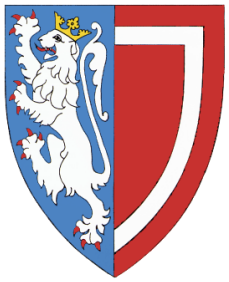
EARLY IDENTIFICATION AND PREDICTION OF MULTIPLE ORGAN FAILURE FOLLOWING MAJOR TRAUMA



LYNN HUTCHINGS

BALLIOL COLLEGE

UNIVERSITY OF OXFORD

APPENDICES

SUBMITTED FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN MUSCULOSKELETAL SCIENCES

MICHAELMAS TERM 2013

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APPENDIX 1 TARN ENTRY CRITERIA

2. Standards of practice

2.1 INCLUSION CRITERIA : REVISED JUNE 2009

The decision to include a patient should be based on the following points:

A. ALL TRAUMA PATIENTS IRRESPECTIVE OF AGE

B. WHO FULFILL THE FOLLOWING LENGTH OF STAY CRITERIA

DIRECT ADMISSIONS	PATIENTS TRANSFERRED IN
Trauma admissions whose length of stay is 72 hours or more OR Trauma patients admitted to a High Dependency Area regardless of length of stay OR Deaths of trauma patients occurring in the hospital including the Emergency Department (even if the cause of death is medical) OR Trauma patients transferred to other hospital for specialist care or for an ICU/HDU bed.	Trauma patients transferred into your hospital for specialist care whose combined hospital stay at both sites is 72 hours or more OR Trauma admissions to a ICU/HDU area regardless of length of stay OR Trauma patients who die from their injuries (even if the cause of death is medical) OR Patients transferred in for rehabilitation only do not need to be submitted to TARN.

C. AND WHOSE ISOLATED INJURIES MEET THE FOLLOWING CRITERIA

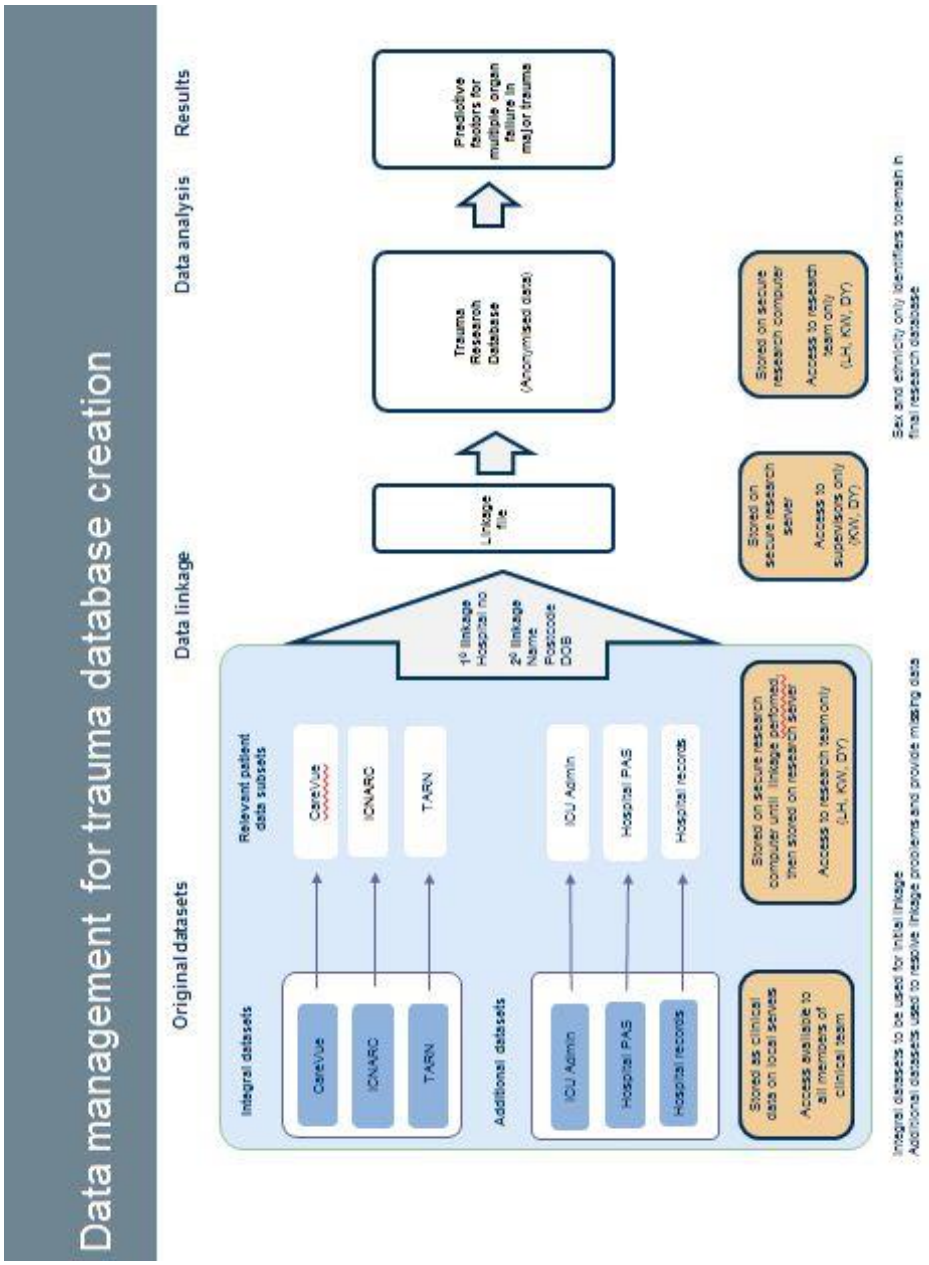
(JUNE 09 REVISIONS ARE HIGHLIGHTED IN RED)

BODY REGION OR SPECIFIC INJURY	INCLUDED – IN ISOLATION (EXCEPT WHERE SPECIFIED)	EXCLUDED – IN ISOLATION (EXCEPT WHERE SPECIFIED)
HEAD	All brain or skull injuries	LOC – unless accompanied by brain injury or skull/face fracture
THORAX	All Patients	None
ABDOMEN	All Patients	None
SPINE	Cord injury, fracture, dislocation or nerve root injury.	Spinal strain or sprain.
FACE	Fractures documented as Significant displacement, open, compound or comminuted. All Lefort fractures, All panfacial fractures. All Orbital Blowout fractures	Fractures documented as simple or stable.
FEMORAL FRACTURE	All (Open or Closed) up to 64 years old	Neck of femur, Intertrochanteric, Subtrochanteric or Greater trochanteric Femur fractures ≥ 65 years.
FOOT OR HAND:	Crush or amputation only.	Any fractures &/or dislocations, even

JOINT OR BONE		if Open &/or multiple
FINGER OR TOE	None	All injuries to digits, even if Open fractures, amputation or crush &/or multiple injuries.
LIMB – UPPER (EXCEPT HANDS/FINGERS)	Any Open injury. Any 2 limb fractures &/or dislocations.	Any Closed unilateral injury (including multiple closed fractures &/or dislocations or the same limb)
LIMB – BELOW KNEE (EXCEPT FEET/TOES)	Any Open injury. Any 2 limb fractures &/or dislocations.	Any Closed unilateral injury (including multiple closed fractures &/or dislocations or the same limb)
PELVIS	All up to 64 years old	Single pubic rami fracture ≥65 years old.
NERVE	Any injury to sciatic, facial, femoral or cranial nerve.	All other nerve injuries, single or multiple.
VESSEL	All injuries to femoral, neck, facial, cranial, thoracic or abdominal vessels. Transection or major disruption of any other vessel.	Intimal tear or superficial laceration or perforation to any limb vessel.
SKIN	Laceration or penetrating skin injuries with blood loss >20% (1000mls) Major degloving injury.	Simple skin lacerations or penetrating injuries with blood loss < 20% (1000mls); single or multiple. Contusions or abrasions: single or multiple. Minor degloving injury.
BURN	Any full thickness burn or Partial/superficial burn ≥10% body surface area NOT referred to a Burns unit	Partial or superficial burn <10% body surface area. Or any burn referred to a Burns unit.
INHALATION	All included - if not referred to Burns unit	If referred to Burns unit.
FROSTBITE	Severe frostbite	Superficial frostbite
ASPHYXIA	All	None
DROWNING	All	None
EXPLOSION	All	None
HYPOTHERMIA	≤31° And accompanied by another (non skin) injury	>31° Or Hypothermia in isolation
ELECTRICAL	All	None

Taken from the TARN Procedures Manual, June 2011

APPENDIX 2 DATA MANAGEMENT PLAN



Data management plan from original study protocol (as submitted to REC, NIGB and Oxford University Hospital Research and Development)

APPENDIX 3 SYSTEMATIC REVIEW PROTOCOL

Systematic review protocol – Early clinical variables associated with multiple organ failure (MOF) following major trauma

Investigators: Dr Lynn Hutchings, Dr Ann John, Dr Peter Watkinson, Dr Duncan Young, Prof. Keith Willett

12th October 2011

Background

Trauma exerts a massive global disease burden, affecting over 135 million people worldwide each year, and causing over 6 million deaths. Survivors of trauma suffer extensive morbidity, with an estimated 50 million people currently living with significant disability secondary to trauma (WHO, 2004). Since trauma most frequently affects people of working age, it exerts a massive social and economic impact, resulting in an estimated loss of 180 million disability-adjusted life years annually (WHO, 2004).

