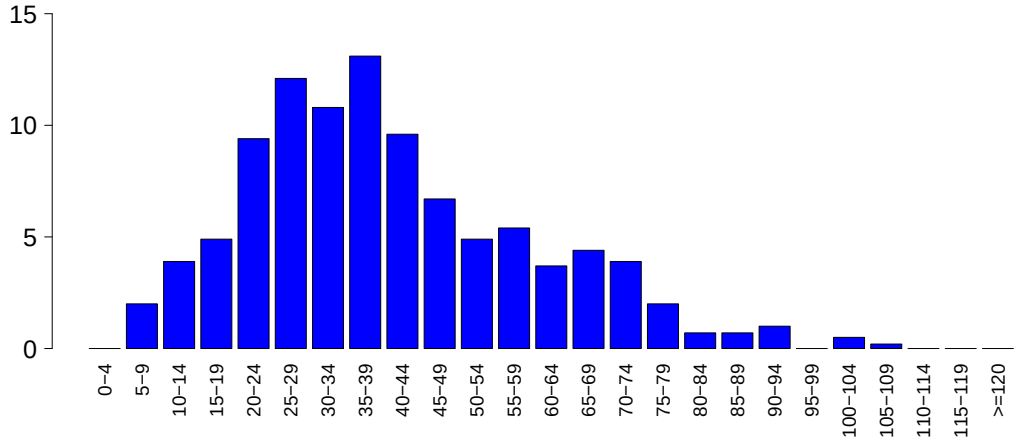
Glasgow Coma Scale (%)



GCS (admission)	
Median	15
Q1−Q3	11−15
Not evaluable	202
Missing	0

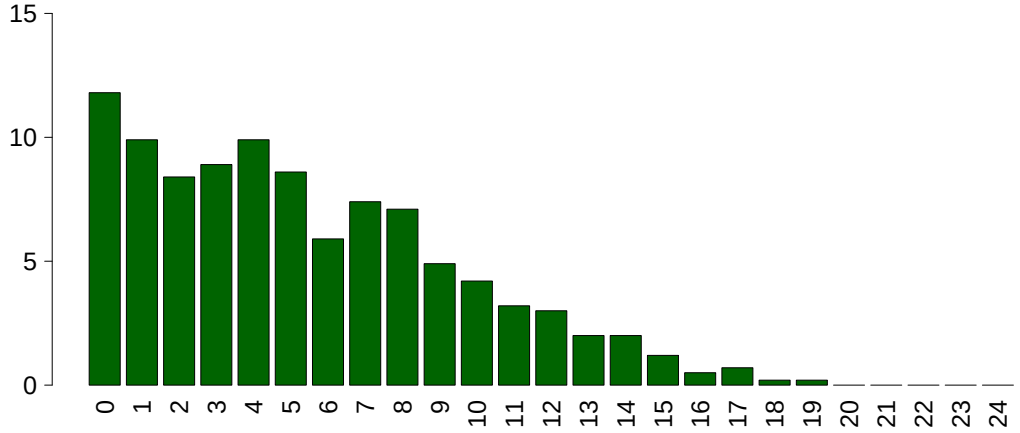
GCS (first 24 hours)	
Median	14
Q1−Q3	9.2−15
Not evaluable	284
Missing	0

SAPS II (%)



SAPSII	
Mean	40.5
SD	19.2
Median	37
Q1−Q3	26−52
Not evaluable	284
Missing	0

SOFA (%)



SOFA	
Mean	5.4
SD	4.2
Median	5
Q1−Q3	2−8
Not evaluable	284
Missing	0

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

Complications during the stay	N	%
No	277	40.1
Yes	413	59.9
Missing	0	

Failures during the stay	N	%
No	533	77.2
Yes	157	22.8
A: Respiratory failure	68	9.9
B: Cardiovascular failure	87	12.6
C: Neurological failure	17	2.5
D: Hepatic failure	6	0.9
E: Renal failure (AKIN)	64	9.3
F: Acute skin failure	2	0.3
G: Metabolic failure	8	1.2
H: Coagulation failure	7	1.0
Missing	0	

Failures during the stay (top 10)	N	%
A	34	4.9
B	28	4.1
BE	22	3.2
E	14	2.0
AB	10	1.4
ABE	8	1.2
AE	4	0.6
C	4	0.6
BC	3	0.4
CE	3	0.4
Missing	0	

Respiratory failure occured	N	%
None	622	90.1
Intubation for airway maint.	17	2.5
Hypoxic failure	46	6.7
Hypercapnic failure	14	2.0
Missing	0	

Cardiovascular failure occured	N	%
None	603	87.4
Cardiogenic shock	19	2.8
Hypovolemic shock	4	0.6
Haemorrhagic/hypovolemic shock	7	1.0
Septic shock	48	7.0
Anaphylactic shock	0	0.0
Neurogenic shock	8	1.2
Other shock	10	1.4
Missing	0	

Neurological failure occured	N	%
None	673	97.5
Cerebral coma	7	1.0
Metabolic coma	9	1.3
Postanoxic coma	2	0.3
Missing	0	

Renal failure occured (AKIN)	N	%
None	626	90.7
Mild	10	1.4
Moderate	19	2.8
Severe	35	5.1
Missing	0	

Complications during the stay	N	%
Respiratory	136	19.7
Atelectasis	88	12.8
Pleural effusion	27	3.9
Pneumothorax/Pneumomediastinum	15	2.2
Aspiration pneumonia	11	1.6
Acute asthma/bronchospasm	10	1.4
Cardiovascular	58	8.4
Acute severe arrhythmia: tachycardias	32	4.6
Cardiac arrest	10	1.4
Left heart failure w/o pulm. edema	6	0.9
Acute severe arrhythmia: bradycardias	4	0.6
Hypertensive crisis	4	0.6
Neurological	151	21.9
Intracranial hypertension	68	9.9
Drowsiness/agitation/delirium	64	9.3
Brain edema	40	5.8
New ischaemic stroke	10	1.4
CrIMyNe	7	1.0
Gastrointestinal and hepatic	49	7.1
Paralytic Ileus	12	1.7
Gastrointestinal bleeding: upper tract	8	1.2
Gastrointestinal perforation	8	1.2
Anastomotic dehiscence	6	0.9
Bowel ischaemia	6	0.9
Other	46	6.7
Nephro-urologic disease	16	2.3
Other disease	11	1.6
Other skin and/or soft tissue pathology	11	1.6
Metabolic disorder	8	1.2
Fat embolism	3	0.4
Extremity compartment syndrome (severe)	3	0.4
Blunt cerebral vessels trauma	2	0.3
Infections	178	25.8
L.R.T.I. other than pneumonia	47	6.8
Pneumonia	42	6.1
Clinical sepsis	16	2.3
F.U.O. fever of unknown origin	15	2.2
NON-surgical urinary tract infection	10	1.4
Upper respiratory tract infection	9	1.3
Post-surgical peritonitis	8	1.2
Sinusitis	8	1.2
NON-surgical skin/soft tissue infection	8	1.2
Post-surgical bone and joint infection	6	0.9
Missing	0	

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

Infections	N	%
None	317	45.9
Only on admission	195	28.3
On admission and during ICU stay	30	4.3
Only during ICU stay	148	21.4
Missing	0	

Maximum severity of infection	N	%
None	317	46.8
Infection with or without SIRS	175	25.8
Severe sepsis	63	9.3
Septic shock	122	18.0
Missing	13	

Severity evolution		**During the stay**				
	N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock	TOT
Admission	None	317 (70.0%)	96 (21.2%)	18 (4.0%)	22 (4.9%)	453
	Infection with or without SIRS	-	79 (88.8%)	3 (3.4%)	7 (7.9%)	89
	Severe sepsis	-	-	42 (84.0%)	8 (16.0%)	50
	Septic shock	-	-	-	85 (100.0%)	85
	TOT	317	175	63	122	677

Ventil. Associat. Pneumonia (VAP)	N	%
No	659	95.5
Yes	31	4.5
Missing	0	

Catheter Bacteraemia (CR-BSI)	N	%
No	685	99.3
Yes	5	0.7
Missing	0	

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

Estimate	10.7
CI (95%)	7.3−15.2

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

Estimate	0.1
CI (95%)	0.0−0.3

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

Estimate	8.6%
CI (95%)	5.8−12.2

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

Estimate	0.2%
CI (95%)	0.0−0.4

National report - **Year 2015**

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

Procedures and/or treatments (Missing=0)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	680	98.6										
Invasive ventilation	544	78.8	372	53.9	79	11.4	3	1–7	0	0	0–0	0
Non invasive ventilation	160	23.2	34	4.9	77	11.2	2	1–4	0	1	1–4	0
Tracheostomy	98	14.2	2	0.3	62	9	8	3–17	0	7	5–9	0
iNO (inhaled nitric oxide)	0	0.0										
Central Venous Catheter	558	80.9	108	15.7	338	49	6	3–10	0	0	0–0	0
PICC	0	0.0										
Arterial Catheter	517	74.9	125	18.1	86	12.5	5	2–8	0	0	0–0	0
Vasoactive drugs	349	50.6	104	15.1	34	4.9	2	1–5	0	0	0–0	0
Antiarrhythmics	129	18.7	23	3.3	64	9.3	3	1–8	0	1	0–3	0
IABP	1	0.1	0	0	1	0.1	2	2–2	0	1	1–1	0
Invasive monitoring of C.O.	38	5.5	1	0.1	1	0.1	6	4–8	0	1	0–2	0
Continous monitoring of ScVO2	90	13.0	4	0.6	2	0.3	4	2–8	0	0	0–0	0
Temporary pacing	1	0.1	0	0	0	0	14	14–14	0	16	16–16	0
Ventricular assistance	0	0.0										
DC-shock	4	0.6								3	1–27	0
CPR	10	1.4								2	0–6	0
Massive blood transfusion	33	4.8								0	0–0	0
ICP monitoring without liquor-drainage	19	2.8	10	1.4	1	0.1	3	2–6	0	0	0–0	0
ICP monitoring with liquor-drainage	65	9.4	20	2.9	16	2.3	6	3–9	0	0	0–0	0
External ventricular drainage without ICP	6	0.9	0	0	2	0.3	4	2–6	0	0	0–0	0
Haemofiltration	7	1.0	0	0	0	0	2	1–4	0	1	1–2	0
Haemodialysis	24	3.5	4	0.6	10	1.4	4	3–10	0	1	0–3	0
ECMO	0	0.0										
Hepatic clearance techniques	0	0.0										
Clearance techniques during sepsis	2	0.3	0	0	0	0	2	1–4	0	1	1–1	0
IAP (intra-abdominal pressure)	29	4.2										
Hypothermia	5	0.7										
Enteral nutrition	459	66.5	26	3.8	285	41.3	5	2–9	0	1	1–2	0
Parenteral nutrition	229	33.2	33	4.8	93	13.5	4	2–8	0	1	0–2	0
SDD (Topical, Topical and systemic)	0	0.0										
Patient restraint	61	8.8										
Peridural catheter	28	4.1	8	1.2	10	1.4	4	3–5	0	0	0–1	0
Electrical cardioversion	0	0.0										
Vacuum therapy	1	0.1										
Antibiotics	561	81.3										
Antibiotics for surgical prophylaxis	312	45.2	132	19.1	72	10.4	2	0–4	0	0	0–0	0
Antibiotics for medical prophylaxis	19	2.8	3	0.4	7	1	4	2–6	0	0	0–2	0
Empirical antibiotic therapy	262	38.0	48	7	81	11.7	4	2–5	0	0	0–3	0
Targeted antibiotic therapy	174	25.2	17	2.5	87	12.6	6	3–10	0	5	3–7	0

National report - **Year 2015**

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

Invasive ventilation (N=544)	N	%	Length (days) Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	181	33.2	6.9	7.8	4	2−9	0
For airway mainteinance	302	55.4	5.4	9.1	3	1−6.8	0
In weaning	37	6.8	0.6	0.5	1	0−1	0
Not evaluable	25	4.6	7.5	12.8	4	2−7	2
Reintubation within 48 hours	24	4.4	6.1	8.8	3	1−6.5	0

Non invasive ventilation (N=160)	N	%
Non invasive ventilation only	49	30.6
Non invasive ventilation failed	13	8.1
For weaning	92	57.5
Other	6	3.8
Missing	0	

Tracheostomy (N=98)	N	%
Surgical	24	24.5
Percutwist	7	7.1
Ciaglia	0	0.0
Monodil. Ciaglia	1	1.0
Fantoni	0	0.0
Griggs	64	65.3
Other Kind	2	2.0
Missing	0	

Tracheostomy - Days after the beginning of inv. vent. Not present on admission (N=96)	
Mean	7.2
SD	3.7
Median	7
Q1−Q3	5−9
Missing	0

Invasive monitoring of C.O. (N=38)	N	%
Swan Ganz	0	0.0
PICCO	38	100.0
LIDCO	0	0.0
Vigileo-PRAM	0	0.0
Other	0	0.0
Missing	0	

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

Antibiotic therapy Pts. infected in ICU only (N=148)	N	%
Only empirical	61	46.9
Only targeted	29	22.3
Targeted after empirical	32	24.6
Other	8	6.2
Missing	18	

Surgical interventions	N	%
No	597	86.5
Yes	93	13.5
Missing	0	

Number of surgical interventions	N	%
0	597	86.5
1	67	9.7
2	18	2.6
3	4	0.6
>3	4	0.6
Missing	0	

Surgical interventions Days from admission	
Mean	8.4
SD	6.6
Median	6
Q1−Q3	4−11
Missing	0

Surgical interventions (top 10)	N	%
Orthopaedic surgery	42	6.1
Gastrointestinal surgery	32	4.6
Other surgery	24	3.5
Neurosurgery	12	1.7
ENT surgery	11	1.6
Nephro/Urological surgery	4	0.6
Maxillo-Facial surgery	4	0.6
Organ donation	3	0.4
Peripheral vascular surgery	2	0.3
Pancreatic surgery	1	0.1
Missing	0	

