

GiViTI








Gruppo Italiano per la Valutazione degli Interventi In Terapia Intensiva

**Report
CREACTIVE project**

Year 2015

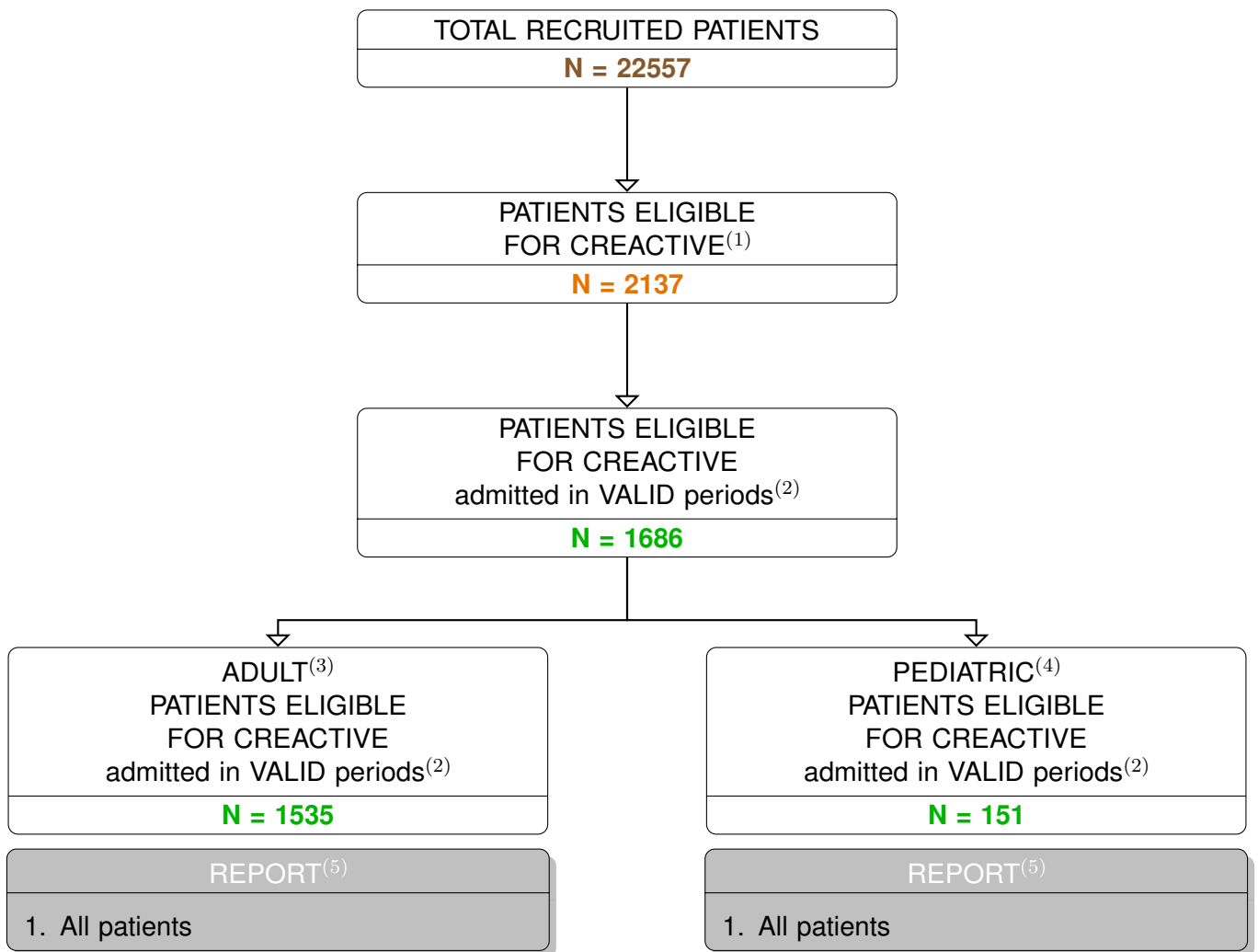
General report (53 ICUs)

General report - Year 2015
Project participation*

Nation	ICUs	Adult Patients	Pediatric Patients	TBI Adult Patients	TBI Pediatric Patients	VALID TBI Adult Patients	VALID TBI Pediatric Patients
 Cyprus	1	791	1	55	0	46	0
 Greece	2	336	127	13	7	11	7
 Hungary	6	2886	35	338	19	253	15
 Israel	1	18	637	0	61	0	61
 Italy	38	15339	934	1347	78	1040	67
 Poland	1	16	0	16	0	16	0
 Slovenia	4	1427	10	201	2	169	1
Total	53	20813	1744	1970	167	1535	151
		22557		2137	1686		

*Only the ICUs providing valid data are included in the analysis.

Overall population with valid data (53 ICUs) - Year 2015
Study flow-chart



(1) Patients with traumatic brain injury are eligible to participate in CReACTIVE (the petal is not activated for patients with maxillofacial fractures only).

(2) Periods are considered VALID when the % of complete data for core and petal are over the thresholds.

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

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

(5) Statistics are only provided for categories of patients composed of at least 5 subjects.

General report - Year 2015

Characteristics on admission - Adult patients

Patients (N): 1535

Sex	N	%
Male	1119	72.9
Female	416	27.1
Missing	0	

Age (years)	N	%
17-45	493	32.1
46-65	425	27.7
66-75	237	15.4
>75	380	24.8
Missing	0	
Mean	56.5	
SD	20.7	
Median	58	
Q1-Q3	40-75	
Min-Max	17-95	

Race	N	%
White European	1374	94.1
White African	7	0.5
Black Afro-american	15	1.0
Asian	10	0.7
Arab	6	0.4
Nomad	1	0.1
Unknown	47	3.2
Missing	75	

Marital status:	N	%
Married	572	37.3
Unmarried / Single	281	18.3
Separated / Divorced	44	2.9
Cohabiting	33	2.2
Widowed	107	7.0
Unknown	495	32.3
Missing	3	

Education level	N	%
No schooling	42	2.7
Primary school/ Elementary school	362	23.6
High school diploma	260	17.0
University degree	50	3.3
Unknown	818	53.4
Missing	3	

Occupational status:	N	%
Worker	400	26.1
Retired	466	30.4
Unemployed / Looking for work	52	3.4
Student	81	5.3
Disabled / Not applicable / Sheltered employment	30	2.0
Unknown	503	32.8
Missing	3	

Body mass Index (BMI)	N	%
Underweight	59	3.9
Normal	791	52.1
Overweight	525	34.6
Obese	143	9.4
Missing	17	

Comorbidities	N	%
No	767	50.0
Yes	768	50.0
Missing	0	

Comorbidities (top 10)	N	%
Hypertension	492	32.1
Arrhythmia	157	10.2
Diabetes Type II without insulin tr.	131	8.5
Antiplatelet therapy	117	7.6
Cerebrovascular disease	116	7.6
Drug-induced coagulopathy	104	6.8
Myocardial infarction	77	5.0
Any tumour without metastasis	64	4.2
Moderate COPD	61	4.0
NYHA class II-III	53	3.5
Missing	0	

Multiple trauma	N	%
No	837	54.5
Yes	698	45.5
Missing	0	

Trauma (anatomical districts)	N	%
Spine	304	19.8
Vertebral fracture, without deficit	268	17.5
Tetraplegia	12	0.8
Cervical injury, incomplete deficit	11	0.7
Chest	448	29.2
Other injuries of the chest	214	13.9
Traum. haemothorax/pneumothorax	183	11.9
Severe lung contusion/laceration	158	10.3
Abdomen	149	9.7
Minor injuries of the abdomen	49	3.2
Spleen: Moderate-Severe laceration	44	2.9
Liver: Moderate-Severe laceration	37	2.4
Pelvis/bone/joint & muscle	324	21.1
Long bone fracture	245	16.0
Multiple fracture of the pelvis	112	7.3
Very severe or open fracture of the pelvis	19	1.2
Major vessels injury	36	2.3
Neck vessels: dissection/transection	10	0.7
Aorta: rupture/dissection	9	0.6
Proximal limbs vessels: transection	8	0.5
Miscellaneous	4	0.3
Inhalation injury	4	0.3
-	0	0.0
Missing	0	

General report - Year 2015

Timing of admission in ICU - Adult patients

Stay before ICU (days)		
Mean	0.6	
SD	3.2	
Median	0	
Q1–Q3	0–0	
Missing	0	

Source of admission	N	%
Same hospital	1268	82.6
Other hospital	266	17.3
Long-term chronic care hospital	0	0.0
Directly from the community	1	0.1
Missing	0	

Ward of admission		
Same hospital (N=1268)	N	%
Medical ward	19	1.5
Surgical ward	183	14.4
Emergency room	1029	81.2
Other ICU	24	1.9
High dependency care unit	13	1.0
Missing	0	

Ward of admission		
Other hospital (N=266)	N	%
Medical ward	7	2.6
Surgical ward	8	3.0
Emergency room	199	74.8
Other ICU	48	18.0
High dependency care unit	4	1.5
Missing	0	

Reason for transfer from		
Other ICU (N=72)	N	%
Specialist expertise	29	40.3
Step-up care	32	44.4
Logistical/organizational reasons	9	12.5
Step-down care	2	2.8
Missing	0	