Deaths following major trauma are traditionally held to occur in three peaks, based on epidemiological work on trauma deaths in California in the 1970s (Baker et al, 1980). The first peak of deaths occurs immediately post injury, predominantly due to catastrophic and non-survivable injuries. These deaths are reducible only by primary accident prevention strategies. The second peak of deaths occurs in the hours following injury, generally due to major head injuries, haemorrhage or severe neurological damage.

The third peak of deaths occurs over 48 hours post-injury, and results from three major causes – multiple organ failure (MOF), head injury and sepsis. A series of epidemiological studies have demonstrated widely varying estimates of MOF prevalence, but have consistently emphasised its high prevalence and importance as a major cause of post trauma morbidity and mortality (Baker et al, 1980; Fry et al, 1980; Faist et al, 1983; Moore F.A. et al, 1996; Nast-Kolb et al, 2001).

Despite its prevalence in post-trauma patients, little is known of the pathophysiological processes that lead to the development of MOF. There has remained no consensus on the definition or scoring of MOF, nor of the optimal method of prevention and treatment. However, it is increasingly recognised that MOF not only confers a short-term mortality risk, particularly in the first year post-injury, but also confers a longer-term impact on morbidity (Probst et al, 2009). Ulvik et al (2007) demonstrated increased morbidity and mortality up to seven years post-injury in patients who had suffered from MOF following trauma, and Livingston et al (2009) demonstrated only 50% had returned to work or education at three years post-injury.

Theories on the development of MOF vary, although it is widely believed to be the results of a pro-inflammatory state. The “two-hit” model postulates that the initial trauma induces an inflammatory response which can be further exacerbated by subsequent insults, including transfusion, sepsis, or medical and surgical interventions. These may overwhelm the patient’s physiological reserve, resulting in an uncontrolled inflammatory response and end organ dysfunction (Waydhas et al, 1996; Moore, F.A. et al, 1996, Moore E.E, et al, 2005).

Identification of potential biomarkers from the inflammatory cascade has demonstrated several associations, but these remain predominantly experimental and have not translated into routine clinical practice. For the clinician, an assessment of patient risk of MOF is largely based on clinical judgement. A systematic review of the literature would clarify potential risk factors to improve patient assessment.

Variables associated with MOF include those related to the patient, the injury, the physiological or biochemical response and the treatment or management. Variables can be further considered as fixed or modifiable, with those related to the patient or injury fixed at the time of trauma, whilst those related to the physiological response and management are potentially modifiable. Identification of modifiable factors is particularly important in targeting future intervention strategies.

Establishing the risk factors associated with subsequent MOF development would allow earlier identification and quantification of risk for both trauma populations and individuals.

Research question

What routine clinical data available in the first 48 hours following major trauma are associated with progression to multiple organ failure (MOF)?

Search strategy

- PubMed MEDLINE and EMBASE databases searched
- (((Multiple organ failure [MeSH Terms]) OR exp. organ failure OR exp. organ dysfunction) AND ((Multiple trauma [MeSH Terms]) OR exp. polytrauma OR exp.

severe injury) AND ((Humans [MeSH] AND English [lang] AND ("1992" [PDat] : "2011" [PDat])) for MEDLINE

- Adapted search strategy for EMBASE as follows:
    1. Exp * Multiple organ failure/
    2. Exp *trauma/
    3. 1 and 2
    4. Limit 3 to Human, English and 1992-2011
- Automated searches created for above search term on all databases
- Additional hand searching of major trauma journals and snowball searching from references
- Time period 1992-2011

Inclusion/exclusion criteria

	Inclusion criteria	**Exclusion criteria**
Research type	Quantitative primary research	Case reports, case series, expert opinion, discussion, anecdotal evidence, conference abstracts.
Timing	Hospital data < 48 hours post injury	Pre-hospital data > 48 hours post injury
Patient population	Major trauma	Not exclusively major trauma
	Adults	Extremes of age
		Specific trauma subsets i.e. Traumatic brain injury, Burns
Variables studied	Clinical factors available in routine practice	Laboratory-based experimental parameters Novel technologies
Outcome measure	Multiple organ failure via defined scoring system or physiological parameters	Single organ failure or no multiple organ failure definition

Selection and review process to be performed in the following stages

1. Citation screening and removal of duplicates
2. Abstract screening for inclusion/exclusion criteria
3. Full paper screening for inclusions/exclusion criteria

4. Full paper assessment for quality assessment and data extraction

Initial screening by LH, second screening by KW and disagreement taken to all researchers in team. Tables to be kept at all stages to allow review of process at each stage.

Quality assessment

Formal assessment using the Critical Skills Appraisal Programme (CASP) assessment tools

Data extraction

Formalised protocol for data extraction, and data entered into spreadsheet. Spreadsheet checked against initial sample to assess for completeness prior to full review.

Data collected as follows:

Basic study details

- Authors
- Year
- Journal
- Study type
- Retro-prospective
- Observational/Interventional
- Randomised

Population definitions

- Patient numbers
- Age definition
- Population definition
- Population exclusions
- MOF definition

Methodology

- Area of study
- Hypothesis
- Outcome measures
- Control group?
- Methodology
- Data collection
- Data analysis

Population statistics

- Age
- Injury severity
- Sex
- Trauma type
- MOF prevalence
- Mortality

Findings

- Major finding
- Patient factors

- Injury factors
- Physiological factors
- Laboratory factors
- Management factors
- Modifiable?
- Timing?
- Univariate v Multivariate findings
- Negative findings/ no association found
- Problems

Synthesis

Multiple study types are expected, and a lack of access to primary data, therefore meta-synthesis not meta-analysis to be performed on results.

Reporting

Intended audience - trauma professionals

References

Baker CC, Oppenheimer L, Stephens B, Lewis FR, Trunkey DD. Epidemiology of trauma deaths. *Am J Surg.* 1980:140144-150.

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Livingston DH, Tripp T, Biggs C, Lavery RF. A fate worse than death? Long-term outcome of trauma patients admitted to the surgical intensive care unit. *Journal of Trauma.* 2009:67;341-349.

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Probst C, Zelle BA, Sittaro NA, *et al.* Late death after multiple severe trauma: when does it occur and what are the causes? *Journal of Trauma.* 2009:66;1212-1217.

Ulvik A, Kvale R, Wentzel-Larsen T, *et al.* Multiple organ failure after trauma affects even long term survival and functional status. *Critical Care.* 2007:11(5);R95.

Waydhas C, Nast-Kolb D, Trupka A, *et al.* Posttraumatic inflammatory response, secondary operation and late multiple organ failure. *Journal of Trauma.* 1996:40;624-631.

World Health Organisation. The Global Burden of Disease: 2004 Update. *Online. Available from* http://www.who.int/healthinfo/global_burden_disease/2004_report_update/en.index/html [Accessed 24th August 2011]

APPENDIX 4 LITERATURE REVIEW RESULTS TABLES

4.1. STUDY TYPE, POPULATION DEFINITIONS

1st author	Study type	Age definition	Injury definition	Inclusion criteria	Exclusion criteria
Aldrian (2005)	Retrospective cohort	≥ 16 years	All polytrauma - injuries to ≥ 2 body cavities or injury to 1 body cavity and 2 long bone fractures	Admission for > 1 day	Isolated life-threatening injuries
Balogh (2000)	Retrospective cohort	> 15 years	ISS > 15	Survival > 48 hours	
Beilman (2009)	Prospective cohort	≥ 18 years	1 or more from: - pelvic fracture - ≥ 2 long bone fractures - multiple rib fractures - pulmonary contusion - major blunt or penetrating injury	Admission < 6 hours after injury Transfusion on scene or within 6 hours after injury SBP < 90 mmHg or BD ≥ 6 within 60 mins of arrival	GCS ≤ 4 with no sedation Cardiac arrest on or before arrival Nonsurvivable head injury Advanced directive Bilateral upper limb fractures Haematoma both thenar eminences RBC substitute used
Blow (1999)	Retrospective cohort	Adult	ISS ≥ 20	**Pilot** - Survival > 48 hours, ICU stay > 48 hours **Study** - Survival > 24 hours, SBP > 100 mmHg, Pulse < 120 bpm, urine output > 1ml/kg/hr	
Borgman (2011)	Retrospective cohort	> 15 years	ISS ≥ 9	≥ 1 unit of blood transfused Survival > 1 hour	
Brattstrom (2010)	Prospective cohort	> 15 years	Trauma requiring ICU admission	ICU stay > 24 hours	Treatment in another ICU Short ICU stay Lack of recorded data
Ciesla (2004)	Prospective cohort	>15 years	ISS > 15	Survival > 48 hours Admission to ICU < 24 hours from injury	Isolated head injuries
Ciesla (2006)	Prospective cohort	>15 years	ISS > 15	Survival > 48 hours Admission to ICU < 24 hours from injury	Isolated head injuries Head injury with an extracranial AIS < 2