Non surgical interventions	N	%
No	672	97.4
Yes	18	2.6
Missing	0	

Non surgical interventions Days from admission	
Mean	13.3
SD	14.5
Median	7
Q1−Q3	4−15
Missing	2

Non surgical interventions	N	%
Interventional endoscopy	12	1.7
Interventional radiology	4	0.6
Interventional cardiology	2	0.3
Interventional neuroradiology	1	0.1
Missing	0	

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

ICU outcome	N	%
Dead	132	19.2
Transferred to same hospital	492	71.4
Transferred to other hospital	62	9.0
Discharged home	3	0.4
Disch. terminally ill	0	0.0
Missing	1	

Transferred to (N=554)	N	%
Ward	399	72.0
Other ICU	39	7.0
High dependency care unit	116	20.9
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Reason for transfer to Other ICU (N=39)	N	%
Specialist expertise	2	5.1
Step-up care	7	17.9
Logistical/organizational reasons	24	61.5
Step-down care	6	15.4
Missing	0	

Transferred to Same hospital (N=492)	N	%
Ward	372	75.6
Other ICU	6	1.2
High dependency care unit	114	23.2
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Transferred to Other hospital (N=62)	N	%
Ward	27	43.5
Other ICU	33	53.2
High dependency care unit	2	3.2
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	557	80.8
Dead	132	19.2
Missing	1	

Timing of ICU mortality (N=132)	N	%
Daytime (08:00AM - 07:59PM)	69	52.3
Nigthtime (08:00PM - 07:59AM)	63	47.7
Weekdays (Monday - Friday)	93	70.5
Weekend (Saturday - Sunday)	39	29.5
Missing	0	

Hospital mortality	N	%
Alive	455	65.9
Dead	235	34.1
Missing	0	

Timing of hosp. mortality (N=235)	N	%
In ICU	132	56.2
Within 24 hours after ICU	2	0.9
24-47 hours after ICU	8	3.4
48-71 hours after ICU	10	4.3
72-95 hours after ICU	6	2.6
After 95 hours after ICU	77	32.8
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=103)	
Mean	18.0
SD	26.7
Median	8
Q1−Q3	3.5−20.5
Missing	0

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

Last hospital mortality	N	%
Alive	454	65.8
Dead	236	34.2
Missing	0	

ICU stay (days)	
Mean	8.3
SD	10.9
Median	5
Q1−Q3	2−9.8
Missing	0

ICU stay (days) **Alive** (N=557)	
Mean	8.3
SD	11.0
Median	5
Q1−Q3	2−10
Missing	0

ICU stay (days) **Dead** (N=132)	
Mean	8.0
SD	10.6
Median	5
Q1−Q3	2−9
Missing	0

Stay after ICU (days) **Alive** (N=557)	
Mean	14.2
SD	19.0
Median	8
Q1−Q3	4−18
Missing	0

Hospital stay (days)	
Mean	22.7
SD	22.9
Median	16
Q1−Q3	9−29
Missing	0

Hospital stay (days) **Alive** (N=455)	
Mean	24.1
SD	21.5
Median	18
Q1−Q3	10−31.5
Missing	0

Hospital stay (days) **Dead** (N=235)	
Mean	20.0
SD	25.2
Median	11
Q1−Q3	7−24
Missing	0

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

Patients (N): 208

Sex	N	%
Male	120	57.7
Female	88	42.3
Missing	0	

Age (years)	N	%
17-45	25	12.0
46-65	72	34.6
66-75	53	25.5
>75	58	27.9
Missing	0	
Mean	64.9	
SD	15.0	
Median	67	
Q1−Q3	56.8−77	
Min−Max	20−98	

Body mass Index (BMI)	N	%
Underweight	18	8.7
Normal	90	43.3
Overweight	56	26.9
Obese	44	21.2
Missing	0	

Pregnancy status **Females** (N=88)	N	%
Not fertile	44	50.0
Not pregnant/Unknown	44	50.0
Currently pregnant	0	0.0
Post partum	0	0.0
Missing	0	

Comorbidities	N	%
No	30	14.4
Yes	178	85.6
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	131	63.0
Peripheral vascular disease	42	20.2
Arrhythmia	39	18.8
Diabetes Type II without insulin tr.	34	16.3
Cerebrovascular disease	29	13.9
Myocardial infarction	27	13.0
NYHA class II-III	26	12.5
Moderate COPD	23	11.1
Moderate or severe renal disease	20	9.6
Any tumour without metastasis	19	9.1
Missing	0	

Stay before ICU (days)	
Mean	4.8
SD	12.7
Median	1
Q1−Q3	0−3
Missing	0

Source of admission	N	%
Same hospital	203	97.6
Other hospital	4	1.9
Long-term chronic care hospital	1	0.5
Directly from the community	0	0.0
Missing	0	

Ward of admission **Hospital** (N=207)	N	%
Medical ward	29	14.0
Surgical ward	91	44.0
Emergency room	82	39.6
Other ICU	3	1.4
High dependency care unit	2	1.0
Missing	0	

Reason for transfer from **Other ICU** (N=3)	N	%
Specialist expertise	0	0.0
Step-up care	2	66.7
Logistical/organizational reasons	1	33.3
Step-down care	0	0.0
Missing	0	

Ward of admission **Same hospital** (N=203)	N	%
Medical ward	29	14.3
Surgical ward	91	44.8
Emergency room	80	39.4
Other ICU	1	0.5
High dependency care unit	2	1.0
Missing	0	

Ward of admission **Other hospital** (N=4)	N	%
Medical ward	0	0.0
Surgical ward	0	0.0
Emergency room	2	50.0
Other ICU	2	50.0
High dependency care unit	0	0.0
Missing	0	

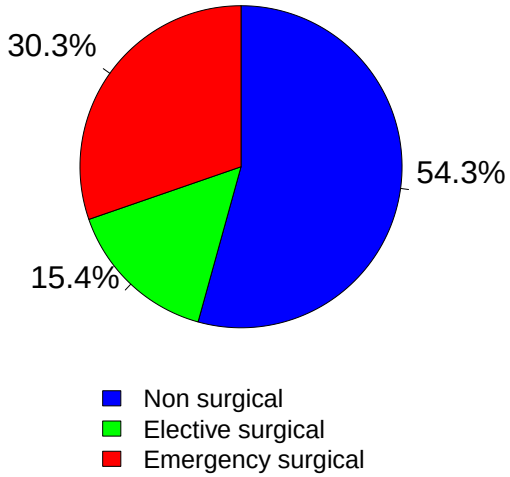
Scheduled admission	N	%
No	191	91.8
Yes	17	8.2
Missing	0	

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

Trauma	N	%
No	152	73.1
Yes	56	26.9
Multiple trauma	9	4.3
Missing	0	

Surgical status	N	%
Non surgical	113	54.3
Elective surgical	32	15.4
Emergency surgical	63	30.3
Missing	0	

Surgical status



Source of admission **Surgical pts.** (N=95)	N	%
Operating theatre of surgical ward	55	58.5
Operating theatre of emergency room	9	9.6
Surgical ward	13	13.8
Other	17	18.1
Missing	1	

Surgical interventions (top 10) **Elective surgical** (N=32)	N	%
Orthopaedic surgery	11	34.4
Other surgery	5	15.6
Gastrointestinal surgery	4	12.5
Peripheral vascular surgery	3	9.4
Hepatic surgery	2	6.2
Nephro/Urological surgery	2	6.2
Abdominal vascular surgery	2	6.2
Neurosurgery	2	6.2
Gynaecological surgery	1	3.1
Thoracic surgery	1	3.1
Missing	0	

Timing **Elective surgical** (N=32)	N	%
From -7 to -3 days	6	18.8
From -2 to -1 days	2	6.2
On ICU admission day	26	81.2
The day after ICU admission	0	0.0
Missing	0	

Surgical interventions (top 10) **Emergency surgical** (N=63)	N	%
Gastrointestinal surgery	24	38.1
Orthopaedic surgery	13	20.6
Abdominal vascular surgery	7	11.1
Peripheral vascular surgery	7	11.1
Neurosurgery	7	11.1
Pancreatic surgery	2	3.2
Thoracic surgery	2	3.2
Splenectomy	2	3.2
Gynaecological surgery	1	1.6
Other surgery	1	1.6
Missing	0	

Timing **Emergency surgical** (N=63)	N	%
From -7 to -3 days	2	3.2
From -2 to -1 days	7	11.1
On ICU admission day	56	88.9
The day after ICU admission	1	1.6
Missing	0	

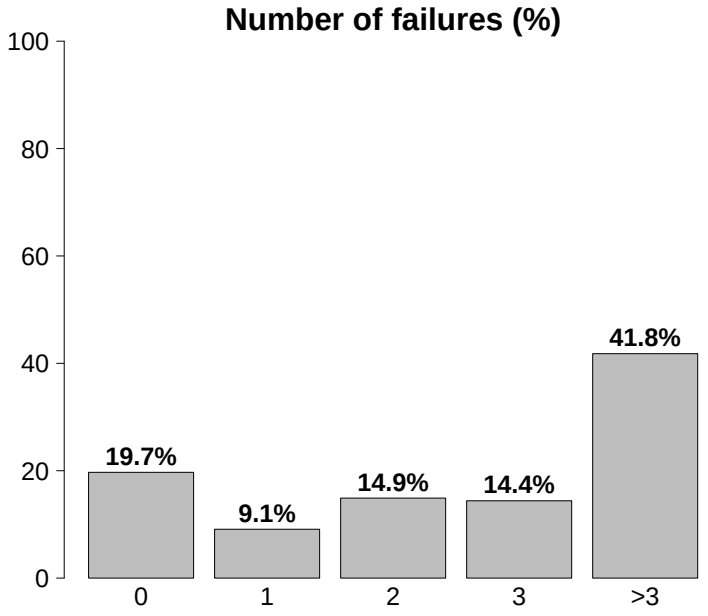
Non surgical interventions	N	%
None	199	95.7
Elective	0	0.0
Emergency	9	4.3
Missing	0	

Non surgical interventions **Elective** (N=0)	N	%
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 **Emergency** (N=9)	N	%
Interventional endoscopy	5	55.6
Interventional cardiology	4	44.4
Interventional radiology	0	0.0
Interventional neuroradiology	0	0.0
Missing	0	

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

Reason for admission	N	%
Monitoring/Weaning	53	25.5
Post surgical weaning	9	4.3
Surgical monitoring	27	13.0
Post interventional weaning	1	0.5
Interventional monitoring	0	0.0
Non surgical monitoring	16	7.7
Missing	0	
Admission for procedures/treatments	0	0.0
Intensive Treatment	155	74.5
Only ventilatory support	36	17.3
Only cardiovascular support	11	5.3
Ventilatory and cardiovascular support	108	51.9
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	41	19.7
Yes	167	80.3
A: Respiratory failure	144	69.2
B: Cardiovascular failure	119	57.2
C: Neurological failure	51	24.5
D: Hepatic failure	6	2.9
E: Renal failure	103	49.5
F: Acute skin failure	0	0.0
G: Metabolic failure	115	55.3
H: Coagulation failure	14	6.7
Missing	0	

Failures on admission (top 10)	N	%
ABEG	39	18.8
ABCEG	17	8.2
AB	9	4.3
ABCG	9	4.3
ABE	9	4.3
AC	9	4.3
A	8	3.8
ABEGH	6	2.9
BEG	6	2.9
ABG	5	2.4
Missing	0	

Respiratory failure	N	%
None	64	30.8
Only hypoxic failure	44	21.2
Only hypercapnic failure	5	2.4
Hypoxic-hypercapnic failure	34	16.3
Intubation for airway maint.	61	29.3
Missing	0	

Cardiovascular failure	N	%
None	89	42.8
Without shock	21	10.1
Cardiogenic shock	21	10.1
Septic shock	39	18.8
Haemorrhagic/hypovolemic shock	21	10.1
Hypovolemic shock	3	1.4
Anaphylactic shock	0	0.0
Neurogenic shock	3	1.4
Other shock	5	2.4
Mixed shock	6	2.9
Missing	0	

Neurologic failure	N	%
None	97	65.5
Cerebral coma	31	20.9
Metabolic coma	9	6.1
Postanoxic coma	10	6.8
Toxic coma	1	0.7
Missing or not evaluable	60	

Renal failure (AKIN)	N	%
None	105	50.5
Mild	13	6.2
Moderate	24	11.5
Severe	66	31.7
Missing	0	

Metabolic failure	N	%
None	93	44.7
pH <= 7.3, PaCO2 < 45 mmHg	24	11.5
Base deficit >= 5 mmol/L, lactate >1.5x	91	43.8
Missing	0	

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

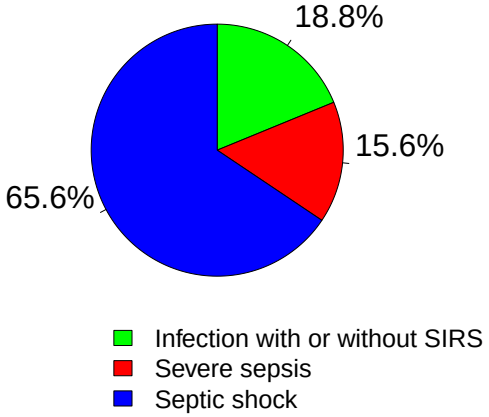
Clinical conditions on admission	N	%
Respiratory	24	11.5
Acute exacerbation of COPD	8	3.8
Pleural effusion	5	2.4
Atelectasis	5	2.4
Acute asthma/bronchospasm	2	1.0
Restrictive lung disease, exacerbation	2	1.0
Cardiovascular	70	33.7
Cardiac arrest	31	14.9
Acute severe arrhythmia: tachycardias	11	5.3
Left heart failure without pulm. edema	10	4.8
Left heart failure with pulmonary edema	9	4.3
Peripheral vascular disease	6	2.9
Neurological	21	10.1
Seizures	8	3.8
Metabolic/postanoxic encephalopathy	4	1.9
Cerebral artery stroke	3	1.4
Brain tumour	2	1.0
Spontaneous Subarachnoid haemorrhage	2	1.0
Gastrointestinal and hepatic	29	13.9
Gastrointestinal perforation	6	2.9
Digestive tract malignancy	6	2.9
Bowel ischaemia	5	2.4
Acute on chronic liver disease	5	2.4
Hepatic malignancy	4	1.9
Trauma (anatomical districts)	56	26.9
Head	28	13.5
Pelvis/bone/joint & muscle	20	9.6
Chest	9	4.3
Spine	7	3.4
Major vessels injury	4	1.9
Abdomen	2	1.0
Miscellaneous	1	0.5
Other	65	31.2
Metabolic disorder	20	9.6
Other disease	17	8.2
Coagulation disorder	14	6.7
Nephro-urologic disease	11	5.3
Orthopaedic disease	6	2.9
Post transplantation	0	0.0
-	0	0.0
-	0	0.0
Infections	64	30.8
Clinical sepsis	18	8.7
Pneumonia	16	7.7
NON-surgical secondary peritonitis	8	3.8
L.R.T.I. other than pneumonia	5	2.4
Primary peritonitis	4	1.9
Gastroenteritis	3	1.4
Post-surgical peritonitis	3	1.4
Cholecystitis/cholangitis	2	1.0
Post-surgical bone and joint infection	1	0.5
Orthopaedic prosthesis infection	1	0.5
Missing	0	