Access type °		
	N	%
Primary	800	72.3
Secondary	306	27.7
Missing	429	

Time of trauma available		
	N	%
No	327	21.4
Yes	1201	78.6
Missing	7	

Hours between trauma and admission in ICU

Time of trauma available (N=1201)

Mean	10.5
SD	19.7
Median	5
Q1–Q3	3–8
Min–Max	0–169
Missing	0

Hours between trauma and admission in ICU

Time of trauma available - Same hospital (N=990)

Mean	10.3
SD	19.6
Median	4
Q1–Q3	2–8
Min–Max	0–169
Missing	0

Hours between trauma and admission in ICU

Time of trauma available - Other hospital (N=211)

Mean	11.3
SD	20.4
Median	6
Q1–Q3	4–9
Min–Max	1–149
Missing	0

Hours between trauma and admission in ICU

Time of trauma available - Same hospital - Emergency room (N=836)

Mean	7.6
SD	15.1
Median	4
Q1–Q3	2–6.2
Min–Max	0–158
Missing	0

Hours between trauma and admission in ICU

Time of trauma available - Other hospital - Emergency room (N=169)

Mean	6.8
SD	4.9
Median	6
Q1–Q3	4–8
Min–Max	1–27
Missing	0

° This information is not requested in the CRF. It is therefore calculated based on the number of hours elapsing between the trauma event and admission to hospital.

General report - Year 2015

Characteristics of the trauma - Adult patients

Type of traumatic brain injury	N	%
Penetrating	54	3.6
Closed	1450	95.8
Unknown	9	0.6
Missing	22	

Workplace accident	N	%
No	1355	88.7
Yes	119	7.8
Unknown	54	3.5
Missing	7	

Intention	N	%
Accidental	1376	90.1
Self-inflicted injury	45	2.9
Violence	34	2.2
Other	7	0.5
Unknown	66	4.3
Missing	7	

Trauma Dynamics	N	%
High energy impact	567	37.1
Low energy impact	571	37.4
Blunt object	53	3.5
Crush	29	1.9
Blast	3	0.2
Gunshot	20	1.3
Acceleration/deceleration	86	8.2
Unknown	64	4.2
Items from the previous version that cannot be reclassified	203	
Missing	8	

N.B.: this section of the data collection form was modified in May 2015. In this report we have combined the two different data collection forms in order to lose as little information as possible.

General report - Year 2015

Type of trauma - Adult patients

Type of lesion °	N	Alone	With G	With H	With G+H
Diffuse Injury *	171	78	43	23	27
Focal Damage **	1209	545	214	230	220
G: Traumatic subarachnoid haemorrhage	639	107	/	28	/
H: Skull fracture	546	18	28	/	/

Marshall Classification	N	%
Diffuse Injury I (no visible pathology)	26	1.9
(D-II) Diffuse injury II	568	41.3
Diffuse Injury III (edema)	133	9.7
Diffuse Injury IV (shift>5mm)	47	3.4
(5-EML) Evacuated mass lesion	457	33.2
Cerebral contusion/laceration	40	8.8
Extradural/epidural haematoma	83	18.2
Traumatic Subdural haematoma	298	65.2
Traumatic intraparenchymal bleeding	36	7.9
(6-NEML) Not Evacuated mass lesion	145	10.5
Cerebral contusion/laceration	46	31.7
Extradural/epidural haematoma	5	3.4
Traumatic Subdural haematoma	68	46.9
Traumatic intraparenchymal bleeding	26	17.9
Missing	4	

Prevalent lesion: DIFFUSE INJURY (N): 171

Diffuse injury	N	Alone	With G	With H	With G+H
A: Traumatic diffuse injury without oedema	101	50	33	8	10
B: Traumatic diffuse injury with oedema	70	28	10	15	17

Petechiae	N	%	Midline shift>5 mm	N	%	Cistern conditions	N	%
No	57	33.5	No	152	89.4	Normal	119	70.0
Yes	113	66.5	Yes	18	10.6	Compressed or distorted	34	20.0
Missing	1		Missing	1		Absent	17	10.0
						Missing	1	

Presence of focal damage	N	%
No	103	60.6
Yes	67	39.4
Missing	1	

Focal lesion	N	%
Presence of focal damage (N=67)		
Traumatic subdural hematoma	16	23.9
Extradural or epidural hematoma	3	4.5
Contusion and/ or brain laceration	40	59.7
Traumatic intraparenchymal hemorrhage	8	11.9
Missing	0	

Lesion volume > 25ml (N=67)	N	%	Evacuated mass (N=67)	N	%
No	60	89.6	No	63	94.0
Yes	7	10.4	Yes	4	6.0
Missing	0		Missing	0	

° Diffuse injury and focal injury are mutually exclusive. Where both are present, the clinician is requested to select and indicate the prevalent injury.

* Traumatic diffuse injury without oedema, Traumatic diffuse injury with oedema.

** Cerebral contusion/laceration, Extradural/epidural haematoma, Traumatic Subdural haematoma, Traumatic intraparenchymal bleeding.

General report - Year 2015

Type of trauma - Adult patients

Prevalent lesion: FOCAL DAMAGE (N): 1209

Focal damage	N	Alone	With G	With H	With G+H
C: Cerebral contusion/laceration	419	170	79	93	77
D: Extradural/epidural haematoma	120	52	5	42	21
E: Traumatic Subdural haematoma	550	280	101	75	94
F: Traumatic intraparenchymal bleeding	120	43	29	20	28

Lesion volume > 25ml	N	%	Evacuated mass	N	%
No	720	59.7	No	753	62.4
Yes	486	40.3	Yes	453	37.6
Missing	3		Missing	3	

Petechiae	N	%	Midline shift>5 mm	N	%	Cistern conditions	N	%
No	775	64.3	No	734	60.9	Normal	607	50.3
Yes	431	35.7	Yes	472	39.1	Compressed or distorted	520	43.1
Missing	3		Missing	3		Absent	79	6.6
						Missing	3	

FOCAL DAMAGE (prevalent or compresent) (N): 1276

Lesion volume > 25ml	N	%	Evacuated mass	N	%
No	780	61.3	No	816	64.1
Yes	493	38.7	Yes	457	35.9
Missing	3		Missing	3	

Midline shift>5 mm	N	%	Cistern conditions	N	%
No	788	61.9	Normal	648	50.9
Yes	485	38.1	Compressed or distorted	539	42.3
Missing	3		Absent	86	6.8
			Missing	3	

FOCAL DAMAGE (prevalent or compresent) with evacuated mass (N): 457

Lesion volume > 25ml	N	%
No	109	23.9
Yes	348	76.1
Missing	0	

Midline shift>5 mm	N	%
No	98	21.4
Yes	359	78.6
Missing	0	

Cistern conditions	N	%
Normal	90	19.7
Compressed or distorted	324	70.9
Absent	43	9.4
Missing	0	

FOCAL DAMAGE (prevalent or compresent) without evacuated mass (N): 816

Lesion volume > 25ml	N	%
No	671	82.2
Yes	145	17.8
Missing	0	

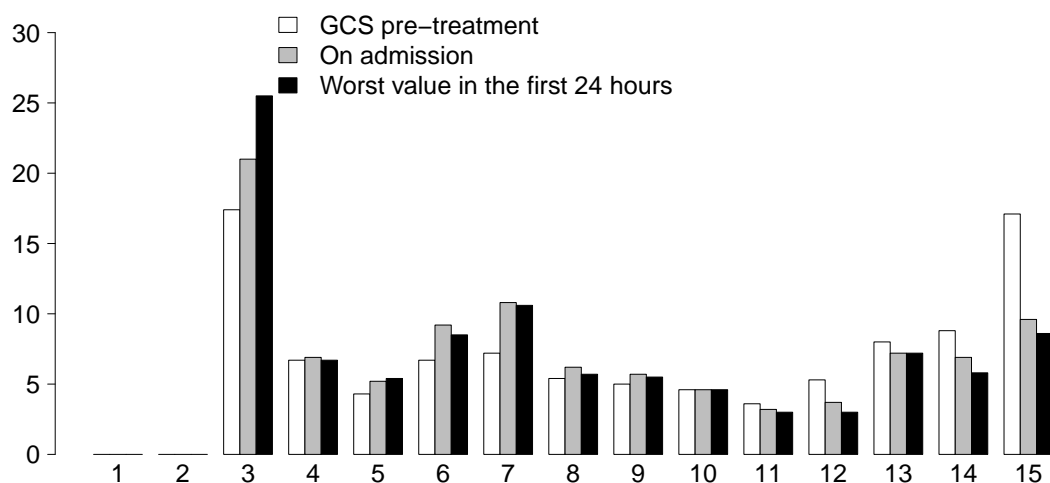
Midline shift>5 mm	N	%
No	690	84.6
Yes	126	15.4
Missing	0	

Cistern conditions	N	%
Normal	558	68.4
Compressed or distorted	215	26.3
Absent	43	5.3
Missing	0	

General report - Year 2015

Glasgow Coma Scale - Adult patients

Glasgow Coma Scale (%)