1st author	Study type	Age definition	Injury definition	Inclusion criteria	Exclusion criteria
Cotton (2009)	Retrospective cohort	Not stated	Trauma sufficient to activate trauma exsanguination protocol or equivalent	Assessed by physician to be at high risk of haemorrhage Transferred directly to theatre > 10 units RBCs in first 24 hours	
Durham (2003)	Prospective cohort	Not stated	Trauma requiring ICU admission	Survival > 48 hours	
Edmonds (2011)	Prospective cohort	16-90 years	Blunt trauma with AIS ≥ 2 in any region except for head	Prehospital or ED SBP < 90 mmHg or BD ≥ 6 RBCs in first 12 hours Survival > 24 hours	Cervical spinal cord injury BMI < 18.5 or > 30
Frink (2007)	Prospective cohort	16-65 years	ISS ≥ 16	Primary admission < 1 hour from injury Survival > 48 hours	Hx of steroids, NSAIDs, hormone replacement, malignancy, chronic lung, liver or kidney disease, vascular disease
Gando (1999)	Prospective cohort	>15 years	Trauma requiring ICU admission	Survival > 24 hours	Known clotting disorder Use of anticoagulants
Johnson (2010)	Retrospective cohort	Not stated	ISS > 15 Trauma requiring ICU admission	Admission < 12 hours from injury Survival > 48 hours	Isolated head injury Isolated spinal cord injury
Maegele (2007)	Retrospective cohort	Not stated	Multiple trauma		Incomplete data on coagulation parameters
Moore (1996)	Retrospective cohort	> 16 years	ISS > 15 Trauma requiring ICU admission	Survival > 48 hours	
Moore (1997)	Prospective cohort	>16 years	ISS > 15	Survival > 48 hours	
Oberholzer (2000)	Prospective cohort	> 16 years	ISS ≥ 9 Trauma requiring ICU admission	Admission < 4 hours from injury Survival > 3 days	
Sauaia (1994)	Retrospective cohort	> 16 years	ISS > 15	Admission < 1 hour from injury Survival > 24 hours	
Sauaia (1998)	Retrospective cohort	> 15 years	ISS > 15	Admission < 48 hours from injury Survival > 48 hours	Hanging, strangulation, drowning
Sperry (2007)	Prospective cohort	16-90 years	Blunt trauma	Prehospital or ED SBP < 90 mmHg RBCs in first 12 hours	Isolated TBI Isolated cervical cord injury Known diabetes

1st author	Study type	Age definition	Injury definition	Inclusion criteria	Exclusion criteria
Sperry (2008)	Prospective cohort	16-90 years	Blunt trauma	Prehospital or ED SBP < 90 mmHg RBCs in first 12 hours	Isolated TBI Isolated cervical cord injury Known diabetes
Trupka (1994)	Retrospective cohort	16 - 70 years	AIS ≥ 3 in at least 2 body regions or 3 major fractures	Admission < 6 hours from injury Survival > 24 hours	No requirement for intubation
Tuttle (2009)	Retrospective cohort	Skeletally mature patients (with closed physes)	ISS ≥ 25 or refractory hypotension Femoral shaft fracture		Skeletally immature
Watson (2009)	Retrospective cohort	17-89 years	Blunt trauma AIS ≥ 2 in any region except head	Prehospital or ED SBP < 90 mmHg or BD ≥ 6 RBCs in first 12 hours	Cervical spinal cord injury Survival < 48 hours
Winfield (2010)	Prospective cohort	> 16 years	Blunt trauma	Prehospital or ED SBP < 90 mmHg or BD ≥ 6 Survival > 48 hours RBCs in first 12 hours	GCS ≤ 8 No height or weight recorded BMI < 18.5 Pre-existing metabolic abnormalities
Zallen (1999)	Retrospective cohort	> 17 years	ISS > 15 with an extracranial region AIS > 3	Evidence of haemorrhagic shock (i.e. SBP < 90 mmHg) 6-20 units RBCs required in firs 12 hours	Unable to give consent
Zeckey (2011)	Retrospective cohort	16-65 years	ISS ≥ 16	Primary admission	Incomplete clinical data Hx of steroid use, NSAIDs, HRT, malignancy, chronic liver, kidney or lung disease, hepatitis

HRT = Hormone Replacement Therapy, NSAIDs = Non-Steroidal Anti-inflammatory Drugs, TBI = Traumatic Brain Injury

4.2. OUTCOME DEFINITIONS

1st author	MOF definition	Outcome measures
Aldrian (2005)	Goris score	MOF ARDS Duration of ventilation Mortality
Balogh (2000)	Denver score	MOF Mortality
Beilman (2009)	Marshall score	MOF Mortality
Blow (1999)	Denver score	MOF Mortality
Borgman (2011)	SOFA	MOF Ventilator-free days ICU-free days Sepsis Mortality
Brattstrom (2010)	SOFA	MOF ALI Sepsis Mortality
Ciesla (2004)	Denver score	MOF
Ciesla (2006)	Denver score	MOF ICU stay Hospital stay Mortality
Cotton (2009)	Denver score	MOF Infectious complications Hospital stay Abdominal wall complications SIRS ACS Mortality
Durham (2003)	Knaus score with additional definitions for liver and GI as defined by Fry and Deitch (neuro score excluded) Marshall score	MOF Mortality
Edmonds (2011)	Marshall score	MOF Mortality Nosocomial infection
Frink (2007)	Marshall score	MOF Ventilator days ICU stay Hospital stay Sepsis
Gando (1999)	Individual definitions for each organ system.	MOF

1st author	MOF definition	Outcome measures
Johnson (2010)	Denver score	MOF
Maegele (2007)	SOFA	MOF Mortality
Moore (1996)	Denver score	MOF ARDS
Moore (1997)	Denver score	MOF
Oberholzer (2000)	Goris score	MOF Mortality Sepsis
Sauaia (1994)	Denver score	MOF
Sauaia (1998)	Denver score	MOF
Sperry (2007)	Marshall score	MOF Infection Mortality
Sperry (2008)	Marshall score	MOF Infection Mortality
Trupka (1994)	Individual definitions for each organ system.	MOF Mortality
Tuttle (2009)	Denver score	**Primary** - MOF ARDS Mortality LRTI **Secondary** - Transfusion requirements Operative time Blood loss ICU stay Hospital stay
Watson (2009)	Marshall score	MOF ARDS Infection Mortality
Winfield (2010)	Marshall score	MOF Cardiovascular and metabolic endpoints
Zallen (1999)	Denver score	MOF
Zeckey (2011)	Marshall score	MOF SIRS Sepsis

ACS = Acute Coronary Syndrome, ALI = Acute Lung Injury, LRTI = Lower Respiratory Tract Infection