Trauma (anatomical districts)	N	%
Head	28	13.5
Traumatic subarachnoid haemorrhage	15	7.2
Traumatic Subdural haematoma	14	6.7
Skull fracture	12	5.8
Maxillofacial fracture	8	3.8
Cerebral contusion/laceration	4	1.9
Spine	7	3.4
Vertebral fracture, without deficit	5	2.4
Cervical injury, incomplete deficit	2	1.0
-	0	0.0
Chest	9	4.3
Traum. haemothorax/pneumothorax	6	2.9
Severe lung contusion/laceration	5	2.4
Other injuries of the chest	3	1.4
Abdomen	2	1.0
Liver: Moderate-Severe laceration	1	0.5
Spleen: Massive rupture	1	0.5
-	0	0.0
Pelvis/bone/joint & muscle	20	9.6
Long bone fracture	19	9.1
Multiple fracture of the pelvis	2	1.0
Massive crush/amputation	2	1.0
Major vessels injury	4	1.9
Proximal limbs vessels: transection	3	1.4
Aorta: rupture/dissection	1	0.5
-	0	0.0
Miscellaneous	1	0.5
Inhalation injury	1	0.5
-	0	0.0
Missing	0	

Infection severity on admission	N	%
None	144	69.2
Infection with or without SIRS	12	5.8
Severe sepsis	10	4.8
Septic shock	42	20.2
Missing	0	

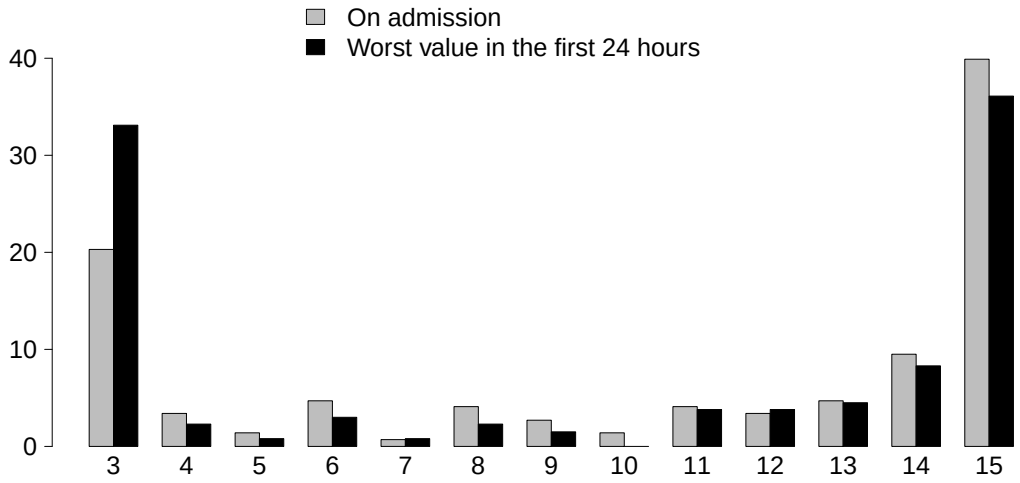
Infection severity on admission

Patients infected (N=64)



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

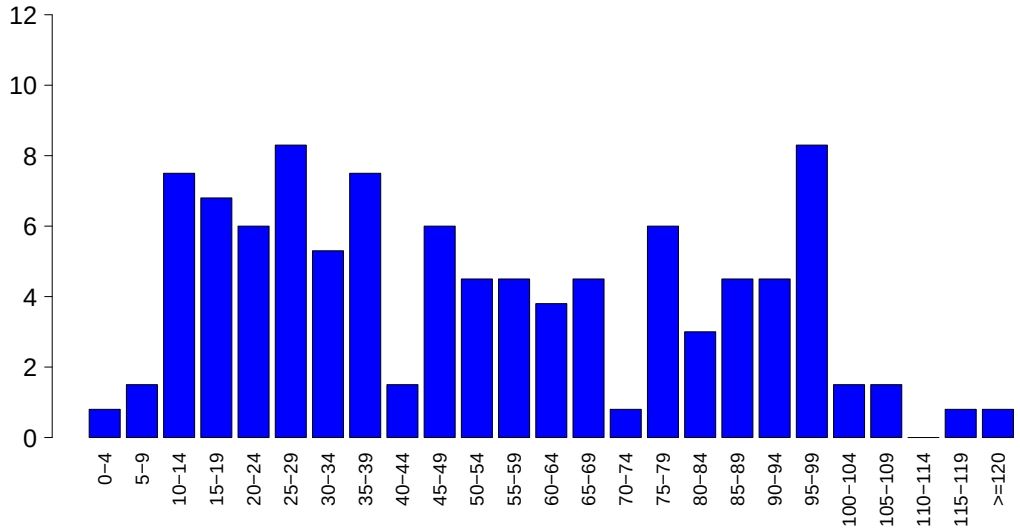
Glasgow Coma Scale (%)



GCS (admission)	
Median	13
Q1−Q3	5.8−15
Not evaluable	60
Missing	0

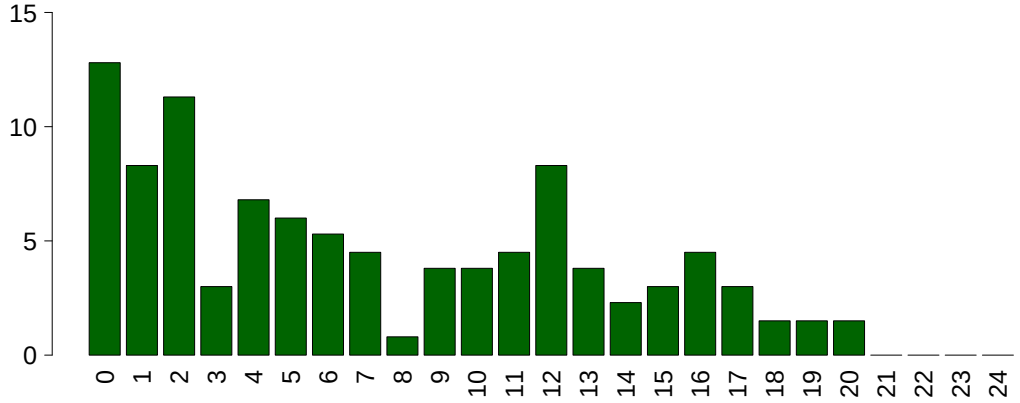
GCS (first 24 hours)	
Median	12
Q1−Q3	3−15
Not evaluable	75
Missing	0

SAPS II (%)



SAPSII	
Mean	52.6
SD	30.6
Median	48
Q1−Q3	25−79
Not evaluable	75
Missing	0

SOFA (%)



SOFA	
Mean	7.2
SD	5.9
Median	6
Q1−Q3	2−12
Not evaluable	75
Missing	0

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

Complications during the stay	N	%
No	120	57.7
Yes	88	42.3
Missing	0	

Failures during the stay	N	%
No	175	84.1
Yes	33	15.9
A: Respiratory failure	8	3.8
B: Cardiovascular failure	16	7.7
C: Neurological failure	4	1.9
D: Hepatic failure	2	1.0
E: Renal failure (AKIN)	12	5.8
F: Acute skin failure	0	0.0
G: Metabolic failure	3	1.4
H: Coagulation failure	0	0.0
Missing	0	

Failures during the stay (top 10)	N	%
B	10	4.8
E	5	2.4
A	3	1.4
BE	3	1.4
G	3	1.4
AC	2	1.0
CE	2	1.0
AB	1	0.5
ABE	1	0.5
AE	1	0.5
Missing	0	

Respiratory failure occured	N	%
None	200	96.2
Intubation for airway maint.	4	1.9
Hypoxic failure	5	2.4
Hypercapnic failure	2	1.0
Missing	0	

Cardiovascular failure occured	N	%
None	192	92.3
Cardiogenic shock	9	4.3
Hypovolemic shock	0	0.0
Haemorrhagic/hypovolemic shock	0	0.0
Septic shock	6	2.9
Anaphylactic shock	0	0.0
Neurogenic shock	1	0.5
Other shock	2	1.0
Missing	0	

Neurological failure occured	N	%
None	204	98.1
Cerebral coma	1	0.5
Metabolic coma	2	1.0
Postanoxic coma	1	0.5
Missing	0	

Renal failure occured (AKIN)	N	%
None	196	94.2
Mild	0	0.0
Moderate	3	1.4
Severe	9	4.3
Missing	0	

Complications during the stay	N	%
Respiratory	4	1.9
Severe ARDS	1	0.5
Atelectasis	1	0.5
Pneumothorax/Pneumomediastinum	1	0.5
Pulmonary embolism	1	0.5
-	0	0.0
Cardiovascular	46	22.1
Cardiac arrest	25	12.0
Acute severe arrhythmia: bradycardias	20	9.6
Pulmonary edema	4	1.9
Acute severe arrhythmia: tachycardias	4	1.9
Peripheral vascular disease	3	1.4
Neurological	15	7.2
Intracranial hypertension	10	4.8
Brain edema	6	2.9
Drowsiness/agitation/delirium	3	1.4
Non-surgical intracranial bleeding	1	0.5
Seizures	1	0.5
Gastrointestinal and hepatic	5	2.4
Gastrointestinal bleeding: upper tract	2	1.0
Intrabdominal bleeding	2	1.0
Acute on chronic liver disease	1	0.5
Liver Dysfunction Syndrome	1	0.5
-	0	0.0
Other	10	4.8
Other disease	6	2.9
Metabolic disorder	3	1.4
Nephro-urologic disease	1	0.5
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Infections	6	2.9
Clinical sepsis	2	1.0
Cholecystitis/cholangitis	1	0.5
L.R.T.I. other than pneumonia	1	0.5
NON-surgical secondary peritonitis	1	0.5
NON-surgical urinary tract infection	1	0.5
-	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	%
None	142	68.3
Only on admission	60	28.8
On admission and during ICU stay	4	1.9
Only during ICU stay	2	1.0
Missing	0	

Maximum severity of infection	N	%
None	142	68.3
Infection with or without SIRS	11	5.3
Severe sepsis	8	3.8
Septic shock	47	22.6
Missing	0	

Severity evolution		**During the stay**				
	N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock	TOT
Admission	None	142 (98.6%)	1 (0.7%)	1 (0.7%)	0 (0.0%)	144
	Infection with or without SIRS	-	10 (83.3%)	1 (8.3%)	1 (8.3%)	12
	Severe sepsis	-	-	6 (60.0%)	4 (40.0%)	10
	Septic shock	-	-	-	42 (100.0%)	42
	TOT	142	11	8	47	208

National report - **Year 2015**

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

Procedures and/or treatments (Missing=0)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	196	94.2										
Invasive ventilation	153	73.6	97	46.6	42	20.2						
Non invasive ventilation	29	13.9	11	5.3	13	6.2						
Tracheostomy	0	0.0										
iNO (inhaled nitric oxide)	0	0.0										
Central Venous Catheter	118	56.7	22	10.6	62	29.8						
PICC	0	0.0										
Arterial Catheter	110	52.9	28	13.5	41	19.7						
Vasoactive drugs	126	60.6	56	26.9	36	17.3						
Antiarrhythmics	22	10.6	10	4.8	8	3.8						
IABP	1	0.5	0	0	0	0						
Invasive monitoring of C.O.	4	1.9	1	0.5	2	1						
Continous monitoring of ScVO2	33	15.9	3	1.4	1	0.5						
Temporary pacing	0	0.0										
Ventricular assistance	1	0.5	0	0	0	0						
DC-shock	12	5.8										
CPR	20	9.6										
Massive blood transfusion	10	4.8										
ICP monitoring without liquor-drainage	2	1.0	2	1	0	0						
ICP monitoring with liquor-drainage	3	1.4	0	0	2	1						
External ventricular drainage without ICP	2	1.0	1	0.5	2	1						
Haemofiltration	2	1.0	0	0	2	1						
Haemodialysis	3	1.4	0	0	0	0						
ECMO	0	0.0										
Hepatic clearance techniques	0	0.0										
Clearance techniques during sepsis	0	0.0										
IAP (intra-abdominal pressure)	2	1.0										
Hypothermia	2	1.0										
Enteral nutrition	27	13.0	6	2.9	19	9.1						
Parenteral nutrition	19	9.1	10	4.8	17	8.2						
SDD (Topical, Topical and systemic)	0	0.0										
Patient restraint	0	0.0										
Peridural catheter	4	1.9	3	1.4	2	1						
Electrical cardioversion	0	0.0										
Vacuum therapy	0	0.0										
Antibiotics	87	41.8										
Antibiotics for surgical prophylaxis	34	16.3	14	6.7	14	6.7						
Antibiotics for medical prophylaxis	7	3.4	2	1	5	2.4						
Empirical antibiotic therapy	44	21.2	11	5.3	18	8.7						
Targeted antibiotic therapy	3	1.4	1	0.5	1	0.5						