GCS pre-treatment

Median	9
Q1-Q3	5-14
Missing	6

GCS (admission)

Median	7
Q1-Q3	4-12
Not evaluable	368
Missing	0

Worst GCS (first 24 hours)

Median	7
Q1-Q3	3-11
Not evaluable	438
Missing	0

GCS	GCSPre(N)	GCSPre(%)	GCSAdm(N)	GCSAdm(%)	GCSWorst24(N)	GCSWorst24(%)
3	266	17.4	245	21	280	25.5
4	103	6.7	80	6.9	73	6.7
5	65	4.3	61	5.2	59	5.4
6	102	6.7	107	9.2	93	8.5
7	110	7.2	126	10.8	116	10.6
8	83	5.4	72	6.2	63	5.7
9	76	5.0	66	5.7	60	5.5
10	70	4.6	54	4.6	50	4.6
11	55	3.6	37	3.2	33	3.0
12	81	5.3	43	3.7	33	3.0
13	123	8.0	84	7.2	79	7.2
14	134	8.8	80	6.9	64	5.8
15	261	17.1	112	9.6	94	8.6
Tot	1529	100	1167	100	1097	100
3-8					684	62.4
9-13					255	23.2
14-15					158	14.4

Worst GCS during first 24h: best motor response	N	%
Obeys commands (6)	270	17.6
Localizes pain (5)	313	20.4
Withdraws to pain (4)	150	9.8
Flexion (abnormal) to pain (3)	76	5.0
Extension to pain (2)	77	5.0
None(1)	340	22.1
Not available	309	20.1
Missing	0	

GCS trend in 48h	N	%
Available information (N=1129)		
GCS 3 stable	135	12.0
GCS from 3 to 4-8	41	3.6
GCS from 3 to > 8	18	1.6
GCS from 4-8 to 3	62	5.5
GCS 4-8 stable	161	14.3
GCS from 4-8 to > 8	98	8.7
GCS from > 8 to 3	50	4.4
GCS from > 8 to 4-8	121	10.7
GCS > 8 stable	443	39.2
Missing	0	

General report - Year 2015

Before admission to ICU - Adult patients

Availability of the pre-ICU systolic blood pressure value	N	%
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No	423	27.7
Yes	1105	72.3
Missing	7	

Clinically relevant hypotension	N	%
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No	1219	79.8
Yes	215	14.1
Not available	94	6.2
Missing	7	

(Lowest) systolic blood pressure value		
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Mean	118.6
SD	33.9
Median	120
Q1–Q3	100–140
Min–Max	20–250
Missing	0

Availability of pre-ICU hypoxia value	N	%
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No	449	29.4
Yes	1079	70.6
Missing	7	

Clinically relevant hypoxia	N	%
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No	1069	70.0
Yes	336	22.0
Not available	123	8.0
Missing	7	

(Lowest) peripheral oxygen saturation value		
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Mean	94.0
SD	8.6
Median	96
Q1–Q3	93–99
Min–Max	10–100
Missing	0

Pupils in the emergency room		
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GCS pre < 15 (N=1268)	N	%
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Bilaterally reactive and/or miotic	861	68.0
Unilaterally dilated and non-reactive	222	17.5
Bilaterally dilated and non-reactive	133	10.5
Not assessable	21	1.7
Not available	30	2.4
Missing	1	

Hemoglobin ER (gr/dl)		
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Mean	12.4
SD	2.3
Median	12.8
Q1–Q3	11.1–14
Min–Max	1–20
Not available	195
Missing	7

Blood glucose at ER (mg/dl)		
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Mean	154.4
SD	65.4
Median	144
Q1–Q3	119–180
Min–Max	1–651
Not available	247
Missing	7

General report - Year 2015

Complications in the ICU - Adult patients

Neurological complications during the stay	N	%
No	764	50.0
Yes	764	50.0
A: Intracranial hypertension	421	27.6
B: Intracranial hypertension refractory or intractable	253	16.6
C: At least one episode of dilated pupils unreactive to light	302	19.8
D: Reduction of serum sodium	159	10.4
E: Post-surgical intracranial bleeding	11	0.7
F: Non-surgical intracranial bleeding	23	1.5
G: Seizures	65	4.3
H: Brain edema	161	10.5
I: Drowsiness/agitation/delirium	158	10.3
Missing	7	

Neurological complications during the stay (top 10)	N	%
I	109	7.1
A	76	5.0
ABC	76	5.0
C	64	4.2
D	56	3.7
ABCH	54	3.5
AB	42	2.7
G	30	2.0
AC	20	1.3
ABH	19	1.2
Missing	7	

Other complications during the stay	N	%
Respiratory	234	15.3
Atelectasis	101	6.6
Pleural effusion	77	5.0
Pneumothorax/Pneumomediastinum	35	2.3
Aspiration pneumonia	31	2.0
Upper resp. tract disease	17	1.1
Cardiovascular	179	11.7
Deep venous thrombosis	55	3.6
Acute severe arrhythmia: tachycardias	46	3.0
Cardiac arrest	40	2.6
Acute severe arrhythmia: bradycardias	21	1.4
Hypertensive crisis	20	1.3
Gastrointestinal and hepatic	46	3.0
Paralytic Ileus	17	1.1
Liver Dysfunction Syndrome	8	0.5
Bowel ischaemia	5	0.3
Intrabdominal bleeding	5	0.3
Abdominal compartment syndrome	4	0.3
Other	80	5.2
Metabolic disorder	41	2.7
Other disease	17	1.1
Other skin and/or soft tissue pathology	9	0.6
Nephro-urologic disease	6	0.4
Extremity compartment syndrome (severe)	5	0.3
Blunt cerebral vessels trauma	3	0.2
Fat embolism	3	0.2
Infections	567	37.0
Pneumonia	310	20.2
L.R.T.I. other than pneumonia	140	9.1
NON-surgical urinary tract infection	56	3.7
Catheter-related bacteremia (CR-BSI)	37	2.4
Primary bacteraemia of unknown origin	33	2.2
F.U.O. fever of unknown origin	28	1.8
Upper respiratory tract infection	28	1.8
Clinical sepsis	12	0.8
Sinusitis	12	0.8
Post-surgical skin/soft tissue infection	8	0.5
Missing	1	

General report - Year 2015

Process indicators - Adult patients

ICP monitoring in Core	N	%
No	1090	71.0
Yes	445	29.0
Missing	0	

Neurosurgical operation	N	%
Primary decompressive craniectomy	133	8.8
Secondary decompressive craniectomy	35	2.3
No decompressive craniectomy	1351	88.9
Missing	16	

Hypothermia	N	%
No	1508	98.2
Yes	27	1.8
Missing	0	

External ventricular drainage without ICP monitoring	N	%
No	1513	98.6
Yes	22	1.4
Missing	0	

External ventricular drainage with ICP monitoring	N	%
No	1437	93.6
Yes	98	6.4
Missing	0	

Barbiturate infusion for refractory ICP	N	%
No	1439	94.2
Yes	89	5.8
Missing	7	

Hyperventilation paCO₂<25 mmHg	N	%
No	1431	93.7
Yes	97	6.3
Missing	7	

Indomethacin	N	%
No	1526	99.9
Yes	2	0.1
Missing	7	

Mannitol (multiple doses)	N	%
No	1136	74.4
Yes	391	25.6
Missing	8	

Hypertonic saline	N	%
No	1336	87.6
Yes	189	12.4
Missing	10	

Sedation/analgesia	N	%
No	761	49.9
Yes	765	50.1
Missing	9	

Propofol infusion for refractory ICP	N	%
No	1348	88.3
Yes	179	11.7
Missing	8	

Vasoconstrictor drugs	N	%
Vasoactive drugs in Core (N=828)		
No	277	33.7
Yes	546	66.3
Missing	5	

General report - Year 2015

Outcome - Adult patients

ICU stay (days)

Mean	10.7
SD	11.5
Median	7
Q1–Q3	2–16
Min–Max	1–80
Missing	0

ICU mortality

	N	%
Alive	1185	77.2
Dead	350	22.8
Missing	0	

Hospital stay (days) ^{(1),(2)}

Mean	21.5
SD	25.8
Median	14
Q1–Q3	6–27
Min–Max	0–291
Missing	0

Hospital mortality ^{(1),(3)}

	N	%
Alive	1082	70.6
Dead	451	29.4
Missing	1	

Cause of death ^{(1),(4)}

Dead (N=442)	N	%
MOF	63	15.0
Comorbidities	35	8.3
Cerebral	287	68.2
Hemorrhagic	21	5.0
Not determined	15	3.6
Missing	21	

Outcome at discharge from hospital ^{(1),(5)}

Alive (N=1092)	N	%
Cannot follow simple commands	287	26.4
Can follow simple commands	800	73.6
Missing	5	

Last hospital mortality ⁽¹⁾

	N	%
Alive	1048	68.6
Dead	480	31.4
Missing	6	

(1) Statistics calculated after excluding readmissions (N = 1534).

(2) Days between admission to ICU and discharge from hospital.

(3) Patients discharged in a preterminal condition (N = 9) were calculated among the deceased.

(4) Excluding patients discharged in a preterminal condition.

(5) Including patients discharged in a preterminal condition.