4.3. POPULATION STATISTICS

1st author	Patient nos.	Age in years (mean +/- SD)	ISS (mean +/- SD)	Sex (% male)	Blunt trauma (%)	MOF (%)	Mortality (%)
Aldrian (2005)	466	**Gp 1 (16-65 years)** - 36.4 (no SD given) **Gp 2 (> 65 years)** - 74.8 (no SD given)	**Gp 1 (16-65 years)** - 34.0 (no SD given) **Gp 2 (> 65 years)** - 32.1 (no SD given)	70	Not stated	8	30
Balogh (2000)	558	36 +/- 0.7 (SEM)	27 +/- 0.4 (SEM)	Not stated	74	18	9
Beilman (2009)	356	39 +/- 17	28 +/- 15	72	65	14	14
Blow (1999)	79	**Pilot** - no data given **Study** - 43 +/- 19	**Pilot** - not given **Study** - 28 +/- 6.4	Not stated	**Pilot** - 90 **Study** - Not stated	10	11
Borgman (2011)	2474	43 +/- 19	34 +/- 15.4	70	93	43	25
Brattstrom (2010)	164	40 (26-58 IQ range)	24 (17-33 IQ range)	82	91	40	10
Ciesla (2004)	1277	37.3 +/- 16.5	37.3 +/- 16.5	72	72	29	2
Ciesla (2006)	716	38.6 +/- 17	31.0 +/- 11.6	71	80	25	8
Cotton (2009)	266	**Gp 1 (Pre-TEP)** - 38.5 +/- 17.8 **Gp 2 (TEP)** - 35.6 +/- 15.5	**Gp 1 (Pre-TEP)** - 28.0 +/- 15.5 **Gp 2 (TEP)** - 33.3 +/- 15.9	90	55	27	53
Durham (2003)	869	37.9 +/- 18.3	19.1 +/- 9.7	74	77	5	5
Edmonds (2011)	820	**Gp 1 (High BMI)** - 42.9 +/- 18 **Gp 2 (Low BMI)** - 39.0 +/- 19	**Gp 1 (High BMI)** - 32.5 +/- 15 **Gp 2 (Low BMI)** - 32.4 +/- 13	64	100 - Inclusion criteria	37	14
Frink (2007)	143	36.9 +/- 1.3 (SEM)	25.1 +/- 0.7 (SEM)	74	Not stated	17	14
Gando (1999)	136	**Gp 1 (non-SIRS)** - 47 +/- 4 (SEM) **Gp 2 (SIRS ≤ 2 days)** - 42 +/- 3 (SEM) **Gp 3 (SIRS ≥ 3 days)** - 40 +/- 3 (SEM)	**Gp 1 (non-SIRS)** - 22 +/- 2 (SEM) **Gp 2 (SIRS ≤ 2 days)** - 18 +/- 1 (SEM) **Gp 3 (SIRS ≥ 3 days)** - 28 +/- 1 (SEM)	68	Not stated	47	23
Johnson (2010)	1440	37.4 +/- 16.6	29.3 +/- 11.3	72	76	24	8
Maegele (2007)	8724	**Gp 1 (Coagulopathy)** - 37 +/- 19 **Gp 2 (No coagulopathy)** - 40 +/- 19	**Gp 1 (Coagulopathy)** - 30 +/- 15 **Gp 2 (No coagulopathy)** - 21 +/- 12	73	96	18	15
Moore (1996)	457	36.0 +/- 0.7	25.1 +/- 0.4	77	72	15	8
Moore (1997)	513	36.2 +/- 9.7 (SEM)	25.4 +/- 0.4	77	73	17	9
Oberholzer (2000)	1276	**Gp 1 (ISS < 25)** - 42.5 +/- 0.6 (SEM) **Gp 2 (ISS ≥ 25)** - 38.0 +/- 0.4 (SEM)	**Gp 1 (ISS < 25)** - 14.0 +/- 0.2 (SEM) **Gp 2 (ISS ≥ 25)** - 32.4 +/- 0.5 (SEM)	71	Not stated	56	7

1st author	Patient nos.	Age in years (mean +/- SD)	ISS (mean +/- SD)	Sex (% male)	Blunt trauma (%)	MOF (%)	Mortality (%)
Sauaia (1994)	394	42 +/- 2.3	23.7 +/- 0.4	77	77	13	8
Sauaia (1998)	411	35.8 +/- 10.8 (SEM)	**Gp 1 (No MOF)** - 33 +/- 1.5 **Gp 2 (MOF)** - 26 +/- 0.5	76	70	19	9
Sperry (2007)	850	**Gp 1 (Early hyperglycaemia)** - 40.1 +/- 17 **Gp 2 (No early hyperglycaemia)** - 40.6 +/- 19	31.6 +/-14	65	100 - Inclusion criteria	38	20
Sperry (2008)	1036	**Gp 1 (Males)** - 40.9 /- 18 **Gp 2 (Females)** - 42.5 +/- 18	31.6 +/-14	65	100 - Inclusion criteria	40	20
Trupka (1994)	125	**Gp 1 (Early intubation)** - 37 +/- 17 **Gp 2 (Delayed intubation)** - 36 +/- 15	39 +/- 13	Not stated	Not stated	30	17
Tuttle (2009)	97	**Gp 1 (ETC)** - 26.8 (no SD given) **Gp 2 (DCO)** - 31.7 (no SD given)	**Gp 1 (ETC)** - 36.8 (no SD given) **Gp 2 (DCO)** - 39.1 (no SD given)	67	Not stated	Not stated	Not stated
Watson (2009)	1175	**Gp 1 (no plasma)** - 43 +/- 17 **Gp 2 (plasma)** - 41 +/- 19	**Gp 1 (no plasma)** - 27.6 +/- 11.9 **Gp 2 (plasma)** - 33.7 +/- 13.7	64	100 - Inclusion criteria	41	11
Winfield (2010)	877	**Gp 1 (Normal)** - 35 (median) **Gp 2 (Overweight)** - 40 (median) **Gp 3 (Obese)** - 45 (median) **Gp 4 (Morbidly obese)** - 47 (median)	**Gp 1 (Normal)** - 31 (median) **Gp 2 (Overweight)** - 30 (median) **Gp 3 (Obese)** - 29 (median) **Gp 4 (Morbidly obese)** - 29 (median)	66	100 - Inclusion criteria	56	11
Zallen (1999)	63	**Gp 1 (MOF)** - 46 +/- 4.7 (SEM) **Gp 2 (No MOF)** - 33 +/- 2.3 (SEM)	**Gp 1 (MOF)** - 29.5 +/- 1.6 (SEM) **Gp 2 (No MOF)** - 31.7 +/- 1.4 (SEM)	Not stated	Not stated	37	Not stated
Zeckey (2011)	437	**Gp 1 (Alcohol +)** - 36.3 +/- 0.7 (SEM) **Gp 2 (Alcohol -)** - 35 +/- 1.2 (SEM)	**Gp 1 (Alcohol +)** - 28.7 +/- 0.7 (SEM) **Gp 2 (Alcohol -)** - 29.7 +/- 1.4 (SEM)	73	Not stated	3	11

Gp = Group, IQ = Interquartile, SD = Standard Deviation, TEP = Transfusion Exsanguination Protocol

4.4. UNIVARIATE ANALYSIS RESULTS

1st author	Patient factors	Injury factors	Physiological factors	Laboratory results	Management factors	Timing after injury	No association
Aldrian (2005)	Age (> 64 years)						
Balogh (2000)	Age	ISS nISS			PRBC transfusion	0-12 hours - PRBC transfusion	Mechanism of injury
Beilman (2009)			Hypothermia			0-6 hours - Hypothermia	BD
Blow (1999)			Cardiac index	Lactate		Admission - Lactate, CI 24 hours - Lactate	
Borgman (2011)					High plasma FFP:PRBC > 1.2 with TASH < 15	0-24 hours - FFP:PRBC ratio	FFP:PRBC ratio with TASH > 15
Brattstrom (2010)	Age(> 55 years)	ISS (>24) nISS Head injury AIS ≥ 3 GCS (9-13)	APACHE II SBP < 90mmHg	Raised blood ethanol	IV fluids > 5 litres ≥ 10 units PRBC transfusion	Initial management - all factors	Sex Hyper - glycaemia GCS (3-8)
Ciesla (2004)	Age	ISS	Early organ dysfunction		RBC transfusion	0-12 hours - PRBC transfusion 0-48 hours - Early organ dysfunction	Mechanism of injury
Ciesla (2006)	Obesity						
Cotton (2009)					Massive transfusion protocol	Initial management - massive transfusion protocol	
Durham (2003)	Age	ISS	APACHE III	Lactate	PRBC transfusion	Admission - Lactate 24 hours - APACHE III, Lactate, PRBC transfusion	
Edmonds (2011)	BMI						
Frink (2007)	Male (if ISS > 25)				PRBCs and FFP transfusion	0 - 24 hours - PRBC and FFP transfusion	Age Injury severity GCS Duration of initial operative intervention
Gando (1999)			SIRS	Platelets DIC score - PT, fibrinogen, FDPs		24 hours - Platelet count, Fibrinogen, FDPs	