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

Invasive ventilation (N=153)	N	%
Due to pulmonary failure	80	52.3
For airway mainteinance	62	40.5
In weaning	10	6.5
Not evaluable	1	0.7
Reintubation within 48 hours	0	0.0

Non invasive ventilation (N=29)	N	%
Non invasive ventilation only	17	58.6
Non invasive ventilation failed	6	20.7
For weaning	6	20.7
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=4)	N	%
Swan Ganz	0	0.0
PICCO	4	100.0
LIDCO	0	0.0
Vigileo-PRAM	0	0.0
Other	0	0.0
Missing	0	

SDD (N=0)	N	%
Topical	0	0.0
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	127	61.1
Transferred to same hospital	71	34.1
Transferred to other hospital	10	4.8
Discharged home	0	0.0
Disch. terminally ill	0	0.0
Missing	0	

Transferred to (N=81)	N	%
Ward	65	80.2
Other ICU	3	3.7
High dependency care unit	13	16.0
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Reason for transfer to Other ICU (N=3)	N	%
Specialist expertise	0	0.0
Step-up care	0	0.0
Logistical/organizational reasons	2	66.7
Step-down care	1	33.3
Missing	0	

Transferred to Same hospital (N=71)	N	%
Ward	59	83.1
Other ICU	0	0.0
High dependency care unit	12	16.9
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Transferred to Other hospital (N=10)	N	%
Ward	6	60.0
Other ICU	3	30.0
High dependency care unit	1	10.0
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	81	38.9
Dead	127	61.1
Missing	0	

Timing of ICU mortality (N=127)	N	%
Daytime (08:00AM - 07:59PM)	73	57.5
Nigthtime (08:00PM - 07:59AM)	54	42.5
Weekdays (Monday - Friday)	91	71.7
Weekend (Saturday - Sunday)	36	28.3
Missing	0	

Hospital mortality	N	%
Alive	73	35.1
Dead	135	64.9
Missing	0	

Timing of hosp. mortality (N=135)	N	%
In ICU	127	94.1
Within 24 hours after ICU	0	0.0
24-47 hours after ICU	3	2.2
48-71 hours after ICU	0	0.0
72-95 hours after ICU	0	0.0
After 95 hours after ICU	5	3.7
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=8)	
Mean	10.8
SD	10.0
Median	10
Q1−Q3	1−17.8
Missing	0

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

Last hospital mortality	N	%
Alive	73	35.1
Dead	135	64.9
Missing	0	

Stay after ICU (days)	
Alive (N=81)	
Mean	11.8
SD	21.2
Median	7
Q1−Q3	3−11
Missing	0

Hospital stay (days)	
Mean	10.0
SD	23.3
Median	3
Q1−Q3	1−10
Missing	0

Hospital stay (days)	
Alive (N=73)	
Mean	18.0
SD	34.7
Median	9
Q1−Q3	5−14
Missing	0

Hospital stay (days)	
Dead (N=135)	
Mean	5.6
SD	11.7
Median	1
Q1−Q3	1−5.5
Missing	0

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

Patients (N): 32

Sex	N	%
Male	13	40.6
Female	19	59.4
Missing	0	

Age (years)	N	%
17-45	6	18.8
46-65	10	31.2
66-75	8	25.0
>75	8	25.0
Missing	0	
Mean	63.0	
SD	16.0	
Median	66	
Q1−Q3	53−75.5	
Min−Max	23−86	

Body mass Index (BMI)	N	%
Underweight	3	9.4
Normal	10	31.2
Overweight	14	43.8
Obese	5	15.6
Missing	0	

Pregnancy status **Females** (N=19)	N	%
Not fertile	9	47.4
Not pregnant/Unknown	10	52.6
Currently pregnant	0	0.0
Post partum	0	0.0
Missing	0	

Comorbidities	N	%
No	4	12.5
Yes	28	87.5
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	25	78.1
Any tumour without metastasis	4	12.5
Cerebrovascular disease	4	12.5
NYHA class II-III	4	12.5
Peripheral vascular disease	4	12.5
Arrhythmia	3	9.4
Diabetes Type II with insulin treatment	3	9.4
Myocardial infarction	3	9.4
Diabetes Type II without insulin tr.	2	6.2
Asthma	1	3.1
Missing	0	

Stay before ICU (days)	
Mean	7.3
SD	11.2
Median	3
Q1−Q3	1−6.2
Missing	0

Source of admission	N	%
Same hospital	32	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 **Hospital** (N=32)	N	%
Medical ward	2	6.2
Surgical ward	30	93.8
Emergency room	0	0.0
Other ICU	0	0.0
High dependency care unit	0	0.0
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 **Same hospital** (N=32)	N	%
Medical ward	2	6.2
Surgical ward	30	93.8
Emergency room	0	0.0
Other ICU	0	0.0
High dependency care unit	0	0.0
Missing	0	

Ward of admission **Other hospital** (N=0)	N	%
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	

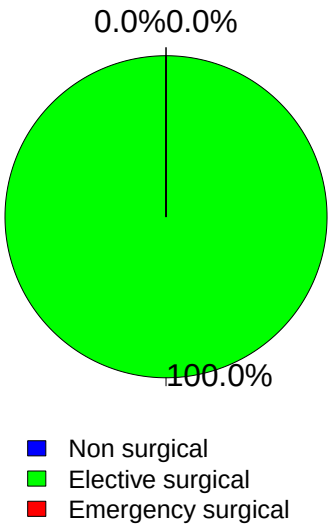
Scheduled admission	N	%
No	15	46.9
Yes	17	53.1
Missing	0	

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

Trauma	N	%
No	29	90.6
Yes	3	9.4
Multiple trauma	0	0.0
Missing	0	

Surgical status	N	%
Non surgical	0	0.0
Elective surgical	32	100.0
Emergency surgical	0	0.0
Missing	0	

Surgical status



Source of admission		
Surgical pts. (N=32)	N	%
Operating theatre of surgical ward	23	71.9
Operating theatre of emergency room	0	0.0
Surgical ward	7	21.9
Other	2	6.2
Missing	0	

Surgical interventions (top 10)		
Elective surgical (N=32)	N	%
Orthopaedic surgery	11	34.4
Other surgery	5	15.6
Gastrointestinal surgery	4	12.5
Peripheral vascular surgery	3	9.4
Hepatic surgery	2	6.2
Nephro/Urological surgery	2	6.2
Abdominal vascular surgery	2	6.2
Neurosurgery	2	6.2
Gynaecological surgery	1	3.1
Thoracic surgery	1	3.1
Missing	0	

Timing		
Elective surgical (N=32)	N	%
From -7 to -3 days	6	18.8
From -2 to -1 days	2	6.2
On ICU admission day	26	81.2
The day after ICU admission	0	0.0
Missing	0	

Surgical interventions (top 10)		
Emergency surgical (N=0)	N	%
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Timing		
Emergency surgical (N=0)	N	%
From -7 to -3 days	0	0.0
From -2 to -1 days	0	0.0
On ICU admission day	0	0.0
The day after ICU admission	0	0.0
Missing	0	

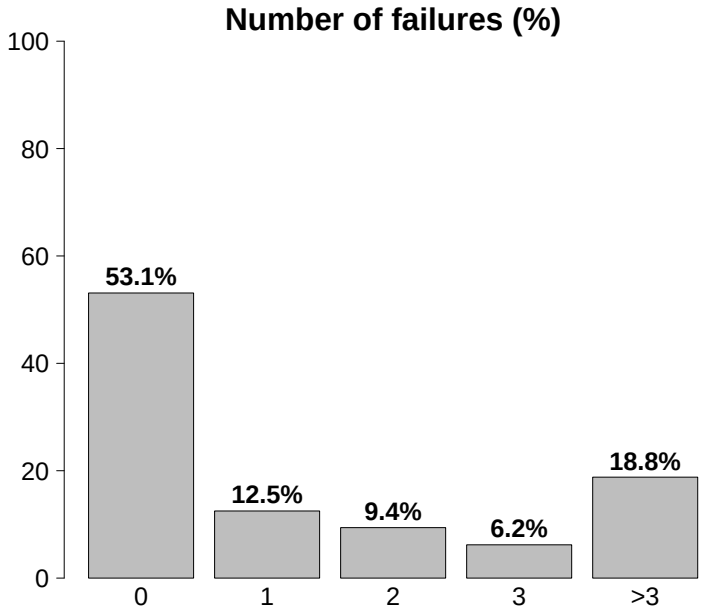
Non surgical interventions	N	%
None	31	96.9
Elective	0	0.0
Emergency	1	3.1
Missing	0	

Non surgical interventions		
Elective (N=0)	N	%
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		
Emergency (N=1)	N	%
Interventional cardiology	1	100.0
Interventional radiology	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	19	59.4
Post surgical weaning	4	12.5
Surgical monitoring	15	46.9
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	13	40.6
Only ventilatory support	4	12.5
Only cardiovascular support	1	3.1
Ventilatory and cardiovascular support	8	25.0
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	



Failures on admission	N	%
No	17	53.1
Yes	15	46.9
A: Respiratory failure	12	37.5
B: Cardiovascular failure	9	28.1
C: Neurological failure	3	9.4
D: Hepatic failure	0	0.0
E: Renal failure	10	31.2
F: Acute skin failure	0	0.0
G: Metabolic failure	7	21.9
H: Coagulation failure	1	3.1
Missing	0	

Failures on admission (top 10)	N	%
ABEG	4	12.5
E	2	6.2
A	1	3.1
AB	1	3.1
ABCEG	1	3.1
ABCGH	1	3.1
ABE	1	3.1
AC	1	3.1
AE	1	3.1
AEG	1	3.1
Missing	0	

Respiratory failure	N	%
None	20	62.5
Only hypoxic failure	2	6.2
Only hypercapnic failure	0	0.0
Hypoxic-hypercapnic failure	3	9.4
Intubation for airway maint.	7	21.9
Missing	0	

Cardiovascular failure	N	%
None	23	71.9
Without shock	1	3.1
Cardiogenic shock	2	6.2
Septic shock	1	3.1
Haemorrhagic/hypovolemic shock	5	15.6
Hypovolemic shock	0	0.0
Anaphylactic shock	0	0.0
Neurogenic shock	0	0.0
Other shock	0	0.0
Mixed shock	0	0.0
Missing	0	

Neurologic failure	N	%
None	24	88.9
Cerebral coma	3	11.1
Metabolic coma	0	0.0
Postanoxic coma	0	0.0
Toxic coma	0	0.0
Missing or not evaluable	5	

Renal failure (AKIN)	N	%
None	22	68.8
Mild	4	12.5
Moderate	1	3.1
Severe	5	15.6
Missing	0	

Metabolic failure	N	%
None	25	78.1
pH <= 7.3, PaCO2 < 45 mmHg	2	6.2
Base deficit >= 5 mmol/L, lactate >1.5x	5	15.6
Missing	0	

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

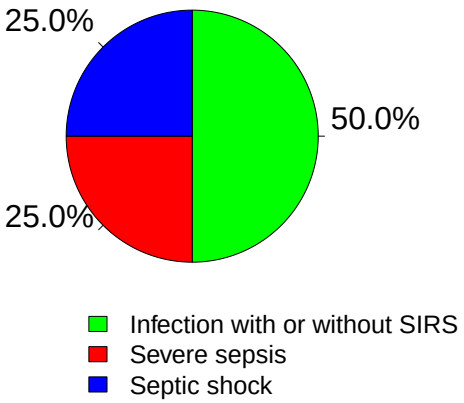
Clinical conditions on admission	N	%
Respiratory	1	3.1
Acute asthma/bronchospasm	1	3.1
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Cardiovascular	7	21.9
Cardiac arrest	3	9.4
Acute severe arrhythmia: tachycardias	2	6.2
Systemic hypertensive crisis	1	3.1
Left heart failure with pulmonary edema	1	3.1
Acute myocardial infarction	1	3.1
Neurological	3	9.4
Cerebral artery stroke	2	6.2
Brain tumour	1	3.1
Spontaneous Subarachnoid haemorrhage	1	3.1
-	0	0.0
-	0	0.0
Gastrointestinal and hepatic	5	15.6
Digestive tract malignancy	4	12.5
Hepatic malignancy	2	6.2
-	0	0.0
-	0	0.0
-	0	0.0
Trauma (anatomical districts)	3	9.4
Pelvis/bone/joint & muscle	3	9.4
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Other	13	40.6
Other disease	6	18.8
Orthopaedic disease	4	12.5
Nephro-urologic disease	2	6.2
Coagulation disorder	1	3.1
Other skin and/or soft tissue pathology	1	3.1
Post transplantation	0	0.0
-	0	0.0
-	0	0.0
Infections	4	12.5
Post-surgical bone and joint infection	1	3.1
Clinical sepsis	1	3.1
Orthopaedic prosthesis infection	1	3.1
NON-surgical secondary peritonitis	1	3.1
-	0	0.0
-	0	0.0
-	0	0.0
-	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	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Chest	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Abdomen	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Pelvis/bone/joint & muscle	3	9.4
Long bone fracture	3	9.4
-	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	28	87.5
Infection with or without SIRS	2	6.2
Severe sepsis	1	3.1
Septic shock	1	3.1
Missing	0	