General report - Year 2015

Characteristics on admission - Pediatric patients

Patients (N): 151

Sex	N	%
Male	92	60.9
Female	59	39.1
Missing	0	

Age	N	%
Newborn (0-4 weeks)	0	0.0
1-6 months	10	6.6
6-12 months	4	2.6
12-24 months	10	6.6
2-4 years	32	21.2
5-8 years	25	16.6
9-16 years	70	46.4
Missing	0	
Mean	8.0	
SD	5.7	
Median	8	
Q1–Q3	2.5–14	
Min–Max	0–16	

Race	N	%
White European	53	50.0
White African	8	7.5
Black Afro-american	1	0.9
Asian	5	4.7
Arab	39	36.8
Nomad	0	0.0
Unknown	0	0.0
Missing	45	

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

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

Comorbidities	N	%
No	139	92.1
Yes	12	7.9
Missing	0	

Comorbidities (top 10)	N	%
Asthma	3	2.0
Brain and skull malformations	2	1.3
Coagulation disorder	2	1.3
Congenital heart defect	2	1.3
Genetic diseases	2	1.3
Arrhythmia	1	0.7
Chromosomal anomalies	1	0.7
Encephalopathy	1	0.7
Not congenital valvulopathy	1	0.7
Severe malnutrition	1	0.7
Missing	0	

Multiple trauma	N	%
No	104	68.9
Yes	47	31.1
Missing	0	

Trauma (anatomical districts)	N	%
Spine	10	6.6
Vertebral fracture, without deficit	9	6.0
Tetraplegia	1	0.7
-	0	0.0
Chest	31	20.5
Other injuries of the chest	14	9.3
Severe lung contusion/laceration	11	7.3
Traum. haemothorax/pneumothorax	10	6.6
Abdomen	17	11.3
Minor injuries of the abdomen	7	4.6
Spleen: Moderate-Severe laceration	6	4.0
Liver: Moderate-Severe laceration	4	2.6
Pelvis/bone/joint & muscle	26	17.2
Long bone fracture	21	13.9
Multiple fracture of the pelvis	7	4.6
Massive crush/amputation	2	1.3
Major vessels injury	1	0.7
Neck vessels: dissection/transection	1	0.7
-	0	0.0
-	0	0.0
Miscellaneous	0	0.0
-	0	0.0
-	0	0.0
Missing	0	

General report - Year 2015

Timing of admission in ICU - Pediatric patients

Previous ICU admissions	N	%
None	140	92.7
<=2	6	4.0
>2	0	0.0
Unknown	5	3.3
Missing	0	

Stay before ICU (days)		
Mean	0.2	
SD	0.4	
Median	0	
Q1–Q3	0–0	
Missing	0	

Source of admission	N	%
Same hospital	124	82.1
Other hospital	24	15.9
Long-term chronic care hospital	0	0.0
Directly from the community	3	2.0
Missing	0	

Ward of admission		
Same hospital (N=124)	N	%
Medical ward	0	0.0
Surgical ward	12	9.7
Emergency room	111	89.5
Other ICU	1	0.8
High dependency care unit	0	0.0
Missing	0	

Ward of admission		
Other hospital (N=24)	N	%
Medical ward	1	4.2
Surgical ward	1	4.2
Emergency room	18	75.0
Other ICU	4	16.7
High dependency care unit	0	0.0
Missing	0	

Reason for transfer from		
Other ICU (N=5)	N	%
Specialist expertise	3	60.0
Step-up care	2	40.0
Logistical/organizational reasons	0	0.0
Step-down care	0	0.0
Missing	0	

Access type °	N	%
Primary	89	76.7
Secondary	27	23.3
Missing	35	

Time of trauma available	N	%
No	24	15.9
Yes	127	84.1
Missing	0	

Hours between trauma and admission in ICU

Time of trauma available (N=127)

Mean	6.4
SD	12.0
Median	4
Q1–Q3	3–6
Min–Max	0–96
Missing	0

Hours between trauma and admission in ICU

Time of trauma available - Same hospital (N=102)

Mean	6.5
SD	13.2
Median	3
Q1–Q3	2–5.8
Min–Max	0–96
Missing	0

Hours between trauma and admission in ICU

Time of trauma available - Other hospital (N=22)

Mean	6.9
SD	4.5
Median	5
Q1–Q3	4.2–8
Min–Max	3–23
Missing	0

Hours between trauma and admission in ICU

Time of trauma available - Same hospital - Emergency room (N=92)

Mean	4.0
SD	3.0
Median	3
Q1–Q3	2–5
Min–Max	0–25
Missing	0

Hours between trauma and admission in ICU

Time of trauma available - Other hospital - Emergency room (N=16)

Mean	7.0
SD	5.2
Median	5
Q1–Q3	4–7.5
Min–Max	3–23
Missing	0

° This information is not requested in the CRF. It is therefore calculated based on the number of hours elapsing between the trauma event and admission to hospital.

General report - Year 2015

Characteristics of the trauma - Pediatric patients

Type of traumatic brain injury	N	%
Penetrating	15	10.4
Closed	129	89.6
Unknown	0	0.0
Missing	7	

Workplace accident	N	%
No	150	99.3
Yes	1	0.7
Unknown	0	0.0
Missing	0	

Intention	N	%
Accidental	142	94.0
Self-inflicted injury	0	0.0
Violence	5	3.3
Other	0	0.0
Unknown	4	2.6
Missing	0	

Trauma Dynamics	N	%
High energy impact	54	36.0
Low energy impact	60	40.0
Blunt object	13	8.7
Crush	15	10.0
Blast	3	2.0
Gunshot	0	0.0
Acceleration/deceleration	8	7.0
Unknown	3	2.0
Items from the previous version that cannot be reclassified	10	
Missing	1	

N.B.: this section of the data collection form was modified in May 2015. In this report we have combined the two different data collection forms in order to lose as little information as possible.

General report - Year 2015

Type of trauma - Pediatric patients

Type of lesion °	N	Alone	With G	With H	With G+H
Diffuse Injury *	22	12	3	4	3
Focal Damage **	99	39	5	46	9
G: Traumatic subarachnoid haemorrhage	29	7	/	2	/
H: Skull fracture	85	21	2	/	/

Marshall Classification	N	%
Diffuse Injury I (no visible pathology)	4	3.3
(D-II) Diffuse injury II	62	51.2
Diffuse Injury III (edema)	8	6.6
Diffuse Injury IV (shift>5mm)	10	8.3
(5-EML) Evacuated mass lesion	35	28.9
Cerebral contusion/laceration	2	5.7
Extradural/epidural haematoma	19	54.3
Traumatic Subdural haematoma	13	37.1
Traumatic intraparenchymal bleeding	1	2.9
(6-NEML) Not Evacuated mass lesion	2	1.7
Cerebral contusion/laceration	1	50.0
Extradural/epidural haematoma	0	0.0
Traumatic Subdural haematoma	1	50.0
Traumatic intraparenchymal bleeding	0	0.0
Missing	0	

Prevalent lesion: DIFFUSE INJURY (N): 22

Diffuse injury	N	Alone	With G	With H	With G+H
A: Traumatic diffuse injury without oedema	11	7	1	3	0
B: Traumatic diffuse injury with oedema	11	5	2	1	3

Petechiae	N	%	Midline shift>5 mm	N	%	Cistern conditions	N	%
No	7	31.8	No	17	77.3	Normal	14	63.6
Yes	15	68.2	Yes	5	22.7	Compressed or distorted	2	9.1
Missing	0		Missing	0		Absent	6	27.3
						Missing	0	

Presence of focal damage	N	%
No	14	63.6
Yes	8	36.4
Missing	0	

Focal lesion	N	%
Presence of focal damage (N=8)		
Traumatic subdural hematoma	1	12.5
Extradural or epidural hematoma	0	0.0
Contusion and/ or brain laceration	4	50.0
Traumatic intraparenchymal hemorrhage	3	37.5
Missing	0	

Lesion volume > 25ml §	N	%	Evacuated mass	N	%
(N=4)			(N=8)		
No	4	100.0	No	8	100.0
Yes	0	0.0	Yes	0	0.0
Missing	0		Missing	0	

° Diffuse injury and focal injury are mutually exclusive. Where both are present, the clinician is requested to select and indicate the prevalent injury.

* Traumatic diffuse injury without oedema, Traumatic diffuse injury with oedema.

** Cerebral contusion/laceration, Extradural/epidural haematoma, Traumatic Subdural haematoma, Traumatic intraparenchymal bleeding.

§ Only for > 10 years old.