1st author	Patient factors	Injury factors	Physiological factors	Laboratory results	Management factors	Timing after injury	No association
Johnson (2010)	Age	ISS		PT APTT	PRBC transfusion FFP transfusion Platelet transfusion PRBC:FFP ratio	0 - 12 hours - PRBC, FFP and platelet transfusion, worst PT and APTT values	Blood substitute use
Maegele (2007)				Coagulopathy			
Moore (1996)	Age Heart disease	ISS (> 25) Abdominal injury Head injury	SBP (< 90mmHg)	BD Lactate	PRBC transfusion	Admission - SBP < 90mmHg 0-12 hours - PRBC transfusion, BD, Lactate 13-24hours - BD, lactate	Mechanism of injury GCS Chest injury Major fractures Sex Co-morbidities
Moore (1997)	Age	ISS	SBP	BD Lactate	PRBC transfusion	Admission - SBP 0-12 hours- PRBC transfusion, BD, Lactate 13 -24 hours - BD, Lactate	Sex Co-morbidities Mechanism of injury GCS
Oberholzer (2000)	Male (if ISS ≥ 25)	ISS (≥ 25)					
Sauaia (1994)		ISS (≥ 25)		BD (> 8mEq/L) Lactate (> 2.5 mmol/L)	PRBC transfusion (> 6 units)	0-12 hours - PRBC transfusion, BD, Lactate 13-24 hours - Lactate	Age Mechanism of injury Co-morbidities GCS SBP BD 13-24 hours
Sauaia (1998)	Age	ISS	APACHE III			0 - 48 hours - APACHE III	Sex Co-morbidities Mechanism of injury Time from injury to admission GCS
Sperry (2007)				Hyper - glycaemia		0 - 24 hours – Hyper - glycaemia	
Sperry (2008)	Male						
Trupka (1994)							Early intubation
Tuttle (2009)							Surgical strategy
Watson (2009)					Plasma-rich blood product transfusion	0-24 hours - Plasma-rich blood product transfusion	
Winfield (2010)	Obesity						

1st author	Patient factors	Injury factors	Physiological factors	Laboratory results	Management factors	Timing after injury	No association
Zallen (1999)	Age				Age of transfused blood	0-12 hours - Age of transfused blood	ISS PRBC transfusion
Zeckey (2011)							Raised blood ethanol

TASH = Trauma-associated severe haemorrhage score

4.5. MULTIVARIATE ANALYSIS RESULTS

1st author	Patient factors	Injury factors	Physiological factors	Laboratory results	Management factors	Timing after injury	No association
Aldrian (2005)							
Balogh (2000)	Age (> 55 years)	ISS nISS			PRBC transfusion	0-12 hours - PRBC transfusion	BD Lactate
Beilman (2009)			Hypothermia			0-6 hours - Hypothermia	0-1 hours - maximum BD, minimum SBP 0-6 hours - total IV fluids, PRBCs
Blow (1999)							
Borgman (2011)			RISC score (> 25)		Total IV fluids Use of vasopressors Emergency operative intervention	Initial management	
Brattstrom (2010)	Age(> 55 years)	ISS (> 24) nISS Head injury (AIS ≥ 3)		Raised blood ethanol	≥ 10 units PRBC transfusion	Initial management	Extrication time > 60 mins GCS SBP < 90 mmHg IV fluids
Ciesla (2004)							
Ciesla (2006)	Obesity (BMI ≥ 30) Age (> 55 years)	ISS (> 25)			> 6 units PRBC transfusion	0-12 hours - PRBC transfusion	
Cotton (2009)					Massive transfusion protocol Total 24 hour blood product administration	Initial management - Massive transfusion protocol 0-24 hours - blood products	
Durham (2003)			APACHE III	Lactate	PRBC transfusion	24 hours - APACHE III, Lactate, PRBC transfusion	Age ISS
Edmonds (2011)	BMI						
Frink (2007)							
Gando (1999)							
Johnson (2010)	Age	ISS			PRBC transfusion FFPs transfusion PRBC:FFP ratio	0 - 12 hours - PRBC and FFP transfusion	Worst PT and APTT values Platelets transfusion Blood substitute use
Maegele (2007)							

1st author	Patient factors	Injury factors	Physiological factors	Laboratory results	Management factors	Timing after injury	No association
Moore (1996)	Age (> 55 years)	ISS (> 25)		BD (>8 mEq/L) Lactate (> 2.5mmol/L)	PRBC transfusion (> 6 units)	0-12 hours - PRBC transfusion, BD, Lactate 13-24hours - Lactate	Not given
Moore (1997)	Age (> 55 years)	ISS (> 25)		BD (>8 mEq/L) Lactate (> 2.5mmol/L)	PRBC transfusion (> 6 units)	0-12 hours - PRBC transfusion, BD, Lactate 13-24hours - Lactate	Not given
Oberholzer (2000)							
Sauaia (1994)	Age (> 55 years)	ISS (≥ 25)		BD (>8 mEq/L) Lactate (> 2.5mmol/L)	PRBC transfusion (> 6 units)	0-12 hours - PRBC transfusion, BD 13-24hours – Lactate	Not given
Sauaia (1998)	Age	ISS	APACHE III	Lactate Platelet count	PRBC transfusion Inotropes	Admission - Platelet count 0-12 hours - PRBC transfusion, Inotropes, Lactate, Platelet count 0-24 hours - PRBC transfusion, Inotropes, Lactate, Platelet count 0-48 hours - PRBC transfusion, Inotropes, Lactate, Platelet count, APACHE III	Full details not given
Sperry (2007)	Male	ISS		Hyper - glycaemia	PRBC transfusion (> 6 units)	0 - 12 hours - PRBC transfusion 0 - 24 hours - Hyperglycaemia	BD GCS Maximum insulin requirement
Sperry (2008)	Male BMI	ISS	APACHE II		PRBC transfusion Vasopressor requirement	0 - 12 hours - PRBC transfusion 0-24 hours - Vasopressor requirement	Head injury SBP BD PMH of alcoholism or cirrhosis
Trupka (1994)							
Tuttle (2009)							

1st author	Patient factors	Injury factors	Physiological factors	Laboratory results	Management factors	Timing after injury	No association
Watson (2009)					FFP transfusion	0-24 hours - FFP transfusion	Platelet transfusion Cryoprecipitate transfusion
Winfield (2010)							
Zallen (1999)					Age of transfused blood Number of units > 14 days old Number of units > 21 days old	0-12 hours - Age of transfused blood	Not given
Zeckey (2011)							

4.6. QUALITY ANALYSIS

1st author (Year)	Retrospective/Prospective	Adjustment for confounders?	Follow-up	Results - clarity	Results - precision
Aldrian (2005)	Retrospective	1	2	2	1
Balogh (2000)	Retrospective	3	2	2	3
Beilman (2009)	Prospective	2	3	2	2
Blow (1999)	Retrospective	2	2	2	1
Borgman (2011)	Retrospective	3	2	3	3
Brattstrom (2010)	Prospective	3	2	3	3
Ciesla (2004)	Prospective	3	2	3	3
Ciesla (2006)	Prospective	3	2	3	3
Cotton (2009)	Retrospective	3	2	3	3
Durham (2003)	Prospective	2	2	2	2
Edmonds (2011)	Prospective	3	2	3	3
Frink (2007)	Prospective	2	2	2	1
Gando (1999)	Prospective	1	3	1	2
Johnson (2010)	Retrospective	3	3	3	3
Maegele (2007)	Retrospective	3	2	2	2
Moore (1996)	Retrospective	3	2	3	3
Moore (1997)	Prospective	3	2	3	3
Oberholzer (2000)	Prospective	2	2	2	2
Sauaia (1994)	Retrospective	3	3	3	3
Sauaia (1998)	Retrospective	3	3	3	3
Sperry (2007)	Prospective	3	3	3	3
Sperry (2008)	Prospective	3	2	3	3
Trupka (1994)	Retrospective	1	2	2	2
Tuttle (2009)	Retrospective	2	2	2	1
Watson (2009)	Retrospective	3	2	3	3
Winfield (2010)	Prospective	1	2	2	1
Zallen (1999)	Retrospective	2	2	2	2
Zeckey (2011)	Retrospective	2	2	2	2

Scored 1-3, where 3 indicates the highest quality

APPENDIX 5 QUESTIONNAIRE

Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Medicine
University of Oxford
Kadoorie Centre
Level 3
The John Radcliffe Hospital
Headley Way
Oxford
0X3 9DU

In conjunction with Duncan Young, I am creating a trauma research database to produce models predicting progression to multiple organ failure after major trauma.

We need to decide what to include in this database. One of the best ways to determine what data to collect is to ask experienced clinicians. This is where you come in.

On the following pages is a list of 100 variables, grouped into categories.

I would be grateful if you could pick around 15 of these variables that you consider might be related to subsequent development of multiple organ failure after trauma. You may pick fewer or more than 15, should you feel this is more appropriate. If there are any other variables which you feel to be important that are not included in the list, please add to the free text box at the end.

The only information I need about you is your current grade.

Thank you for your help,

Lynn Hutchings
Clinical Research Fellow in Trauma
The Kadoorie Centre for Critical Care Research

Grade:

Please select about 15 of the following variables that you feel are of most importance in the first 48 hours post-trauma in predicting future multiple organ failure.