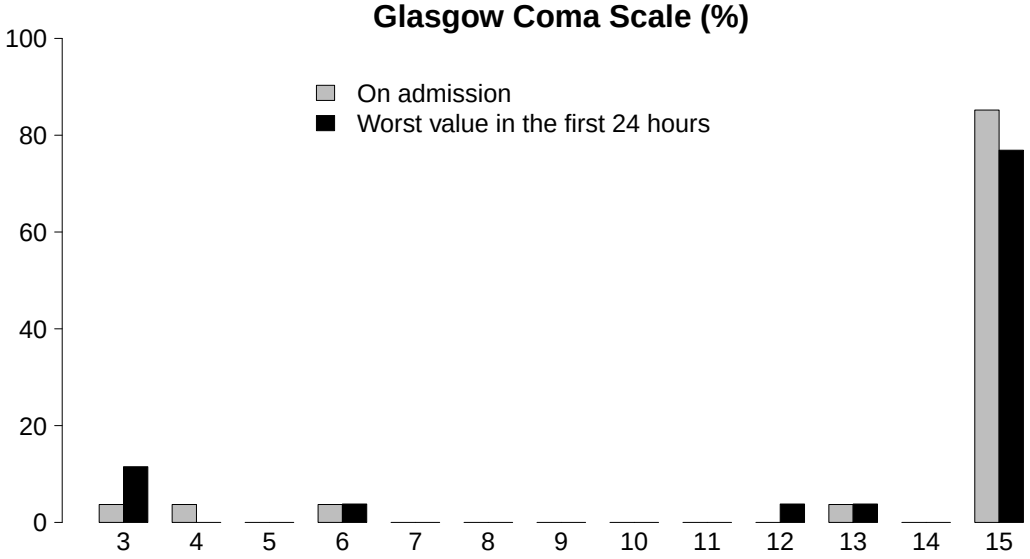
Infection severity on admission

Patients infected (N=4)



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

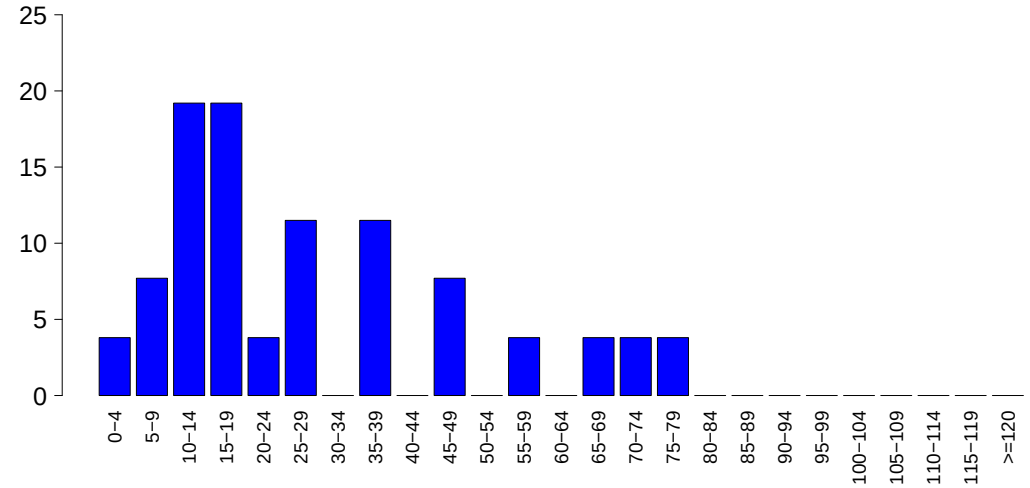
Glasgow Coma Scale (%)



GCS (admission)	
Median	15
Q1−Q3	15−15
Not evaluable	5
Missing	0

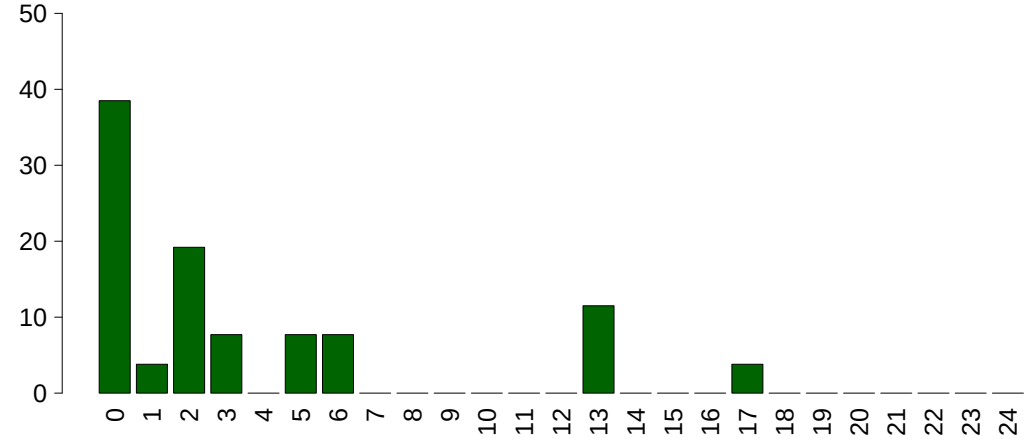
GCS (first 24 hours)	
Median	15
Q1−Q3	15−15
Not evaluable	6
Missing	0

SAPS II (%)



SAPSII	
Mean	28.4
SD	21.1
Median	20.5
Q1−Q3	13−37.5
Not evaluable	6
Missing	0

SOFA (%)



SOFA	
Mean	3.7
SD	4.9
Median	2
Q1−Q3	0−5
Not evaluable	6
Missing	0

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

Complications during the stay	N	%
No	23	71.9
Yes	9	28.1
Missing	0	

Failures during the stay	N	%
No	29	90.6
Yes	3	9.4
A: Respiratory failure	0	0.0
B: Cardiovascular failure	3	9.4
C: Neurological failure	0	0.0
D: Hepatic failure	1	3.1
E: Renal failure (AKIN)	2	6.2
F: Acute skin failure	0	0.0
G: Metabolic failure	0	0.0
H: Coagulation failure	0	0.0
Missing	0	

Failures during the stay (top 10)	N	%
BE	2	6.2
BD	1	3.1
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Respiratory failure occured	N	%
None	32	100.0
Intubation for airway maint.	0	0.0
Hypoxic failure	0	0.0
Hypercapnic failure	0	0.0
Missing	0	

Cardiovascular failure occured	N	%
None	29	90.6
Cardiogenic shock	2	6.2
Hypovolemic shock	0	0.0
Haemorrhagic/hypovolemic shock	0	0.0
Septic shock	1	3.1
Anaphylactic shock	0	0.0
Neurogenic shock	0	0.0
Other shock	0	0.0
Missing	0	

Neurological failure occured	N	%
None	32	100.0
Cerebral coma	0	0.0
Metabolic coma	0	0.0
Postanoxic coma	0	0.0
Missing	0	

Renal failure occured (AKIN)	N	%
None	30	93.8
Mild	0	0.0
Moderate	0	0.0
Severe	2	6.2
Missing	0	

Complications during the stay	N	%
Respiratory	2	6.2
Atelectasis	1	3.1
Pneumothorax/Pneumomediastinum	1	3.1
-	0	0.0
-	0	0.0
-	0	0.0
Cardiovascular	6	18.8
Acute severe arrhythmia: bradycardias	4	12.5
Cardiac arrest	4	12.5
Hypertensive crisis	1	3.1
Acute myocardial infarction	1	3.1
Acute severe arrhythmia: tachycardias	1	3.1
Neurological	1	3.1
Drowsiness/agitation/delirium	1	3.1
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Gastrointestinal and hepatic	3	9.4
Intrabdominal bleeding	2	6.2
Gastrointestinal bleeding: upper tract	1	3.1
Liver Dysfunction Syndrome	1	3.1
-	0	0.0
-	0	0.0
Other	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Infections	1	3.1
NON-surgical secondary peritonitis	1	3.1
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
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	%
None	28	87.5
Only on admission	3	9.4
On admission and during ICU stay	1	3.1
Only during ICU stay	0	0.0
Missing	0	

Maximum severity of infection	N	%
None	28	87.5
Infection with or without SIRS	2	6.2
Severe sepsis	0	0.0
Septic shock	2	6.2
Missing	0	

Severity evolution		**During the stay**				
	N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock	TOT
Admission	None	28 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	28
	Infection with or without SIRS	-	2 (100.0%)	0 (0.0%)	0 (0.0%)	2
	Severe sepsis	-	-	0 (0.0%)	1 (100.0%)	1
	Septic shock	-	-	-	1 (100.0%)	1
	TOT	28	2	0	2	32

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)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	29	90.6										
Invasive ventilation	16	50.0	11	34.4	3	9.4						
Non invasive ventilation	7	21.9	3	9.4	4	12.5						
Tracheostomy	0	0.0										
iNO (inhaled nitric oxide)	0	0.0										
Central Venous Catheter	12	37.5	2	6.2	6	18.8						
PICC	0	0.0										
Arterial Catheter	16	50.0	6	18.8	5	15.6						
Vasoactive drugs	10	31.2	5	15.6	3	9.4						
Antiarrhythmics	4	12.5	3	9.4	3	9.4						
IABP	0	0.0										
Invasive monitoring of C.O.	0	0.0										
Continous monitoring of ScVO2	6	18.8	0	0	0	0						
Temporary pacing	0	0.0										
Ventricular assistance	0	0.0										
DC-shock	2	6.2										
CPR	3	9.4										
Massive blood transfusion	1	3.1										
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	1	3.1	0	0	1	3.1						
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)	0	0.0										
Hypothermia	1	3.1										
Enteral nutrition	6	18.8	2	6.2	2	6.2						
Parenteral nutrition	6	18.8	3	9.4	6	18.8						
SDD (Topical, Topical and systemic)	0	0.0										
Patient restraint	0	0.0										
Peridural catheter	2	6.2	1	3.1	1	3.1						
Electrical cardioversion	0	0.0										
Vacuum therapy	0	0.0										
Antibiotics	11	34.4										
Antibiotics for surgical prophylaxis	9	28.1	4	12.5	6	18.8						
Antibiotics for medical prophylaxis	0	0.0										
Empirical antibiotic therapy	1	3.1	0	0	1	3.1						
Targeted antibiotic therapy	1	3.1	1	3.1	1	3.1						

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

Invasive ventilation (N=16)	N	%
Due to pulmonary failure	5	31.2
For airway mainteinance	7	43.8
In weaning	4	25.0
Not evaluable	0	0.0
Reintubation within 48 hours	0	0.0

Non invasive ventilation (N=7)	N	%
Non invasive ventilation only	5	71.4
Non invasive ventilation failed	1	14.3
For weaning	1	14.3
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=0)	N	%
Swan Ganz	0	0.0
PICCO	0	0.0
LIDCO	0	0.0
Vigileo-PRAM	0	0.0
Other	0	0.0
Missing	0	

SDD (N=0)	N	%
Topical	0	0.0
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	9	28.1
Transferred to same hospital	22	68.8
Transferred to other hospital	1	3.1
Discharged home	0	0.0
Disch. terminally ill	0	0.0
Missing	0	

Transferred to (N=23)	N	%
Ward	18	78.3
Other ICU	0	0.0
High dependency care unit	5	21.7
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

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

Transferred to Same hospital (N=22)	N	%
Ward	18	81.8
Other ICU	0	0.0
High dependency care unit	4	18.2
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	0	0.0
High dependency care unit	1	100.0
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

ICU mortality	N	%
Alive	23	71.9
Dead	9	28.1
Missing	0	

Timing of ICU mortality (N=9)	N	%
Daytime (08:00AM - 07:59PM)	6	66.7
Nigthtime (08:00PM - 07:59AM)	3	33.3
Weekdays (Monday - Friday)	8	88.9
Weekend (Saturday - Sunday)	1	11.1
Missing	0	

Hospital mortality	N	%
Alive	23	71.9
Dead	9	28.1
Missing	0	

Timing of hosp. mortality (N=9)	N	%
In ICU	9	100.0
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	0	0.0
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=0)	
Mean	
SD	
Median	
Q1−Q3	
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	23	71.9
Dead	9	28.1
Missing	0	

Stay after ICU (days) **Alive** (N=23)	
Mean	12.7
SD	16.7
Median	8
Q1−Q3	4−13.5
Missing	0

Hospital stay (days)	
Mean	17.1
SD	24.2
Median	9.5
Q1−Q3	5.8−16.5
Missing	0

Hospital stay (days) **Alive** (N=23)	
Mean	21.0
SD	27.4
Median	12
Q1−Q3	6−21
Missing	0

Hospital stay (days) **Dead** (N=9)	
Mean	7.2
SD	6.9
Median	6
Q1−Q3	2−8
Missing	0

National report - **Year 2015**
Characteristics on admission - Pediatric patients evaluated with PIM 3

Patients (N): 25

Sex	N	%
Male	12	48.0
Female	13	52.0
Missing	0	

Age	N	%
Newborn (0-4 weeks)	0	0.0
1-6 months	0	0.0
6-12 months	0	0.0
12-24 months	1	4.0
2-4 years	6	24.0
5-8 years	7	28.0
9-16 years	11	44.0
Missing	0	
Mean	9.0	
SD	5.5	
Median	7	
Q1−Q3	4−15	
Min−Max	1−16	

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

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

Comorbidities	N	%
No	22	88.0
Yes	3	12.0
Missing	0	

Comorbidities (top 10)	N	%
Asthma	2	8.0
Any tumour without metastasis	1	4.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Previous ICU admissions	N	%
None	23	92.0
<=2	2	8.0
>2	0	0.0
Unknown	0	0.0
Missing	0	

Previous ICU admissions (N=2)	N	%
Paediatric	2	100.0
Neonatal	0	0.0
General - adult	0	0.0
Other/Unknown	0	0.0
Missing	0	

Stay before ICU (days)	
Mean	1.2
SD	5.2
Median	0
Q1−Q3	0−0
Missing	0

Source of admission	N	%
Same hospital	20	80.0
Other hospital	4	16.0
Long-term chronic care hospital	0	0.0
Directly from the community	1	4.0
Missing	0	

Ward of admission		
Hospital (N=24)	N	%
Medical ward	0	0.0
Surgical ward	5	20.8
Emergency room	16	66.7
Other ICU	1	4.2
High dependency care unit	1	4.2
Neonatology	1	4.2
Missing	0	

Reason for transfer from		
Other ICU (N=1)	N	%
Specialist expertise	0	0.0
Step-up care	1	100.0
Logistical/organizational reasons	0	0.0
Step-down care	0	0.0
Missing	0	