General report - Year 2015

Type of trauma - Pediatric patients

Prevalent lesion: FOCAL DAMAGE (N): 99

Focal damage	N	Alone	With G	With H	With G+H
C: Cerebral contusion/laceration	31	14	2	14	1
D: Extradural/epidural haematoma	30	12	0	16	2
E: Traumatic Subdural haematoma	36	13	3	15	5
F: Traumatic intraparenchymal bleeding	2	0	0	1	1

Lesion volume > 25ml § (N=38)	N	%
No	27	71.1
Yes	11	28.9
Missing	0	

Evacuated mass	N	%
No	64	64.6
Yes	35	35.4
Missing	0	

Petechiae	N	%
No	61	61.6
Yes	38	38.4
Missing	0	

Midline shift > 5 mm	N	%
No	70	70.7
Yes	29	29.3
Missing	0	

Cistern conditions	N	%
Normal	72	72.7
Compressed or distorted	26	26.3
Absent	1	1.0
Missing	0	

FOCAL DAMAGE (prevalent or compresent) (N): 107

Lesion volume > 25ml § (N=42)	N	%
No	31	73.8
Yes	11	26.2
Missing	0	

Evacuated mass	N	%
No	72	67.3
Yes	35	32.7
Missing	0	

Midline shift > 5 mm	N	%
No	74	69.2
Yes	33	30.8
Missing	0	

Cistern conditions	N	%
Normal	76	71.0
Compressed or distorted	27	25.2
Absent	4	3.7
Missing	0	

FOCAL DAMAGE (prevalent or compresent) with evacuated mass (N): 35

Lesion volume > 25ml § (N=17)	N	%
No	8	47.1
Yes	9	52.9
Missing	0	

FOCAL DAMAGE (prevalent or compresent) without evacuated mass (N): 72

Lesion volume > 25ml § (N=25)	N	%
No	23	92.0
Yes	2	8.0
Missing	0	

Midline shift > 5 mm	N	%
No	12	34.3
Yes	23	65.7
Missing	0	

Midline shift > 5 mm	N	%
No	62	86.1
Yes	10	13.9
Missing	0	

Cistern conditions	N	%
Normal	15	42.9
Compressed or distorted	20	57.1
Absent	0	0.0
Missing	0	

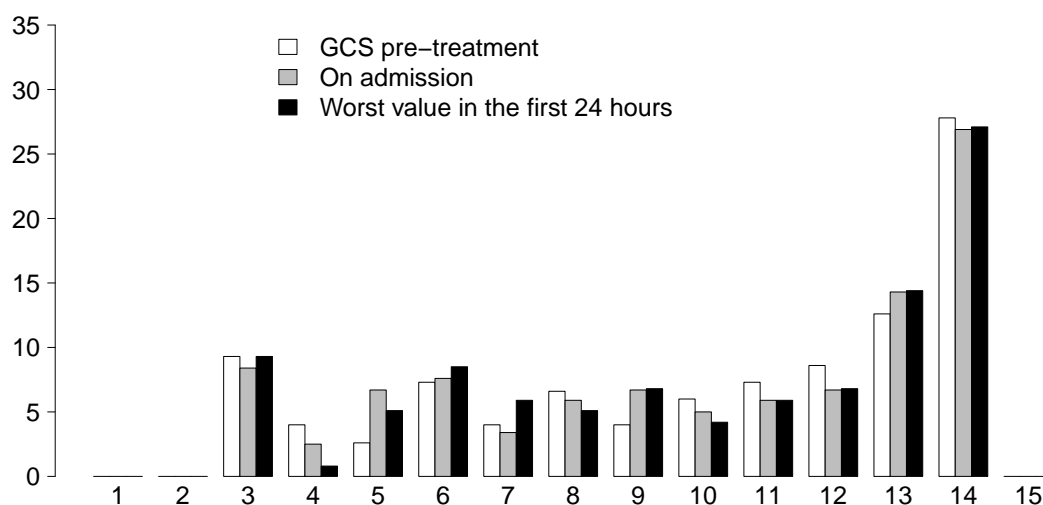
Cistern conditions	N	%
Normal	61	84.7
Compressed or distorted	7	9.7
Absent	4	5.6
Missing	0	

§ Only for > 10 years old.

General report - Year 2015

Glasgow Coma Scale - Pediatric patients

Glasgow Coma Scale (%)



GCS pre-treatment

Median	11
Q1-Q3	7-14
Missing	0

GCS (admission)

Median	11
Q1-Q3	6.5-14
Not evaluable	32
Missing	0

Worst GCS (first 24 hours)

Median	11
Q1-Q3	7-14
Not evaluable	33
Missing	0

GCS	GCSPre(N)	GCSPre(%)	GCSAdm(N)	GCSAdm(%)	GCSWorst24(N)	GCSWorst24(%)
3	14	9.3	10	8.4	11	9.3
4	6	4	3	2.5	1	0.8
5	4	2.6	8	6.7	6	5.1
6	11	7.3	9	7.6	10	8.5
7	6	4	4	3.4	7	5.9
8	10	6.6	7	5.9	6	5.1
9	6	4	8	6.7	8	6.8
10	9	6	6	5	5	4.2
11	11	7.3	7	5.9	7	5.9
12	13	8.6	8	6.7	8	6.8
13	19	12.6	17	14.3	17	14.4
14	42	27.8	32	26.9	32	27.1
15	/	/	/	/	/	/
Tot	151	100	119	100	118	100
3-8					41	34.7
9-13					45	38.1
14					32	27.1

Worst GCS during first 24h: best motor response	N	%
Obeys commands (5)	67	44.4
Localizes pain (4)	28	18.5
Flexion to pain (3)	11	7.3
Extension to pain (2)	1	0.7
None(1)	11	7.3
Not available	33	21.9
Missing	0	

GCS trend in 48h	N	%
Available information (N=129)		
GCS 3 stable	8	6.2
GCS from 3 to 4-8	2	1.6
GCS from 3 to > 8	1	0.8
GCS from 4-8 to 3	2	1.6
GCS 4-8 stable	13	10.1
GCS from 4-8 to > 8	9	7.0
GCS from > 8 to 3	0	0.0
GCS from > 8 to 4-8	3	2.3
GCS > 8 stable	91	70.5
Missing	0	

General report - Year 2015

Before admission to ICU - Pediatric patients

Availability of the pre-ICU systolic blood pressure value	N	%
---	---	---

No	55	36.4
Yes	96	63.6
Missing	0	

Clinically relevant hypotension	N	%
---------------------------------	---	---

No	124	82.1
Yes	24	15.9
Not available	3	2.0
Missing	0	

(Lowest) systolic blood pressure value		
--	--	--

Mean	104.0
SD	22.9
Median	101.5
Q1–Q3	90–120
Min–Max	40–170
Missing	0

Availability of pre-ICU hypoxia value	N	%
---------------------------------------	---	---

No	56	37.1
Yes	95	62.9
Missing	0	

Clinically relevant hypoxia	N	%
-----------------------------	---	---

No	124	82.1
Yes	24	15.9
Not available	3	2.0
Missing	0	

(Lowest) peripheral oxygen saturation value		
---	--	--

Mean	95.2
SD	8.5
Median	98
Q1–Q3	95–99
Min–Max	30–100
Missing	0

Pupils in the emergency room	N	%
------------------------------	---	---

GCS pre < 14 (N=109)	N	%
Bilaterally reactive and/or miotic	68	69.4
Unilaterally dilated and non-reactive	16	16.3
Bilaterally dilated and non-reactive	11	11.2
Not assessable	3	3.1
Not available	0	0.0
Missing	11	

Hemoglobin ER (gr/dl)		
-----------------------	--	--

Mean	11.6
SD	2.0
Median	11.9
Q1–Q3	10.6–12.9
Min–Max	4.5–16.7
Not available	20
Missing	0

Blood glucose at ER (mg/dl)		
-----------------------------	--	--

Mean	157.6
SD	68.9
Median	140
Q1–Q3	114.8–171.5
Min–Max	8–475
Not available	27
Missing	0

General report - Year 2015

Complications in the ICU - Pediatric patients

Neurological complications during the stay	N	%
No	106	70.2
Yes	45	29.8
A: Intracranial hypertension	28	18.5
B: Intracranial hypertension refractory or intractable	18	11.9
C: At least one episode of dilated pupils unreactive to light	11	7.3
D: Reduction of serum sodium	7	4.6
E: Post-surgical intracranial bleeding	1	0.7
F: Non-surgical intracranial bleeding	1	0.7
G: Seizures	8	5.3
H: Brain edema	13	8.6
I: Drowsiness/agitation/delirium	10	6.6
Missing	0	

Neurological complications during the stay (top 10)	N	%
I	9	6.0
ABCH	6	4.0
A	4	2.6
ABC	3	2.0
ABH	3	2.0
AG	3	2.0
AB	2	1.3
ABG	2	1.3
D	2	1.3
G	2	1.3
Missing	0	

Other complications during the stay	N	%
Respiratory	12	7.9
Pneumothorax/Pneumomediastinum	4	2.6
Atelectasis	3	2.0
Upper resp. tract disease	2	1.3
Severe ARDS	1	0.7
Acute asthma/bronchospasm	1	0.7
Cardiovascular	2	1.3
Acute severe arrhythmia: bradycardias	1	0.7
Cardiac arrest	1	0.7
Hypertensive crisis	1	0.7
	0	0.0
	0	0.0
Gastrointestinal and hepatic	3	2.0
Retroperitoneal bleeding	2	1.3
Acute pancreatitis	1	0.7
Intrabdominal bleeding	1	0.7
	0	0.0
	0	0.0
Other	6	4.0
Metabolic disorder	4	2.6
Other disease	3	2.0
	0	0.0
	0	0.0
	0	0.0
	0	0.0
	0	0.0
Infections	16	10.6
Pneumonia	7	4.6
L.R.T.I. other than pneumonia	6	4.0
Catheter-related bacteremia (CR-BSI)	1	0.7
Post-surgical CNS infection	1	0.7
Other fungal infections	1	0.7
Other intra-abdominal infection	1	0.7
NON-surgical secondary peritonitis	1	0.7
Sinusitis	1	0.7
Post-surgical skin/soft tissue infection	1	0.7
	0	0.0
Missing	0	