Patient variables

- ☐ Sex
- ☐ Age
- ☐ Ethnicity
- ☐ Obesity
- ☐ Chronic liver disease
- ☐ Chronic renal disease
- ☐ Chronic cardiovascular disease
- ☐ Chronic respiratory disease
- ☐ Diabetes
- ☐ Malignancy
- ☐ Pre-existing immunocompromise

Injury variables

- ☐ Mechanism of injury
- ☐ Extrication time
- ☐ Time between injury and hospital arrival
- ☐ Overall injury severity
- ☐ Head trauma
- ☐ Chest trauma
- ☐ Abdominal trauma
- ☐ Pelvic trauma
- ☐ Limb trauma
- ☐ Vascular trauma
- ☐ GCS on admission
- ☐ Lowest GCS

Laboratory variables

- ☐ Base excess (BE) on hospital arrival
- ☐ Lowest BE
- ☐ Lactate on hospital arrival
- ☐ Highest lactate
- ☐ pH on hospital arrival
- ☐ Most acidotic pH
- ☐ Hb on hospital arrival
- ☐ Lowest Hb
- ☐ Haematocrit on arrival
- ☐ Lowest haematocrit
- ☐ WCC on hospital arrival
- ☐ Lowest WCC
- ☐ Highest WCC
- ☐ Platelet count on arrival
- ☐ Lowest platelet count
- ☐ Highest platelet count
- ☐ PT on arrival
- ☐ Longest PT
- ☐ APTT on arrival
- ☐ Longest APTT
- ☐ Fibrinogen on arrival
- ☐ Lowest fibrinogen
- ☐ CRP on arrival
- ☐ Highest CRP
- ☐ Creatinine on arrival
- ☐ Highest creatinine
- ☐ K+ on arrival
- ☐ Highest K+

- ☐ Bilirubin on arrival
- ☐ Highest bilirubin
- ☐ Glucose on arrival
- ☐ Highest glucose
- ☐ Highest CK

PTO....

Physiological variables

- ☐ Heart rate on arrival
- ☐ Lowest heart rate
- ☐ Highest heart rate
- ☐ Systolic blood pressure on arrival
- ☐ Systolic blood pressure on ICU admission
- ☐ Lowest systolic blood pressure
- ☐ Mean arterial pressure on arrival
- ☐ Mean arterial pressure on ICU admission
- ☐ Lowest mean arterial blood pressure
- ☐ Temperature on arrival
- ☐ Temperature on ICU admission
- ☐ Lowest temperature
- ☐ Respiratory rate on arrival
- ☐ Respiratory rate on ICU admission
- ☐ Lowest respiratory rate
- ☐ Highest respiratory rate
- ☐ APACHE II score
- ☐ SIRS score
- ☐ Urine output over first 4 hours
- ☐ Urine output over first 24 hours
- ☐ Pa02 on arrival
- ☐ Lowest Pa02
- ☐ PaCO2 on arrival
- ☐ Highest PaCO2

Management variables

- ☐ Overall transfusion volume
- ☐ More than 2 units of packed RBCs
- ☐ More than 4 units of packed RBCs
- ☐ Any use of FFP
- ☐ More than 2 units of FFP
- ☐ Platelet transfusion
- ☐ Overall IV fluid infusion volume
- ☐ Crystalloid infusion volume
- ☐ Colloid infusion volume
- ☐ ≥ 3 litres of crystalloid infused
- ☐ Surgical intervention in the first 4 hours
- ☐ Surgical intervention in the first 24 hours
- ☐ Operation time ≥ 4 hours
- ☐ Intubation on scene
- ☐ Intubation on arrival
- ☐ Intubation in first 4 hours
- ☐ Intubation in first 24 hours
- ☐ Inotropes in first 4 hours
- ☐ Inotropes in first 24 hours
- ☐ Ventilation with FiO2 ≥ 0.4

Any other factors not listed above:

APPENDIX 6 MOF SCORING SYSTEMS

The following table contains all identified MOF scoring systems in chronological order of first description, with details on the measures for defining failure for each organ system.

Grey shaded boxes indicate that organ system is not used in the MOF scoring system in question.

Scoring system	Skillman et al, 1969	Tilney et al, 1973	Fry et al, 1980	Faist et al, 1983	Pine at al, 1983
Respiratory	Vital capacity < 10ml/kg body weight	Need for mechanical ventilation	Assisted ventilation for 5 days or until death	Ventilator for 72 hours	Ventilator > 48 hours
	A-a gradient > 35mmHg at FiO2 1.0			FiO2 ≥ 0.4	
	Dead space to tidal volume ratio > 0.6			PEEP > 0	
	Alveolar hypoventilation with arterial pH < 7.25				
Cardiovascular	Persistent systolic arterial blood pressure < 100mmHg	Hypotension with elevated right atrial pressure, arrythmia compromising cardiac output or ECG evidence of MI		High filling pressures	Congestive heart failure for 24 hours with need for inotropic agents, diuretics or digitalis
	Minimal (< 2 hours), moderate (< 24 hours) and severe (> 24 hours)			Inadequate circulation	Pulmonary oedema with PAWP ≥ 19 mmHg
				Arrhythmias	Acute MI
				Cardiac damage on autopsy	Cardiogenic shock
Renal			Creatinine > 2.0 mg	Creatinine level ≥ 2 mg	Haemodialysis or peritoneal dialysis required
			(Doubling of admission Cr if previous renal failure)		Creatinine clearance ≤ 30ml/min
					Hyperkalaemia or oliguria persisting for 24 hours despite adequate volume status
Hepatic	Jaundice and raised bilirubin	Clinical jaundice or bilirubin > 3mg/100ml	Bilirubin > 2.0mg/dL	Bilirubin > 3.0mg for 48 hours plus GLDH > 10mU/mL (or 2 x normal)	Serum bilirubin increased by 6mg/dL from baseline for 2 or more days in patient with no haemolysis or duct obstruction **AND** Prothrombin time < 20% failed to correct with Vit K **OR**
	Liver histology		SGOT and LDH 2 x normal		SGOT 2 x normal
					Hepatic encephalopathy

Scoring system	**Skillman et al, 1969**	**Tilney et al, 1973**	**Fry et al, 1980**	**Faist et al, 1983**	**Pine at al, 1983**
Haematological				Platelets < 60,000 Low prothrombin time index (less than normal) Need for clotting factors for > 24 hours	
Gastrointestinal		Upper GI - blood in NG tube Lower GI - blood per rectum	2 units blood in 24 hours for presumed stress bleeding +/- endoscopic or surgical confirmation	Upper GI bleed (confirmed on endoscopy) needing ≥2 units of blood in 24 hours	
Central nervous system		Failure to respond to anything other than painful stimuli			Coma unrelated to trauma
Endocrine		Serum amylase 2 x normal			
Overall scoring system	Descriptive use of respiratory failure, jaundice and hypotension to assess associations with sepsis.	Total 7 systems, GI divided into upper and lower.	No of OF	No of OF ≥2 = MOF	OF only
Reference	Skillman JJ, Bushnell LS, Goldman H, Silen W. Respiratory failure, hypotension, sepsis, and jaundice. *The American Journal of Surgery* 117, 523-530, 1969	Tilney NL, Bailey GL, Morgan AP. Sequential system failure after rupture of abdominal aortic aneurysms. *Annals of Surgery* 178 (2), 117-122, 1973	Fry DE, Pearlstein L, Fulton RL, Polk HC Jr. Multiple system organ failure: the role of uncontrolled infection. *Arch Surg* 115:136-140, 1980	Faist E, Baue AE, Dittmer H, Herberer G. Multiple organ failure in trauma patients. *J Trauma* 23:775-787, 1983	Pine RW, Mertz MJ, Lennard ES, Dellinger EP, Carrico CJ, Minshew BH. Determinants of organ malfunction or death in patients with intra-abdominal sepsis. A discriminant analysis. *Arch Surg* 118:242-249, 1983