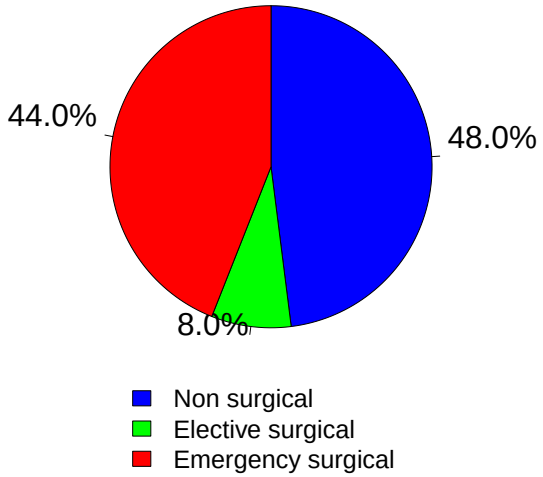
Scheduled admission	N	%
No	25	100.0
Yes	0	0.0
Missing	0	

National report - **Year 2015**
Characteristics on admission - Pediatric patients evaluated with PIM 3

Trauma	N	%
No	5	20.0
Yes	20	80.0
Multiple trauma	4	16.0
Missing	0	

Surgical status	N	%
Non surgical	12	48.0
Elective surgical	2	8.0
Emergency surgical	11	44.0
Missing	0	

Surgical status



Source of admission **Surgical pts.** (N=13)	N	%
Operating theatre of surgical ward	3	23.1
Operating theatre of emergency room	4	30.8
Surgical ward	0	0.0
Other	6	46.2
Missing	0	

Surgical interventions (top 10) **Elective surgical** (N=2)	N	%
ENT surgery	1	50.0
Neurosurgery	1	50.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Timing **Elective surgical** (N=2)	N	%
From -7 to -3 days	0	0.0
From -2 to -1 days	0	0.0
On ICU admission day	1	50.0
The day after ICU admission	1	50.0
Missing	0	

Surgical interventions (top 10) **Emergency surgical** (N=11)	N	%
Maxillo-Facial surgery	3	27.3
Orthopaedic surgery	3	27.3
Other surgery	3	27.3
Splenectomy	2	18.2
Obstetric surgery	1	9.1
Neurosurgery	1	9.1
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Timing **Emergency surgical** (N=11)	N	%
From -7 to -3 days	0	0.0
From -2 to -1 days	1	9.1
On ICU admission day	10	90.9
The day after ICU admission	2	18.2
Missing	0	

Non surgical interventions	N	%
None	24	96.0
Elective	1	4.0
Emergency	0	0.0
Missing	0	

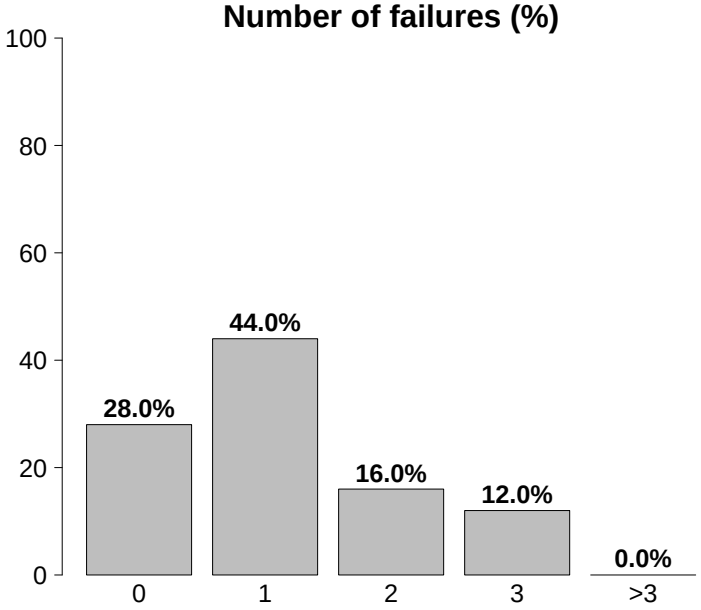
Non surgical interventions **Elective** (N=1)	N	%
Interventional radiology	0	0.0
Interventional cardiology	0	0.0
Interventional neuroradiology	0	0.0
Interventional endoscopy	0	0.0
Therapeutic endoscopy (bronchoscopy excluded)	0	0.0
Therapeutic bronchoscopy	0	0.0
Missing	1	

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

National report - **Year 2015**
Characteristics on admission - Pediatric patients evaluated with PIM 3

Reason for admission	N	%
Monitoring/Weaning	12	48.0
Post surgical weaning	2	8.3
Surgical monitoring	4	16.7
Post interventional weaning	0	0.0
Interventional monitoring	0	0.0
Non surgical monitoring	5	20.8
Missing	1	
Admission for procedures/treatments	0	0.0
Intensive Treatment	13	52.0
Ventilatory support	13	52.0
Cardiovascular support	2	8.0
Metabolic support	0	0.0
Missing	0	
Palliative Sedation	0	0.0
Diagnosis of death/Organ donation	0	0.0
Missing	0	

Number of failures (%)



Failures on admission	N	%
No	7	28.0
Yes	18	72.0
A: Respiratory failure	13	52.0
B: Cardiovascular failure	3	12.0
C: Neurological failure	6	24.0
D: Hepatic failure	5	20.0
E: Renal failure	0	0.0
F: Acute skin failure	0	0.0
G: Metabolic failure	1	4.0
H: Coagulation failure	0	0.0
Missing	0	

Failures on admission (top 10)	N	%
A	6	24.0
C	4	16.0
ABD	2	8.0
AB	1	4.0
AC	1	4.0
ACD	1	4.0
AD	1	4.0
AG	1	4.0
D	1	4.0
-	0	0.0
Missing	0	

Respiratory failure	N	%
None	12	48.0
Only hypoxic failure	3	12.0
Only hypercapnic failure	0	0.0
Hypoxic-hypercapnic failure	0	0.0
Intubation for airway maint.	10	40.0
Missing	0	

Cardiovascular failure	N	%
None	23	92.0
Without shock	0	0.0
Cardiogenic shock	0	0.0
Septic shock	0	0.0
Haemorrhagic/hypovolemic shock	1	4.0
Hypovolemic shock	0	0.0
Anaphylactic shock	0	0.0
Neurogenic shock	0	0.0
Other shock	1	4.0
Mixed shock	0	0.0
Missing	0	

Neurologic failure	N	%
None	19	86.4
Cerebral coma	2	9.1
Metabolic coma	0	0.0
Postanoxic coma	1	4.5
Toxic coma	0	0.0
Missing or not evaluable	3	

Renal failure (RIFLE)	N	%
None	25	100.0
Risk	0	0.0
Injury	0	0.0
Failure	0	0.0
Loss	0	0.0
End-stage renal disease	0	0.0
Missing	0	

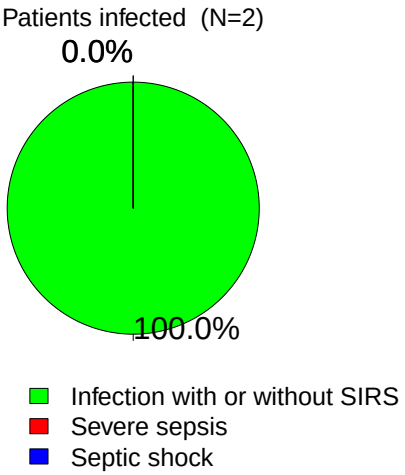
National report - **Year 2015**
Characteristics on admission - Pediatric patients evaluated with PIM 3

Clinical conditions on admission	N	%
Respiratory	2	8.0
Pneumothorax/Pneumomediastinum	1	4.0
Aspiration pneumonia	1	4.0
-	0	0.0
-	0	0.0
-	0	0.0
Cardiovascular	1	4.0
Cardiac arrest	1	4.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Neurological	2	8.0
Seizures	2	8.0
Metabolic/postanoxic encephalopathy	1	4.0
-	0	0.0
-	0	0.0
-	0	0.0
Gastrointestinal and hepatic	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Trauma (anatomical districts)	20	80.0
Head	14	56.0
Chest	4	16.0
Pelvis/bone/joint & muscle	4	16.0
Abdomen	3	12.0
Spine	2	8.0
-	0	0.0
-	0	0.0
Other	4	16.0
Metabolic disorder	1	4.0
Acute intoxication	1	4.0
Other disease	1	4.0
Obstetric disease	1	4.0
-	0	0.0
Post transplantation	0	0.0
-	0	0.0
-	0	0.0
Infections	2	8.0
Catheter-related bacteremia (CR-BSI)	1	4.0
Sinusitis	1	4.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Trauma (anatomical districts)	N	%
Head	14	56.0
Cerebral contusion/laceration	7	28.0
Skull fracture	7	28.0
Maxillofacial fracture	5	20.0
Traumatic subarachnoid haemorrhage	3	12.0
Extradural/epidural haematoma	1	4.0
Spine	2	8.0
Vertebral fracture, without deficit	2	8.0
-	0	0.0
-	0	0.0
Chest	4	16.0
Traum. haemothorax/pneumothorax	2	8.0
Other injuries of the chest	2	8.0
Severe lung contusion/laceration	1	4.0
Abdomen	3	12.0
Spleen: Moderate-Severe laceration	1	4.0
Spleen: Massive rupture	1	4.0
Kidney: Rupture/laceration	1	4.0
Pelvis/bone/joint & muscle	4	16.0
Long bone fracture	2	8.0
Multiple fracture of the pelvis	2	8.0
Very severe or open fracture of the pelvis	1	4.0
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	

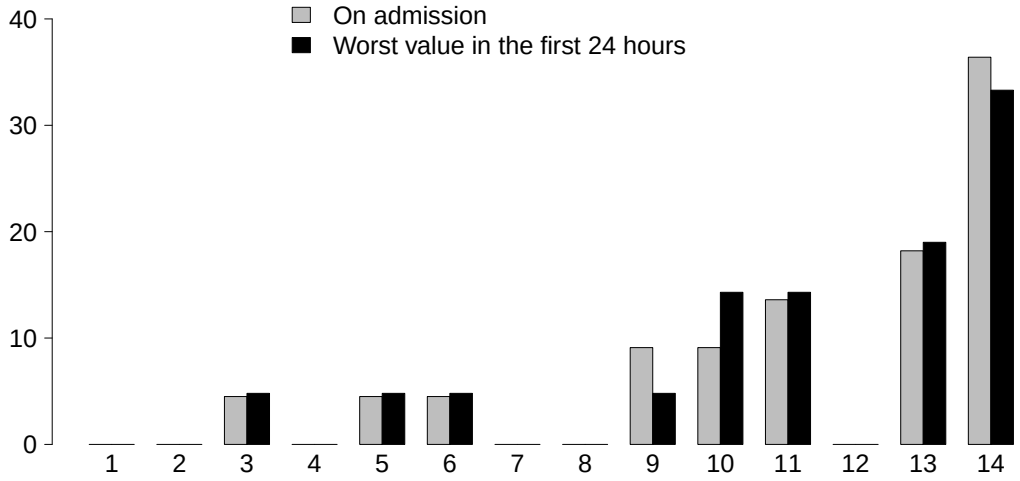
Infection severity on admission	N	%
None	23	92.0
Infection with or without SIRS	2	8.0
Severe sepsis	0	0.0
Septic shock	0	0.0
Missing	0	

Infection severity on admission



National report - **Year 2015**
Severity scores - Pediatric patients evaluated with PIM 3

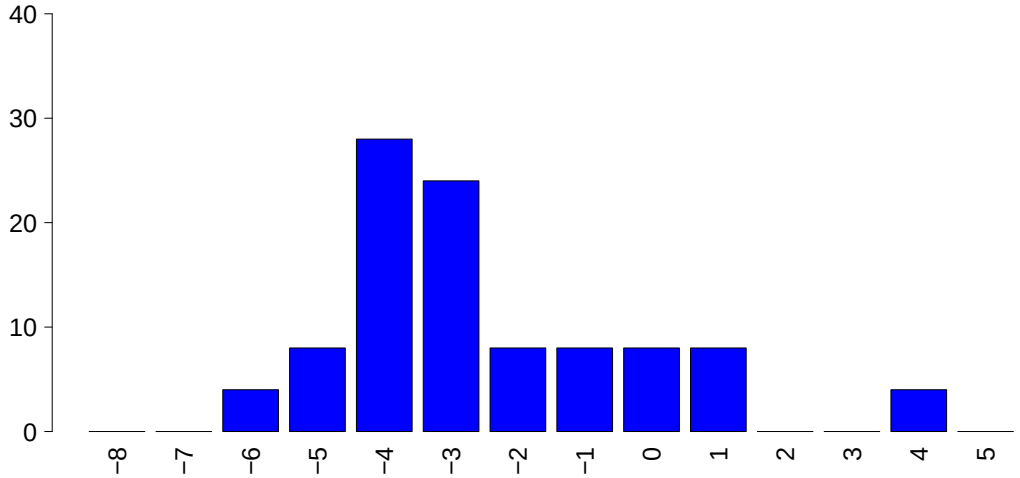
Glasgow Coma Scale (%)



GCS (admission)	
Median	13
Q1−Q3	10−14
Not evaluable	3
Missing	0

GCS (first 24 hours)	
Median	13
Q1−Q3	10−14
Not evaluable	4
Missing	0

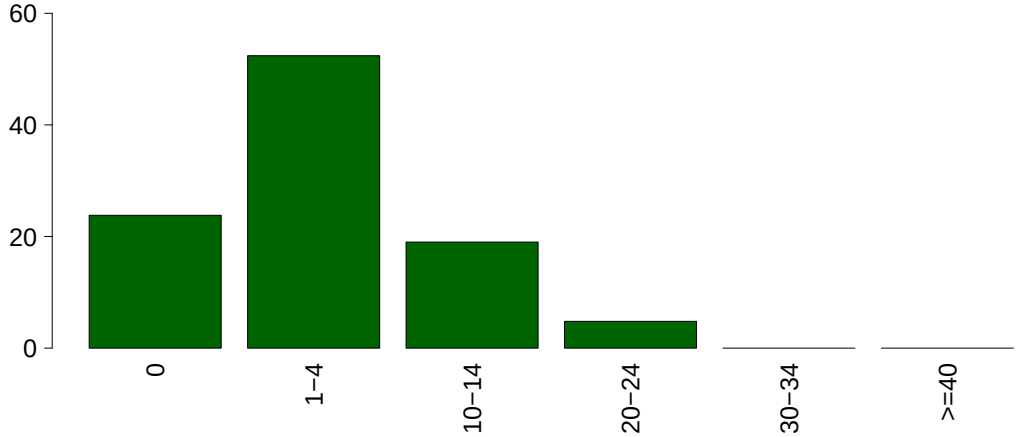
PIM 2 (%)