General report - Year 2015

Process indicators - Pediatric patients

ICP monitoring in Core	N	%
No	114	75.5
Yes	37	24.5
Missing	0	

Neurosurgical operation	N	%
Primary decompressive craniectomy	14	9.3
Secondary decompressive craniectomy	1	0.7
No decompressive craniectomy	135	90.0
Missing	1	

Hypothermia	N	%
No	146	96.7
Yes	5	3.3
Missing	0	

External ventricular drainage without ICP monitoring	N	%
No	150	99.3
Yes	1	0.7
Missing	0	

External ventricular drainage with ICP monitoring	N	%
No	148	98.0
Yes	3	2.0
Missing	0	

Barbiturate infusion for refractory ICP	N	%
No	147	97.4
Yes	4	2.6
Missing	0	

Hyperventilation paCO₂<25 mmHg	N	%
No	144	95.4
Yes	7	4.6
Missing	0	

Indomethacin	N	%
No	150	99.3
Yes	1	0.7
Missing	0	

Mannitol (multiple doses)	N	%
No	127	84.1
Yes	24	15.9
Missing	0	

Hypertonic saline	N	%
No	131	86.8
Yes	20	13.2
Missing	0	

Sedation/analgesia	N	%
No	109	72.2
Yes	42	27.8
Missing	0	

Propofol infusion for refractory ICP	N	%
No	137	90.7
Yes	14	9.3
Missing	0	

Vasoconstrictor drugs	N	%
Vasoactive drugs in Core (N=32)		
No	4	12.5
Yes	28	87.5
Missing	0	

General report - Year 2015**Outcome - Pediatric patients****ICU stay (days)**

Mean	5.9
SD	14.5
Median	2
Q1–Q3	1–5
Min–Max	1–161
Missing	0

ICU mortality

	N	%
Alive	139	92.1
Dead	12	7.9
Missing	0	

Hospital stay (days) ^{(1),(2)}

Mean	12.1
SD	20.2
Median	7
Q1–Q3	4–13
Min–Max	0–202
Missing	0

Hospital mortality ^{(1),(3)}

	N	%
Alive	138	92.0
Dead	12	8.0
Missing	0	

Cause of death ^{(1),(4)}

Dead (N=11)	N	%
MOF	1	9.1
Comorbidities	0	0.0
Cerebral	10	90.9
Hemorrhagic	0	0.0
Not determined	0	0.0
Missing	0	

Outcome at discharge from hospital ^{(1),(5)}

Alive (N=139)	N	%
Cannot follow simple commands	13	9.4
Can follow simple commands	126	90.6
Missing	0	

Last hospital mortality ⁽¹⁾

	N	%
Alive	138	92.0
Dead	12	8.0
Missing	0	

(1) Statistics calculated after excluding readmissions (N = 150).

(2) Days between admission to ICU and discharge from hospital.

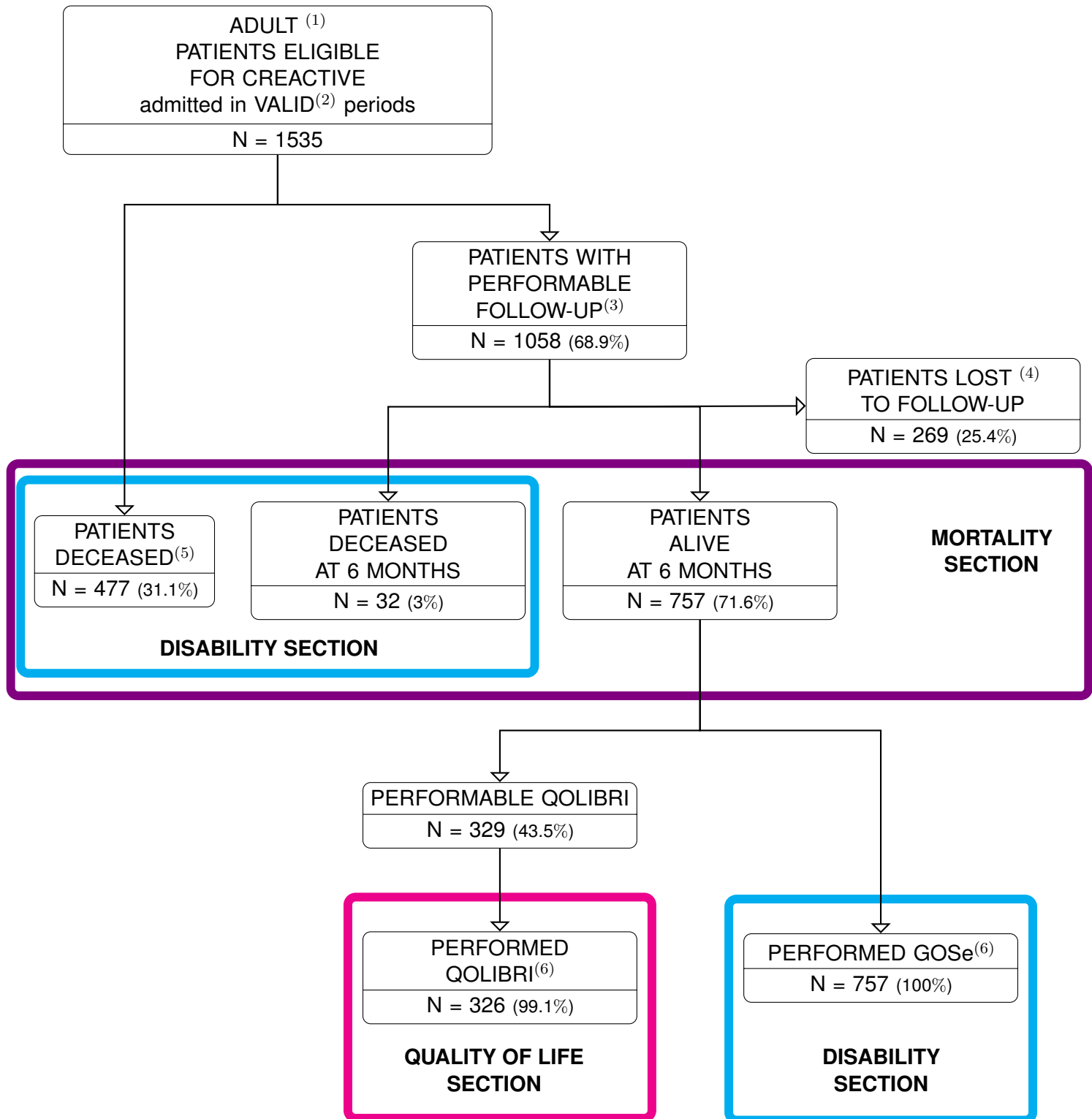
(3) Patients discharged in a preterminal condition (N = 1) were calculated among the deceased.

(4) Excluding patients discharged in a preterminal condition.

(5) Including patients discharged in a preterminal condition.

FOLLOW-UP

Overall population with valid data (52 ICUs) - Year 2015
Follow-up flow-chart



(1) Patients older than 17 years are considered ADULT patients. Follow-up cannot be performed for pediatric patients during 2014.

(2) Periods are considered VALID when the % of complete data for core and petal are over the thresholds.

(3) Patients discharged alive > 6 months from the date of admission.

(4) This also includes patients declining to take part in the follow-up study or who are not contactable.

(5) Patients deceased in ICU or in hospital.

(6) Statistics are presented only for categories of patients represented by at least 5 subjects.

N.B. The % refers to the upper node in the flow chart.

General report - Year 2015

Follow-Up - 'Mortality' section: Mortality for main subgroups of patients

Patients (N): 1266

This section presents the mortality-related statistics.
Each of the tables provided is divided into two parts::

- the **first part** of each table (on the left-hand side, printed in black ink) refers to the ICU and the hospital mortality rates for each patient category.
For example, 12.8% of the 375 patients aged between 17 and 45 years died in the ICU, while 14.2% died in hospital; 38% of the 274 patients aged over 75 years died in the ICU, while 51.1% died in hospital.
This part of the table refers to all **adult CREATIVE patients with valid data**.
- the **second part** of each table (on the right-hand side, printed in purple ink) refers instead to **adult CREATIVE patients with valid data on whom we have 6-month outcome data** (alive or dead). The mortality rate at different time points (irrespective of the place of death - ICU, hospital, home) is shown for these patients: *within 4 days of the trauma event, between 4 and 7 days, between 8 and 30 days, and over 30 days*.
For example, 275 of the valid adult CREATIVE patients are aged between 17 and 45 years: of these, 14.1% died within 4 days of the trauma event, while the remaining 85.9% were still alive at that date. Accordingly, the only patients at risk of dying between 4 and 7 days are the ones still alive at day 4 ($275 \times 0.859 = 236$): 2.2% of these 236 died between 4 and 7 days. At this point, the only patients at risk of dying between 8 and 30 days are the ones who are still alive at day 8 (*i.e.*, $236 \times 0.978 = 231$); 2.7% of these died within 30 days.
Hence, the sum of the percentages in each row does not produce 100%, since the denominator on which the rate is calculated varies for each column. To be precise, it consists of the number of subjects who are still alive at the start of the observation period of each column.