Scoring system	Bell et al, 1983	Marshall WG and Dimick, 1983	Stevens, 1983	Manship et al, 1984	Goris et al, 1985
Respiratory		Need for mechanical ventilatory support for > 6 hours or until time of death.	1= O2 by mask 2 = Intubated, no PEEP	Mechanical ventilatory support: ARDS, paO2 < 70mmHg (40% oxygen)	0 = No mechanical ventilation
			3 = PEEP 0-10%		1 = Mechanical ventilation with a positive end-respiratory pressure ≤ 10 cm H20, Fi02 ≤ 0.4
			4 = PEEP > 10%, PO2 > 50mmHg		2 = PEEP > 10 cm H20 and/or Fi02 > 0.4
			5 = Maximal PEEP, pO2 < 50 mmHg		
Cardiovascular	Cardiac tamponade	Need for catecholamine support of systemic arterial blood pressure (<90mmHg systolic) for > 6 hours or until time of death	1 = Slight hypotension 2 = Moderate hypotension	Inadequate cardiac output	0 = Normal blood pressure, no vasoactive substances
	Enterocarditis		3 = Vasopressors, moderate doses	Inadequate blood pressure	1 = Period of hypotension requiring manipulation such as volume loading, dopamine infusion < 10ug/kg/min, nitroglycerine < 20ug/min, to keep bp above 100mmHg
	MI		4 = Vasopressors, large doses		2 = Periods with hypotension below 100mmHg and /or dopamine > 10ug/kg/min and /or > 20ug/min nitroglycerine
			5 = Profound BP decreases despite vasopressors		
Renal	Creatinine > 5mg/dL	Need for haemodialysis	1 = Creatinine 1.5-2.5 mg/dL 2 = Creatinine 2.6 = 3.5mg/dL	Azotemia	0 = Serum creatinine < 2mg/dL
			3 = Creatinine > 3.6 mg/dL, adequate urine volume	Oliguria with adequate filling volumes	1 = Serum creatinine ≥ 2mg/dL
			4 = Creatinine > 3.6 mg/dL, urine volume 20-50 ml/hr	Rising creatinine	2 = Haemodialysis or peritoneal dialysis required
			5 = Creatinine > 3.6 mg/dL, urine volume < 20 ml/hr	Dialysis	
Hepatic	Transaminase or alkaline phosphatase > 2 x upper limit of normal		1 = LDH and SGOT increased, bilirubin normal 2 = Bilirubin 1.5-2.5 mg/dL	2 unit transfusion secondary to GI bleed in 24 hours	0 = Bilirubin < 2mg/dL and serum SGOT < 25 U/L
	Bilirubin > normal		3 = Bilirubin 2.6 - 4.0 mg/dL	Cirrhosis	1 = Bilirubin ≥ 2mg/dL and < 6 mg/dL or SGOT ≥ 25 U/L and < 50 U/L
			4 = Bilirubin 4.0 = 8.0 mg/dL	Abnormal LFTs	2 = Bilirubin ≥ 6 mg/dL or SGOT ≥ 50 U/L
			5 = Precoma bilirubin > 8.0 mg/dL		

Scoring system	Bell et al, 1983	Marshall WG and Dimick, 1983	Stevens, 1983	Manship et al, 1984	Goris et al, 1985
Haematological	PT or PTT 2 x control		1 = Ecchymoses, PT, PTT and platelets normal 2 = PTT 45-65 secs, PT 12-14 secs	Abnormal clotting	0 = Normal platelet and WCC
	FDPs present		3 = Platelets 20,000-100,000/mm3, PTT > 50 secs, PT > 14 secs	DIC	1 = Thrombocyte count < 50 x 10^9/L and/or leukocyte count ≥ 30 x 10^6/L and < 60 x 10^6/L
	Platelets < 50,000		4 = Platelets < 20,000/mm3, elevated PT and PTT	Underlying haematological disease	2 = Haemorrhagic diathesis or leukocyte count < 2.5 x 10^6/L or ≥ 60 x 10^6/L
	Fibrinogen < 200mg/dL		5 = Increased FSP and euglobulin, bleeding		
Gastrointestinal	Haemorrhage at any level of GI tract requiring transfusion		1 = Mild ileus 2 = Moderate ileus	Included with liver	0 = Normal
	Perforation		3 = Severe ileus		1 = Acalculous cholecystitis or stress ulcer
	Pancreatitis		4 = Bleeding due to erosive gastritis		2 = Bleeding from stress ulcer necessitating transfusion > 2 units blood in 24 hours, necrotising enterocolitis and/or
	Ischaemia		5 = Mesenteric venous thrombosis		pancreatitis and/or spontaneous perforation of gallbladder
Central nervous system	Meningitis		1 = Obtunded 2 - Disorientated		0 = Normal
	Intracranial haemorrhage		3 = Irrational		1 = Diminished response
	Infarction		4 = Hyporeactive		2 = Severely impaired response and/or diffuse neuropathy
	Obtundation		5 = Coma		
Endocrine	Diabetes Acidosis Hypoadrenalism				
Overall scoring system		Used in study on burns patients. No of OFs counted. Additional sepsis category defined as immune system failure.	Used to create SSS (Septic Severity Score). Square of each of the worst three organ system scores, then added together. Correlation between SSS and mortality.		MOF scale 0 - 14, mean score calculated as score/day
Reference	Bell RC, Coalson JJ, Smith JD, Johanson WG Jr. Multiple organ systems failure and infection in adult respiratory distress syndrome. *Ann Intern Med* 99:293-298, 1983	Marshall W and Dimick A. The natural history of burns with multiple subsystem failure. *J Trauma* 23:102-105, 1983.	Stevens LE. Gauging the severity of surgical sepsis. *Arch Surg* 118, 1190-1192, 1983	Manship L, McMillian RD, Brown KK. The influence of sepsis ad multisystem organ failure on mortality in the surgical intensive care unit. *Am Surg* 50:94-101, 1984	Goris R, Bookhorst P, Nuytinick JK, Gimbere JS. Multiple organ failure: generalized autodestructive inflammation. *Arch Surg* 120:1109-1115, 1985

Scoring system	Knaus et al, 1985	Norton, 1985	Maetani et al, 1986	Carrico et al, 1986	Shen & Zhang, 1987
Respiratory	RR ≤ 5/min or ≥ 49/min	Hypoxia - assisted ventilation	Arterial oxygen tension below 60 torr with clinical evidence of pulmonary abnormalities or requirement of a respirator for more than 48 hours	1 = mild respiratory alkalosis	Dsypneoa and tachypneoa not improved despite dehydration by haemodialysis and mechanical ventilation
	PaCO2 ≥50mmHg			2 = tachypnoea, hypocapnia, hypoxia	
	AaDO2 ≥350 mmHg (AaDO2 = 713 FiO2 - PaCO2 - PaO2)			3 = severe hypoxia	
	Ventilator dependent on Day 4 of organ failure			4 = hypercapnia and barotrauma	
Cardiovascular	Pulse ≤ 54/min			1 = increased volume requirements	Clinical manifestations of heart failure and ECG changes
	MAP ≥ 49 mmHg			2 = hyperdynamic, volume dependent	
	VT and/or VF			3 = shock, decreased cardiac output, oedema	
	Serum pH ≤ 7.24 with pCO2 ≤ 49mmHg			4 = inotropes, volume overload	
Renal	Urine output ≤ 479ml/24 hours or ≤ 159 ml/8 hours	Dialysis	Serum creatinine > 3mg/100ml or urine output < 300ml in 24 hours despite use of diuretics and adequate hydration	1 = limited responsiveness	BUN 64-188 mg/DL
	Serum BUN ≥ 100mg/100ml			2 = fixed output, minimal azotemia	Creatinine 8.9 to 28 mg/dL
	Serum creatinine ≥ 3.5mg/100ml			3 = azotemia	Oliguria or anuria
				4 = oliguria	
Hepatic		Bilbirubin > 3mg/dL, serum SGOT 2 x normal	Bilirubin > 5mg/100ml not associated with hepatitis or biliary obstruction	1 = not defined	AAT 67.5 to 560 U/L
				2 = chemical jaundice	Icteric index 36 to 55U
				3 = clinical jaundice	Bilirubin > 34 umol/L (2mg/dL)
				4 = encephalopathy	

Scoring system	**Knaus et al, 1985**	**Norton, 1985**	**Maetani et al, 1986**	**Carrico et al, 1986**	**Shen & Zhang, 1987**
Haematological	WCC ≤ 1000 mm3 Platelets ≤20,000 mm3 Haematocrit ≤ 20%	DIC on laboratory testing	Platelets < 30,000/mm3 and a demonstrated haemorrhagic tendency	1 = not defined 2 = decreased platelet count, increased or decreased WCC 2 = coagulopathy 4 = immature cells and coagulopathy	
Gastrointestinal		GI bleeding requiring transfusion	Endoscopic demonstration of acute ulceration, bloody vomitus or blood via NG tube not related to other lesions		Coffee-coloured vomit and tarry stools
Central nervous system	GCS ≤ 6 in absence of sedation	Coma		1 = confusion 2 = variable 3 = some response 4 = coma	Coma
Endocrine				1 = Increased insulin requirements 2 = Severe catabolism 3 = Metabolic acidosis, hyperglycaemia 4 = Severe acidosis, increased O2 consumption	
Overall scoring system	Any one present for each system for positive score. No of OF counted. No renal score if previously on dialysis.	No of OF		Descriptive of severity	Number of organ systems failed.
Reference	Knaus WA, Draper EA, Wagner DP, Zimmerman JE. Prognosis in acute organ-system failure. *Ann Surg* 65:685-693, 1985	Norton LW. Does drainage of intra-abdominal pus reverse multiple organ failure? *Am J Surg 149:347-350, 1985*	Maetani S, Nishikawa T, Hiarakawa A, Tobe T. Role of blood transfusion in organ system failure following major abdominal surgery. *Ann Surg* 203 (3), 275-281, 1986	Carrico CJ, Meakins JL, Marshall JC. Multiple organ failure syndrome. *Arch Surg* 121:196-208, 1986 AND Carrico CJ, Meakins JL, Marshall JC, Fry D, Maier RV. Multiple-organ-failure syndrome. *Arch Surg* 121: 196-201, 1986	Shen P-F, Zhang S-C. Acute renal failure and multiple organ system failure. *Arch Surg* 122, 1131-1133, 1987