PIM 2	
Median	-2.9
Q1−Q3	-4.2−-1.2
Not evaluable	0
Missing	0

PIM 3	
Median	-3.1
Q1−Q3	-4.6−-1.6
Not evaluable	0
Missing	0

PELOD (%)



PELOD	
Mean	4.0
SD	5.7
Median	2
Q1−Q3	1−3
Not evaluable	4
Missing	0

National report - **Year 2015**
Characteristics during the stay - Pediatric patients evaluated with PIM 3

Complications during the stay	N	%
No	16	64.0
Yes	9	36.0
Missing	0	

Failures during the stay	N	%
No	25	100.0
Yes	0	0.0
A: Respiratory failure	0	0.0
B: Cardiovascular failure	0	0.0
C: Neurological failure	0	0.0
D: Hepatic failure	0	0.0
E: Renal failure (AKIN)	0	0.0
F: Acute skin failure	0	0.0
G: Metabolic failure	0	0.0
H: Coagulation failure	0	0.0
Missing	0	

Failures during the stay (top 10)	N	%
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Respiratory failure occured	N	%
None	25	100.0
Intubation for airway maint.	0	0.0
Hypoxic failure	0	0.0
Hypercapnic failure	0	0.0
Missing	0	

Cardiovascular failure occured	N	%
None	25	100.0
Cardiogenic shock	0	0.0
Hypovolemic shock	0	0.0
Haemorrhagic/hypovolemic shock	0	0.0
Septic shock	0	0.0
Anaphylactic shock	0	0.0
Neurogenic shock	0	0.0
Other shock	0	0.0
Missing	0	

Neurological failure occured	N	%
None	25	100.0
Cerebral coma	0	0.0
Metabolic coma	0	0.0
Postanoxic coma	0	0.0
Missing	0	

Renal failure occured (AKIN)	N	%
None	25	100.0
Mild	0	0.0
Moderate	0	0.0
Severe	0	0.0
Missing	0	

Complications during the stay	N	%
Respiratory	4	16.0
Upper resp. tract disease	2	8.0
Atelectasis	1	4.0
Pneumothorax/Pneumomediastinum	1	4.0
-	0	0.0
-	0	0.0
Cardiovascular	1	4.0
Cardiac arrest	1	4.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Neurological	6	24.0
Drowsiness/agitation/delirium	3	12.0
Brain edema	2	8.0
Intracranial hypertension	1	4.0
-	0	0.0
-	0	0.0
Gastrointestinal and hepatic	1	4.0
Retroperitoneal bleeding	1	4.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Other	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Infections	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

National report - **Year 2015**
Characteristics during the stay - Pediatric patients evaluated with PIM 3

Infections	N	%
None	23	92.0
Only on admission	2	8.0
On admission and during ICU stay	0	0.0
Only during ICU stay	0	0.0
Missing	0	

Maximum severity of infection	N	%
None	23	92.0
Infection with or without SIRS	2	8.0
Severe sepsis	0	0.0
Septic shock	0	0.0
Missing	0	

Severity evolution		**During the stay**				
	N (R %)	None	Infection with or without SIRS	Severe sepsis	Septic shock	TOT
Admission	None	23 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	23
	Infection with or without SIRS	-	2 (100.0%)	0 (0.0%)	0 (0.0%)	2
	Severe sepsis	-	-	0 (0.0%)	0 (0.0%)	0
	Septic shock	-	-	-	0 (0.0%)	0
	TOT	23	2	0	0	25

Ventil. Associat. Pneumonia (VAP)	N	%
No	25	100.0
Yes	0	0.0
Missing	0	

Catheter Bacteraemia (CR-BSI)	N	%
No	25	100.0
Yes	0	0.0
Missing	0	

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

Estimate	0.0
CI (95%)	0.0−147.6

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

Estimate	0.0
CI (95%)	0.0−111.8

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

Estimate	0.0%
CI (95%)	0.0−118.0

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

Estimate	0.0%
CI (95%)	0.0−134.1

National report - **Year 2015**

Process indicators - Pediatric patients evaluated with PIM 3

Procedures and/or treatments (Missing=0)	Use		On admission		On discharge		Length (days)			Days from admission		
	N	%	N	%	N	%	Median	Q1-Q3	Missing	Median	Q1-Q3	Missing
Procedures (antibiotics excluded)	24	96.0										
Invasive ventilation	16	64.0	8	32	0	0	1	1–1	0	0	0–0	0
Non invasive ventilation	1	4.0	0	0	1	4	4	4–4	0	1	1–1	0
Tracheostomy	0	0.0										
iNO (inhaled nitric oxide)	0	0.0										
Central Venous Catheter	7	28.0	2	8	3	12	5	2–6	0	0	0–0	0
PICC	0	0.0										
Arterial Catheter	8	32.0	2	8	1	4	2	1–4	0	0	0–0	0
Vasoactive drugs	2	8.0	0	0	0	0	2	2–3	0	0	0–0	0
Antiarrhythmics	0	0.0										
IABP	0	0.0										
Invasive monitoring of C.O.	1	4.0	0	0	0	0	1	1–1	0	0	0–0	0
Continous monitoring of ScVO2	4	16.0	0	0	0	0	2	2–3	0	0	0–0	0
Temporary pacing	0	0.0										
Ventricular assistance	0	0.0										
DC-shock	0	0.0										
CPR	1	4.0								0	0–0	0
Massive transfusion	1	4.0								0	0–0	0
ICP monitoring without liquor-drainage	3	12.0	2	8	0	0	1	1–4	0	1	1–1	0
ICP monitoring with liquor-drainage	0	0.0										
External ventricular drainage without ICP	1	4.0	0	0	0	0	2	2–2	0	1	1–1	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)	0	0.0										
Hypothermia	0	0.0										
Enteral nutrition	12	48.0	1	4	11	44	2	1–3	0	1	0–1	0
Parenteral nutrition	2	8.0	0	0	1	4	2	1–2	0	1	1–1	0
SDD (Topical, Topical and systemic)	0	0.0										
Patient restraint	3	12.0										
Diagnostic fibrobronchoscopy	0	0.0										
Surfactant treatment	0	0.0										
Vacuum therapy	0	0.0										
Oxygen therapy	6	24.0	1	4	1	4	1	1–1	0	1	0–1	0
Blood transfusion	2	8.0										
Peritoneal dialysis	0	0.0										
Plasmapheresis	0	0.0										
Thoracic drainage	2	8.0	1	4	0	0	2	1–2	0	0	0–0	0
Peridural catheter	0	0.0										
Urinary catheter	4	16.0	1	4	2	8	2	2–4	0	0	0–0	0
Near-infrared spectroscopy	0	0.0										
Phototherapy	0	0.0										
Electrical cardioversion	0	0.0										
Antibiotics	9	36.0										
Antibiotics for surgical prophylaxis	7	28.0	4	16	3	12	3	0–4	0	0	0–1	0
Antibiotics for medical prophylaxis	3	12.0	1	4	2	8	1	0–3	0	2	1–4	0
Empirical antibiotic therapy	1	4.0	1	4	0	0	1	1–1	0			
Targeted antibiotic therapy	0	0.0										

National report - **Year 2015**
Process indicators - Pediatric patients evaluated with PIM 3

Invasive ventilation (N=16)	N	%	Length (days) Mean	SD	Median	Q1-Q3	Missing
Due to pulmonary failure	3	18.8	0.7	0.6	1	0.5–1	0
For airway mainteinance	10	62.5	3.0	4.4	1	1–3.5	0
In weaning	3	18.8	1.0	0.0	1	1–1	0
Not evaluable	0	0.0					
Reintubation within 48 hours	0	0.0					

Non invasive ventilation (N=1)	N	%
Non invasive ventilation only	0	0.0
Non invasive ventilation failed	0	0.0
For weaning	1	100.0
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	

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

Invasive monitoring of C.O. (N=1)	N	%
Swan Ganz	0	0.0
PICCO	1	100.0
LIDCO	0	0.0
Vigileo-PRAM	0	0.0
Other	0	0.0
Missing	0	

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

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

Surgical interventions	N	%
No	25	100.0
Yes	0	0.0
Missing	0	

Number of surgical interventions	N	%
0	25	100.0
1	0	0.0
2	0	0.0
3	0	0.0
>3	0	0.0
Missing	0	

Surgical interventions Days from admission	
Mean	
SD	
Median	
Q1–Q3	
Missing	0

Surgical interventions (top 10)	N	%
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

Non surgical interventions	N	%
No	25	100.0
Yes	0	0.0
Missing	0	

Non surgical interventions Days from admission	
Mean	
SD	
Median	
Q1–Q3	
Missing	0

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

National report - **Year 2015**
Outcome indicators - Pediatric patients evaluated with PIM 3

ICU outcome	N	%
Dead	1	4.0
Transferred to same hospital	23	92.0
Transferred to other hospital	1	4.0
Discharged home	0	0.0
Disch. terminally ill	0	0.0
Missing	0	

Transferred to (N=24)	N	%
Ward	23	95.8
Other ICU	0	0.0
High dependency care unit	1	4.2
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

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

Transferred to Same hospital (N=23)	N	%
Ward	22	95.7
Other ICU	0	0.0
High dependency care unit	1	4.3
Rehabilitation	0	0.0
Day hospital or Long-term care	0	0.0
Missing	0	

Transferred to Other hospital (N=1)	N	%
Ward	1	100.0
Other ICU	0	0.0
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	24	96.0
Dead	1	4.0
Missing	0	

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

Hospital mortality	N	%
Alive	24	96.0
Dead	1	4.0
Missing	0	

Timing of hosp. mortality (N=1)	N	%
In ICU	1	100.0
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	0	0.0
Missing	0	

Timing of hosp. mortality (days from ICU disch.) Discharged alive from ICU (N=0)	
Mean	
SD	
Median	
Q1−Q3	
Missing	0

National report - **Year 2015**
Outcome indicators - Pediatric patients evaluated with PIM 3

Last hospital mortality	N	%
Alive	24	96.0
Dead	1	4.0
Missing	0	

Expected outcome (N=24)	N	%
Recovery/resolution of acute episode	23	95.8
Palliative care grade 1	1	4.2
Palliative care grade 2	0	0.0
Palliative care grade 3	0	0.0
Palliative care grade 4	0	0.0
Missing	0	

Outcome treatments (N=1)	N	%
NON invasive ventilation	0	0.0
Invasive ventilation	0	0.0
Oxygen therapy	0	0.0
Tracheostomy	0	0.0
Diuretics grugs	0	0.0
Inotropic agents drugs	0	0.0
Antiepileptics drugs	0	0.0
Dialytic therapy	0	0.0
Limb replacement	0	0.0
Nasogastric tube	0	0.0
Ostomies	0	0.0
Home based parenteral nutrition	0	0.0
Motor physiotherapy	1	100.0
Respiratory physiotherapy	0	0.0
Posture	0	0.0
Psychological counselling	1	100.0
Missing	0	

ICU stay (days)	
Mean	3.4
SD	4.7
Median	2
Q1−Q3	1−3
Missing	0

ICU stay (days) **Alive** (N=24)	
Mean	3.5
SD	4.8
Median	2
Q1−Q3	1−3
Missing	0

ICU stay (days) **Dead** (N=1)	
Mean	1.0
SD	
Median	1
Q1−Q3	1−1
Missing	0

Stay after ICU (days) **Alive** (N=24)	
Mean	5.8
SD	5.7
Median	5
Q1−Q3	3−6.2
Missing	0

Hospital stay (days)	
Mean	9.1
SD	7.7
Median	8
Q1−Q3	5−9
Missing	0

Hospital stay (days) **Alive** (N=24)	
Mean	9.3
SD	7.8
Median	8
Q1−Q3	5−9
Missing	0

Hospital stay (days) **Dead** (N=1)	
Mean	3.0
SD	
Median	3
Q1−Q3	3−3
Missing	0

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.

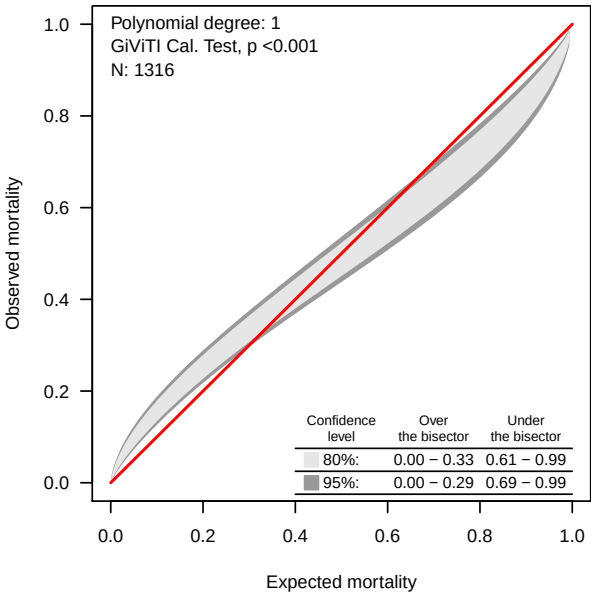
These belts serve as a representation of the validity of the models used to evaluate the performance of each ICU. A model is well calibrated, and thus a useful tool for evaluating individual departments, when the bisector is fully included in the belt. Only when this occurs can a deviation from the bisector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

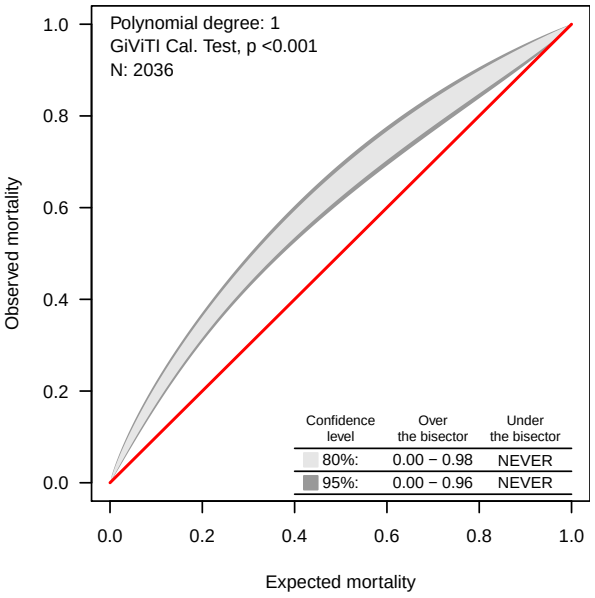
For further informations please look at [PLoS ONE 6(2): e16110].