Age	All adult patients (N=1535)			Adult patients with follow-up (N=1266)				
	N	† in ICU(%)	† in H(%)	N	† within 4 days(%)*	† 4-7 days(%)*	† 8-30 days(%)*	† over 30 days(%)*
17-45	493	11.0	12.2	390	7.8	3.4	4.4	0.9
46-65	425	21.9	27.9	348	16.6	7.3	11.3	6.4
66-75	237	23.2	37.1	195	14.9	8.4	19.1	18.7
>75	380	38.9	56.8	333	22.4	16.3	32.6	31.0

Comorbidities	All adult patients (N=1535)			Adult patients with follow-up (N=1266)				
	N	† in ICU(%)	† in H(%)	N	† within 4 days(%)*	† 4-7 days(%)*	† 8-30 days(%)*	† over 30 days(%)*
Yes	768	30.6	44.3	647	18.1	13.0	24.1	20.5
No	767	15.0	18.5	619	12.1	3.9	6.6	3.1

Source of admission	All adult patients (N=1535)			Adult patients with follow-up (N=1266)				
	N	† in ICU(%)	† in H(%)	N	† within 4 days(%)*	† 4-7 days(%)*	† 8-30 days(%)*	† over 30 days(%)*
Same hospital	1268	23.4	32.4	1047	15.9	8.0	15.6	10.1
Other hospital	266	19.5	26.3	218	11.5	9.9	10.4	11.6
Long-term chronic care hospital	0			0				
Directly from the community	1	100.0	100.0	1	0.0	0.0	100.0	

† Mortality (%)

* from TBI

General report - Year 2015

Follow-Up - 'Mortality' section: Mortality for main subgroups of patients

		All adult patients (N=1535)			Adult patients with follow-up (N=1266)				
Type of traumatic brain injury		N	† in ICU(%)	† in H(%)	N	† within 4 days(%)*	† 4-7 days(%)*	† 8-30 days(%)*	† over 30 days(%)*
	Penetrating	15	53.3	60.0	13	53.8	16.7	20.0	0.0
	Crush	15	40.0	46.7	14	21.4	18.2	22.2	14.3
	Blast	0			0				
	Closed	444	22.5	32.0	369	13.6	6.6	18.2	12.0
	Unknown	3	0.0	0.0	3	0.0	0.0	0.0	33.3

		All adult patients (N=1535)			Adult patients with follow-up (N=1266)				
Worst GCS (first 24 hours)		N	† in ICU(%)	† in H(%)	N	† within 4 days(%)*	† 4-7 days(%)*	† 8-30 days(%)*	† over 30 days(%)*
	3-8	684	37.1	46.6	590	24.7	14.3	22.8	12.7
	9-13	255	3.9	10.6	203	1.0	1.5	6.1	9.2
	14-15	158	3.2	5.7	109	0.9	2.8	3.8	2.0
	Not evaluable	438	18.5	29.0	364	11.7	6.3	14.2	11.8

		All adult patients (N=1535)			Adult patients with follow-up (N=1266)				
Worst GCS during first 24h: best motor response		N	† in ICU(%)	† in H(%)	N	† within 4 days(%)*	† 4-7 days(%)*	† 8-30 days(%)*	† over 30 days(%)*
	Obeys commands (6)	270	1.9	5.2	200	0.5	1.5	2.6	3.7
	Localizes pain (5)	313	6.4	14.1	248	2.0	2.1	9.8	9.0
	Withdraws to pain (4)	150	18.7	26.0	120	3.4	7.8	18.9	11.6
	Flexion (abnormal) to pain (3)	76	32.9	40.8	64	17.2	17.0	18.2	5.6
	Extension to pain (2)	77	37.7	50.6	62	19.4	20.0	32.5	22.2
	None(1)	340	57.6	68.3	312	43.2	22.2	33.6	22.0
	Not available	309	15.2	26.8	260	9.0	6.0	13.3	11.6

		All adult patients (N=1535)			Adult patients with follow-up (N=1266)				
GCS trend in 48h		N	† in ICU(%)	† in H(%)	N	† within 4 days(%)*	† 4-7 days(%)*	† 8-30 days(%)*	† over 30 days(%)*
	GCS 3 stable	135	60.7	70.1	129	47.2	19.4	33.3	13.9
	GCS from 3 to 4-8	41	26.8	34.1	32	18.8	11.5	4.3	13.6
	GCS from 3 to > 8	18	0.0	0.0	15	0.0	0.0	0.0	0.0
	GCS from 4-8 to 3	62	79.0	85.5	59	55.9	38.5	56.2	57.1
	GCS 4-8 stable	161	22.4	31.1	127	12.7	11.8	15.5	11.0
	GCS from 4-8 to > 8	98	4.1	9.2	72	1.4	2.9	8.8	3.2
	GCS from > 8 to 3	50	58.0	76.0	46	43.5	34.6	35.3	36.4
	GCS from > 8 to 4-8	121	32.2	42.5	102	9.8	12.0	27.2	16.9
	GCS > 8 stable	443	3.8	9.0	349	0.9	2.3	5.7	6.0

† Mortality (%)

* from TBI

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Follow-Up - 'Mortality' section: Mortality for main subgroups of patients

		All adult patients (N=1535)			Adult patients with follow-up (N=1266)				
Clinically relevant hypotension		N	† in ICU(%)	† in H(%)	N	† within 4 days(%)*	† 4-7 days(%)*	† 8-30 days(%)*	† over 30 days(%)*
		No	1219	19.8	27.7	997	12.0	8.0	12.8
	Yes	215	42.3	51.2	191	31.6	11.5	22.6	10.1
	Not available	94	17.0	33.0	74	13.5	6.2	25.0	11.1

		All adult patients (N=1535)			Adult patients with follow-up (N=1266)				
Clinically relevant hypoxia		N	† in ICU(%)	† in H(%)	N	† within 4 days(%)*	† 4-7 days(%)*	† 8-30 days(%)*	† over 30 days(%)*
		No	1069	21.0	29.5	890	12.3	9.2	12.9
	Yes	336	27.4	34.4	275	22.0	6.2	16.3	7.9
	Not available	123	25.2	38.8	97	20.6	5.2	27.4	15.1

		All adult patients (N=1535)			Adult patients with follow-up (N=1266)				
Pupils in the emergency room		N	† in ICU(%)	† in H(%)	N	† within 4 days(%)*	† 4-7 days(%)*	† 8-30 days(%)*	† over 30 days(%)*
		Bilaterally reactive and/or miotic	862	12.4	21.0	693	6.7	4.7	11.5
	Unilaterally dilated and non-reactive	222	35.6	46.6	192	23.7	12.4	24.4	12.5
	Bilaterally dilated and non-reactive	133	72.2	78.2	126	58.7	40.4	25.8	21.7
	Not assessable	21	28.6	38.1	19	26.3	0.0	14.3	8.3
	Not available	30	16.7	23.3	21	14.3	0.0	11.1	18.8

		All adult patients (N=1535)			Adult patients with follow-up (N=1266)				
Anatomical severity (worst CT within 48 hours of admission)		N	† in ICU(%)	† in H(%)	N	† within 4 days(%)*	† 4-7 days(%)*	† 8-30 days(%)*	† over 30 days(%)*
		Diffuse Injury I (no visible pathology)	26	3.8	7.7	20	0.0	0.0	5.0
	(D-II) Diffuse injury II	568	6.2	11.1	447	2.5	1.4	6.7	6.6
	Diffuse Injury III (edema)	133	30.1	36.4	107	23.4	9.8	14.9	9.5
	Diffuse Injury IV (shift>5mm)	47	42.6	54.3	38	37.8	4.3	36.4	14.3
	(5-EML) Evacuated mass lesion	457	30.6	44.1	393	17.9	15.5	22.1	17.5
	(6-NEML) Not Evacuated mass lesion	145	62.8	77.2	137	43.1	21.8	47.5	31.2

† Mortality (%)

* from TBI

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 Follow-Up - 'Disability' section

Patients (N): 1266

GOSe result :*	All patients (N=1228)		Alive patients (N=719)	
	N	%	N	%
Deceased	509	41.4	-	-
Vegetative state	33	2.7	33	4.6
Severe disability LOWER LEVEL	161	13.1	161	22.4
Severe disability UPPER LEVEL	99	8.1	99	13.8
Moderate disability LOWER LEVEL	54	4.4	54	7.5
Moderate disability UPPER LEVEL	110	9.0	110	15.3
Good recovery LOWER LEVEL	120	9.8	120	16.7
Good recovery UPPER LEVEL	142	11.6	142	19.7

* patients with 'Pre-trauma disability' are not analyzed. N=1228 patients, instead of 1266 are analyzed.

Disability for main subgroups of patients - N (%)

Age (years)	N	Deceased	Vegetative state(%)	Severe disability(%)	Moderate disability(%)	Good recovery(%)
17-45	382	60 (15.7)	10 (2.6)	97 (25.4)	79 (20.7)	136 (35.6)
46-65	332	123 (37)	6 (1.8)	66 (19.9)	57 (17.2)	80 (24.1)
66-75	192	95 (49.5)	9 (4.7)	46 (24)	18 (9.4)	24 (12.5)
>75	322	231 (71.7)	8 (2.5)	51 (15.8)	10 (3.1)	22 (6.8)

Comorbidities	N	Deceased	Vegetative state(%)	Severe disability(%)	Moderate disability(%)	Good recovery(%)
Yes	620	365 (58.9)	19 (3.1)	112 (18.1)	48 (7.7)	76 (12.3)
No	608	144 (23.7)	14 (2.3)	148 (24.3)	116 (19.1)	186 (30.6)

Source of admission	N	Deceased	Vegetative state(%)	Severe disability(%)	Moderate disability(%)	Good recovery(%)
Same hospital	1016	428 (42.1)	24 (2.4)	212 (20.9)	140 (13.8)	212 (20.9)
Other hospital	211	80 (37.9)	9 (4.3)	48 (22.7)	24 (11.4)	50 (23.7)
Long-term chronic care hospital	0	-	-	-	-	-
Directly from the community	1	1 (100)	0 (0)	0 (0)	0 (0)	0 (0)

Type of traumatic brain injury	N	Deceased	Vegetative state(%)	Severe disability(%)	Moderate disability(%)	Good recovery(%)
Penetrating	13	9 (69.2)	0 (0)	1 (7.7)	2 (15.4)	1 (7.7)
Crush	14	8 (57.1)	0 (0)	3 (21.4)	0 (0)	3 (21.4)
Blast	0	-	-	-	-	-
Closed	361	154 (42.7)	9 (2.5)	79 (21.9)	55 (15.2)	64 (17.7)
Unknown	3	1 (33.3)	0 (0)	2 (66.7)	0 (0)	0 (0)

Worst GCS (first 24 hours)	N	Deceased	Vegetative state(%)	Severe disability(%)	Moderate disability(%)	Good recovery(%)
3-8	579	331 (57.2)	20 (3.5)	111 (19.2)	46 (7.9)	71 (12.3)
9-13	198	34 (17.2)	1 (0.5)	52 (26.3)	41 (20.7)	70 (35.4)
14-15	104	10 (9.6)	1 (1)	17 (16.3)	24 (23.1)	52 (50)
Not evaluable	347	134 (38.6)	11 (3.2)	80 (23.1)	53 (15.3)	69 (19.9)

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Follow-Up - 'Disability' section

Worst GCS during first 24h: best motor response	N	Deceased	Vegetative state(%)	Severe disability(%)	Moderate disability(%)	Good recovery(%)
Obeys commands (6)	192	16 (8.3)	2 (1)	47 (24.5)	45 (23.4)	82 (42.7)
Localizes pain (5)	243	52 (21.4)	3 (1.2)	66 (27.2)	49 (20.2)	73 (30)
Withdraws to pain (4)	116	43 (37.1)	4 (3.4)	33 (28.4)	11 (9.5)	25 (21.6)
Flexion (abnormal) to pain (3)	64	30 (46.9)	4 (6.2)	18 (28.1)	7 (10.9)	5 (7.8)
Extension to pain (2)	59	41 (69.5)	3 (5.1)	6 (10.2)	4 (6.8)	5 (8.5)
None(1)	309	239 (77.3)	13 (4.2)	33 (10.7)	11 (3.6)	13 (4.2)
Not available	245	88 (35.9)	4 (1.6)	57 (23.3)	37 (15.1)	59 (24.1)

GCS trend in 48h	N	Deceased	Vegetative state(%)	Severe disability(%)	Moderate disability(%)	Good recovery(%)
GCS 3 stable	127	96 (75.6)	6 (4.7)	13 (10.2)	7 (5.5)	5 (3.9)
GCS from 3 to 4-8	31	13 (41.9)	2 (6.5)	12 (38.7)	1 (3.2)	3 (9.7)
GCS from 3 to > 8	14	0 (0)	0 (0)	6 (42.9)	5 (35.7)	3 (21.4)
GCS from 4-8 to 3	59	56 (94.9)	1 (1.7)	1 (1.7)	1 (1.7)	0 (0)
GCS 4-8 stable	125	53 (42.4)	4 (3.2)	35 (28)	16 (12.8)	17 (13.6)
GCS from 4-8 to > 8	68	11 (16.2)	0 (0)	20 (29.4)	10 (14.7)	27 (39.7)
GCS from > 8 to 3	46	39 (84.8)	2 (4.3)	4 (8.7)	1 (2.2)	0 (0)
GCS from > 8 to 4-8	101	53 (52.5)	4 (4)	20 (19.8)	7 (6.9)	17 (16.8)
GCS > 8 stable	336	49 (14.6)	2 (0.6)	75 (22.3)	70 (20.8)	140 (41.7)

Clinically relevant hypotension	N	Deceased	Vegetative state(%)	Severe disability(%)	Moderate disability(%)	Good recovery(%)
No	971	361 (37.2)	24 (2.5)	216 (22.2)	145 (14.9)	225 (23.2)
Yes	184	110 (59.8)	5 (2.7)	33 (17.9)	13 (7.1)	23 (12.5)
Not available	69	34 (49.3)	4 (5.8)	11 (15.9)	6 (8.7)	14 (20.3)

Clinically relevant hypoxia	N	Deceased	Vegetative state(%)	Severe disability(%)	Moderate disability(%)	Good recovery(%)
No	862	336 (39)	22 (2.6)	180 (20.9)	123 (14.3)	201 (23.3)
Yes	271	117 (43.2)	9 (3.3)	64 (23.6)	36 (13.3)	45 (16.6)
Not available	91	52 (57.1)	2 (2.2)	16 (17.6)	5 (5.5)	16 (17.6)

Pupils in the emergency room	N	Deceased	Vegetative state(%)	Severe disability(%)	Moderate disability(%)	Good recovery(%)
Bilaterally reactive and/or miotic	675	197 (29.2)	13 (1.9)	166 (24.6)	126 (18.7)	173 (25.6)
Unilaterally dilated and non-reactive	189	106 (56.1)	11 (5.8)	47 (24.9)	10 (5.3)	15 (7.9)
Bilaterally dilated and non-reactive	122	108 (88.5)	4 (3.3)	7 (5.7)	0 (0)	3 (2.5)
Not assessable	19	8 (42.1)	3 (15.8)	2 (10.5)	2 (10.5)	4 (21.1)
Not available	18	8 (44.4)	0 (0)	3 (16.7)	5 (27.8)	2 (11.1)

Anatomical severity (worst CT within 48 hours of admission)	N	Deceased	Vegetative state(%)	Severe disability(%)	Moderate disability(%)	Good recovery(%)
Diffuse Injury I (no visible pathology)	18	2 (11.1)	1 (5.6)	1 (5.6)	7 (38.9)	7 (38.9)
(D-II) Diffuse injury II	429	71 (16.6)	9 (2.1)	124 (28.9)	85 (19.8)	140 (32.6)
Diffuse Injury III (edema)	107	50 (46.7)	2 (1.9)	26 (24.3)	15 (14)	14 (13.1)
Diffuse Injury IV (shift>5mm)	37	25 (67.6)	0 (0)	7 (18.9)	1 (2.7)	4 (10.8)
(5-EML) Evacuated mass lesion	381	217 (57)	14 (3.7)	67 (17.6)	28 (7.3)	55 (14.4)
(6-NEML) Not Evacuated mass lesion	135	115 (85.2)	5 (3.7)	9 (6.7)	3 (2.2)	3 (2.2)

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Follow-Up - 'Quality of Life' section

Patients (N): 326

QOLIBRI-OS score:

Mean	73.4
SD	26.4
Median	79.2
Q1–Q3	66.7–91.7
Min–Max	0–100

QOLIBRI-OS score:

Anatomical severity (worst CT within 48 hours of admission) (N=279)	N	%	Mean	SD	Median	Q1-Q3
Diffuse Injury I (no visible pathology)	10	3.6	71.2	19.0	72.9	61.5–86.5
(D-II) Diffuse injury II	164	58.8	71.3	29.6	79.2	66.7–91.7
Diffuse Injury III (edema)	24	8.6	81.4	16.7	83.3	70.8–95.8
Diffuse Injury IV (shift>5mm)	4	1.4	77.1	13.0	77.1	68.7–85.4
(5-EML) Evacuated mass lesion	72	25.8	75.1	23.5	79.2	66.7–91.7
(6-NEML) Not Evacuated mass lesion	5	1.8	73.3	21.4	75.0	54.2–87.5

QOLIBRI-OS score:

GOSe result (N=313)	N	%	Mean	SD	Median	Q1-Q3
Deceased	0	0.0				
Vegetative state	0	0.0				
Severe disability	65	20.8	53.8	31.4	62.5	41.7–79.2
Moderate disability	81	25.9	65.3	26.4	75.0	54.2–83.3
Good recovery	167	53.4	86.2	13.9	87.5	77.1–100