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

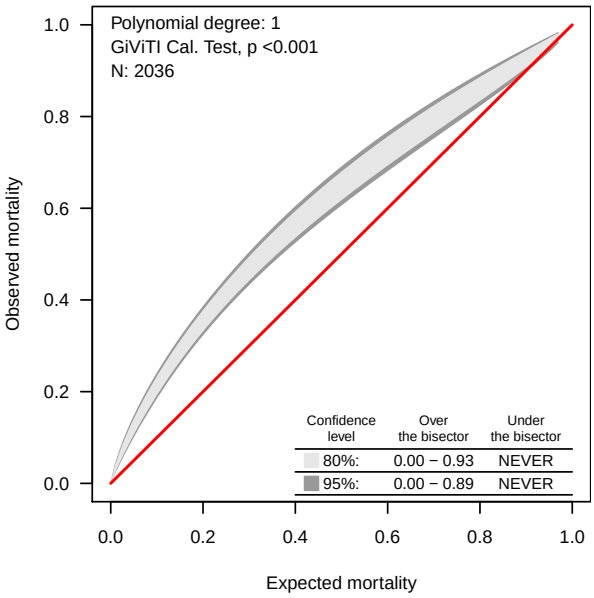
Predictive model: SAPSII (LOS>=24 hours)



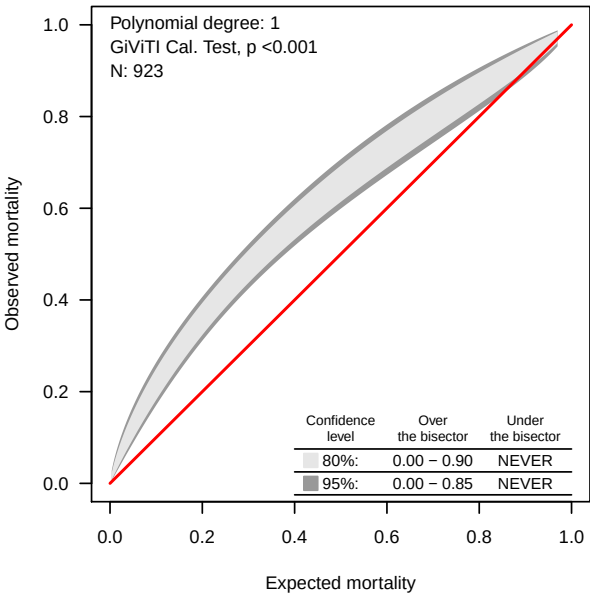
Predictive model: GiViTI 2014 (LOS>=24 hours)



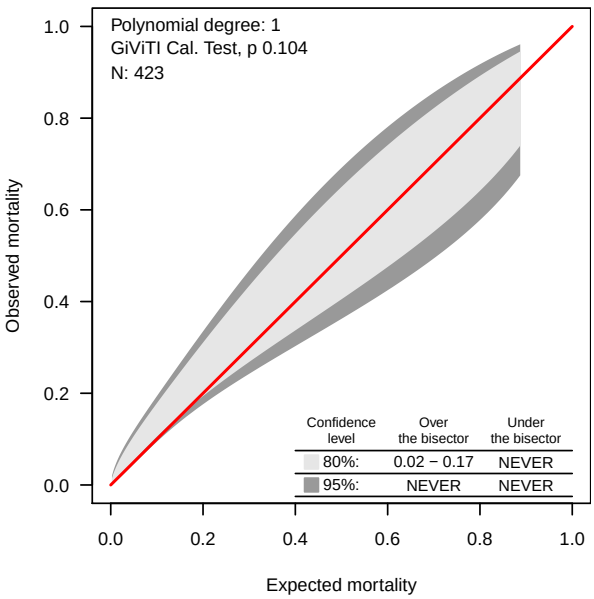
Predictive model: GiViTI 2015 (LOS>=24 hours)



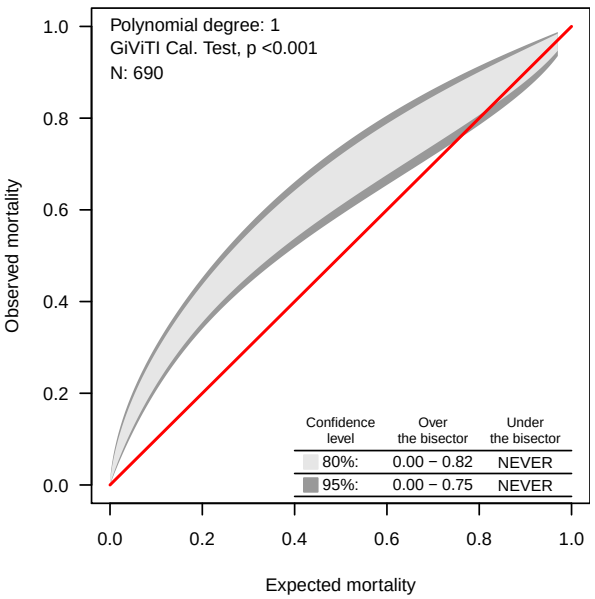
Predictive model: GiViTI 2015 (LOS>=24 hours) Non surgical



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

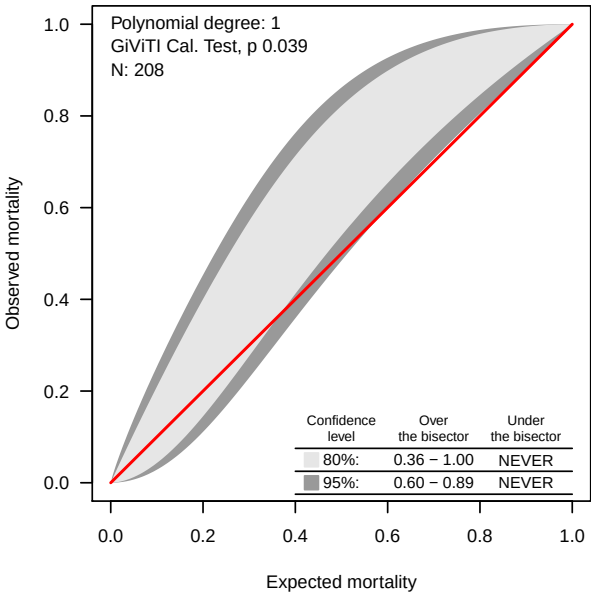


Predictive model: GiViTI 2015 (LOS>=24 hours) Emergency surgical

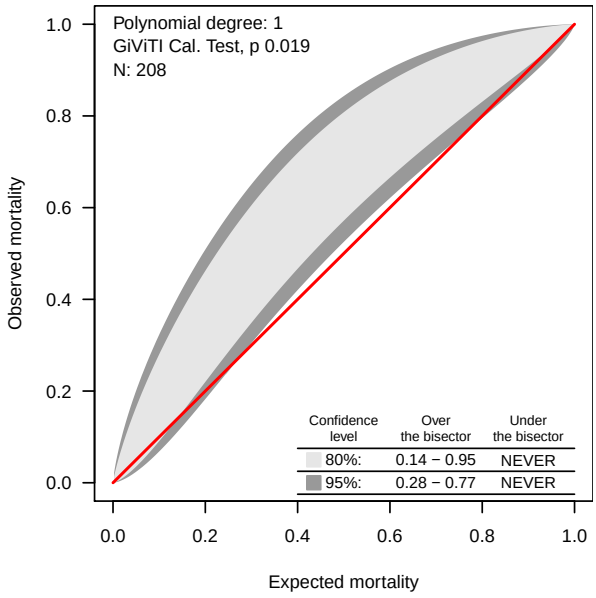


National report - **Year 2015**
Validity of the models - Calibration belts

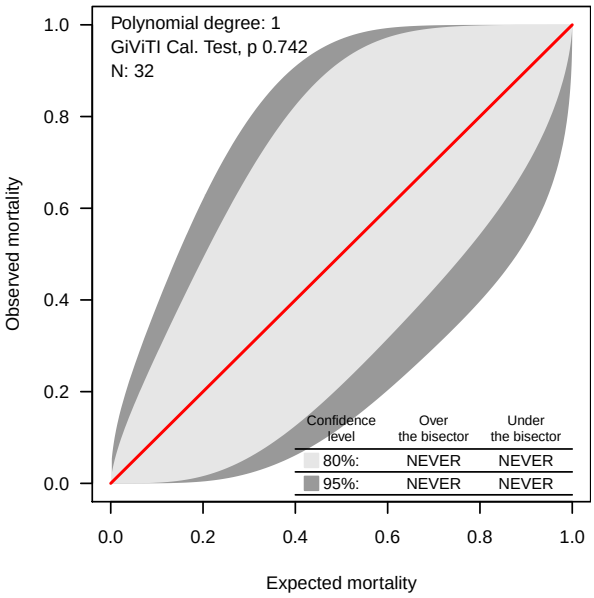
Predictive model: GiViTI 2014 (LOS<24 hours)



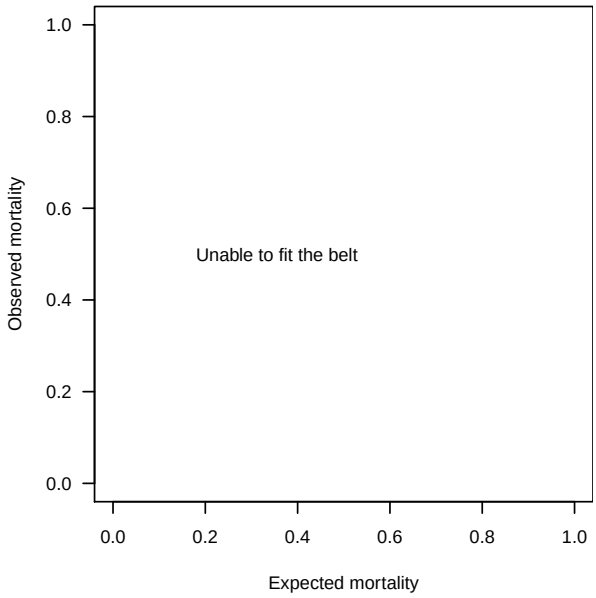
Predictive model: GiViTI 2015 (LOS<24 hours)



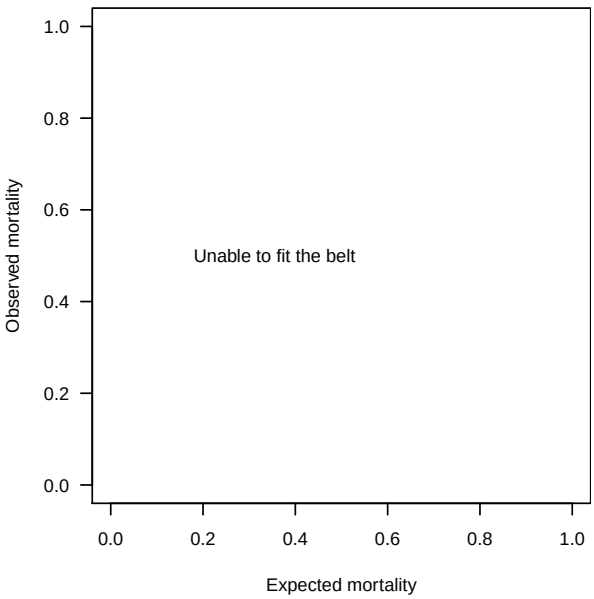
Predictive model: GiViTI 2015 (LOS<24 hours) Elective surgical



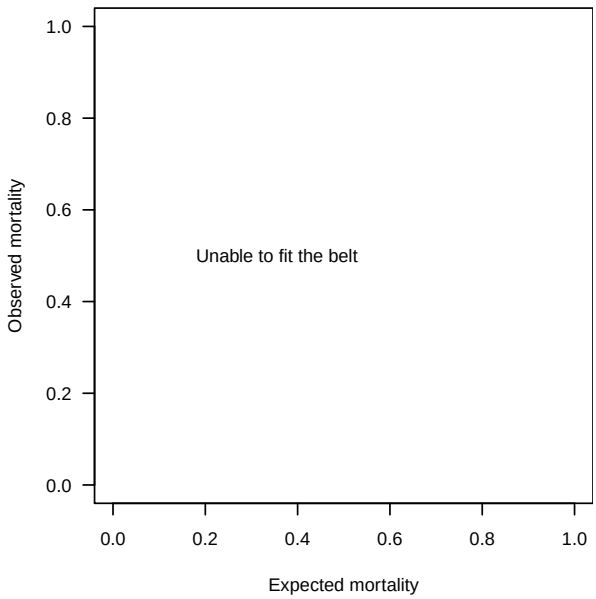
Predictive model : PELOD



Predictive model: PIM2



Predictive model: PIM3



Appendix

Coauthors

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