Scoring system	Bihari et al, 1987	Marshall et al, 1988	Darling et al, 1988	Bumaschny et al, 1988	Rubin et al, 1990
Respiratory	Ventilator dependent with A-a tension gradient > 250mmHg or pulmonary shunt > 20% Dopamine therapy for MAP > 45mmHG in the absence of hypovolaemia (PAWP > 6mmHg)	0 = no ventilatory support or support with FiO2 < 0.3 for 5 days or less 1 = ventilatory support with FiO2 ≤ 0.4 for 5 or more days 2 = ventilatory support with FiO2 > 0.4 for ≥ 3 consecutive days	Fall in oxygen tension < 50mmHg on room air Need for mechanical ventilation > 48 hours Aetiological evidence of pulmonary oedema, pulmonary capillary wedge pressure < 18 mmHg	Arterial PO2 < 50mmHg with FiO2 0.21	Lung injury score based on CXR, hypoxaemia, compliance and PEEP 0 = no injury 0.1-2.5 = moderate lung injury >2.5 = severe lung injury
Cardiovascular		0 = normal central blood pressure 1 = cardiac output > 7.0 L/min or PAWP ≥ 20mm Hg 2 = inotropes required	Cardiac index <= 2.5l min/m2 with normal elevated filling pressures or dependence on inotropic drugs to maintain tissue perfusion	HR > 130 beats/min SBP < 80 mmHg Severe arrythmia Acute MI	
Renal	Serum creatinine > 300 micromol/L in preceding 24 hours	0 = creatinine ≤ 1.4mg/dL (120 umol/L) 1 = creatinine 1.5-2.4 mg/dL (130-210 umol/L) or chronic renal failure 2 = creatinine ≥ 2.5mg/dL (≥220 umol/L)	Serum creatinine > 176.8 micomol/L or double the level of pre-existing impairment Creatinine clearance of < 30mL per age over 24 hours despite adequate hydration	Creatinine > 177 umol/L (> 2mg/dL) or doubles within 24 hours	Serum creatinine > 2mg/dL
Hepatic	Serum bilirubin > 100 micromol/L Alkaline phosphatase > 3 x normal	0 = bilirubin < 19 micromol/L, albumin ≥ 25 g/L (≥2.5g/dL) 1 = bilirubin 19-34 micromol/L (1.1 to 2.0 mg/dL), albumin < 25 g/L (< 2.5 g/dL) 2 = bilirubin ≥ 34 micromol/L (≥2.0 mg/dL), albumin ≤ 20 g/L (≤ 2.0g/dL)	Serum bilirubin > 68.4 micromol/L AST > 2 x normal		Bilbirubin > 2 mg/dL PT ≥ 3 secs longer than control

Scoring system	Bihari et al, 1987	Marshall et al, 1988	Darling et al, 1988	Bumaschny et al, 1988	Rubin et al, 1990
Haematological	WCC < 2.0 x 10^9/L	0 = platelets ≥100 x 10^9/L	Platelet < 50,000	Haematocrit < 30%	Platelet < 75,000/mm3
	Platelet count < 40 x 10^9/L	1 = platelets 60-99 x 10^9/L	DIC	WCC < 3 x 109/L or > 30 x 109/L	WCC < 1000/mm3
	Abnormal coagulation, suggesting DIC	2 = platelets < 60 x 10^9/L	Fibrinogen < 2.0 g/L	Platelets < 80 x 109/L	DIC
			FDPs > 10mg/mL or positive protamine sulfate test or bleeding diathesis	p50 < 23mmHg	
Gastrointestinal			Inability to tolerate enteral feed	Acute upper GI tract haemorrhage	
			Acalcuous cholecystitis	Bilirubin > 171 umol/L (>10mg/dL), amylase > 200U/L, ALP > 200 U/L	
			Pancreatitis	Ileus over 48 hours in nonsurgical cases or 96 hours in postoperative cases	
			GI bleed requiring transfusion > 2 units packed cells in 24 hours		
Central nervous system	Encephalopathy before intubation suggested by sudden onset confusion, psychosis, coma	0 = GCS 14 or 15 1 = GCS 11-13 2 = GCS ≤10	Decreased level of consciousness in the absence of CNS infection		Obtunded - not attributable to sedation, primary CNS abnormalities, seizures
Endocrine		0 = No insulin requirement 1 = Insulin 1-3 U/hr 2 = Insulin 4+ U/hr			
Overall scoring system		Continuous scoring system - sum of worst values for each system during ICU admission. Total score 0 - 16. Original score immunologic score based on delayed-type hypersensitivity but found to be poor disciminator in ICU patients.		Any parameter = SOF, except CV failure needs 2 parameters minimum. GI and hepatic combined under "Digestive".	Each system OF considered individually
Reference	Bihari D, Smithies M, Gimson A, Tinker J. The effects of vasodilation with prostacyclin on oxygen delivery and uptake in critically ill patients. *New Engl J Med* 317:397-403, 1987	Marshall JC, Christou NV, Horn R, Meakins JL. The microbiology of mutliple organ failure. The proximal gastrointestinal tract as an occult reservoir of pathogens. *Arch Surg* 123:309-315, 1988	Darling GE, Duff JH, Mustard RA, Finley RJ. Multiorgan failure in critically ill patients. *Can J Surg* 31:172-176, 1988	Bumaschny E, Doglio G, Pusajo J, Vetere L, Parra C, Grosso RM, Schieppati E. Postoperative acute GI tract haemorrhage and multiple organ failure. *Arch Surg* 123, 722-726, 1988	Rubin DB, Wiener-Kronish JP, Murray JF, et al. Elevated von Willebrand Factor Antigen is an early plasma predictor of acute lung injury in nonpulmonary sepsis syndrome. *J Clin Invest* 86:474-480, 1990

Scoring system	Dorinsky and Gadek, 1990	Tran et al, 1990	Bone, 1991	Villar et al, 1991	Ruokonen et al, 1991
Respiratory	Presence of ARDS	RR <= 5/min or >= 50 /min	ARDS: Hypoxia with predisposing factor	Endotracheal intubation and mechanical ventilation for at least 48 hours	Dependence on mechanical ventilation
		Mechanical ventilation for >= 3 days	Bilateral pulmonary infiltrates consistent with pulmonary oedema and PaO2/Fio2 < 175	FiO2 > 0.3 to maintain PaO2 at 75mmHg	
		FiO2 > 0.4 and/or PEEP > 5 cmH2O	PAWP < 18mmHg if measured		
			Absence of congestive heart failure or primary lung disease (i.e. PE or LRTI)		
Cardiovascular	CI <= 2L/min/m2	MAP <= 50 mmHg		Pulmonary capilllary wedge pressure > 18mmHg	Vasoactive drug infusion required to treat hypotension
	MAP < 60 mmHg	Need for volume loading and/or vasoactive drugs to maintain systolc arterial pressure > 100mmHg		Low cardiac output	Decreased cardiac output
	Reversible VF	HR <= 50 beats/min			
	Raised systole	VT, VF, Acute MI, Cardiac arrest			
Renal	Serum creatinine > 2mg/dL	Serum creatinine >= 280 umol/L (3.5mg/dL)	Acute renal failure - abnormal creatinine with urinary Na+ 40mmmol/L or increased creatinine > 176	Serum creatinine > 2mg/dL	Serum creatinine > 200 micromol/L (2.3 mg/dL)
	Urine output < 600ml in 24 hour period	Dialysis or ultrafiltration	micromol/L (2.0mg/dL) with previous renal impairment	OR doubling of admission creatinine if pre-existing renal disease	Urine output < 750ml in 24 hours (or 10ml/kg body weight) in the absence of hypovolaemia
			Not pre-renal or due to rhabdomyolysis		Dialysis
Hepatic	Serum bilirubin > 4-5mg/dL	Clinical jaundice or total bilirubin >= 51 umol/L (3mg/dL) in the absence of haemolysis	Bilirubin > 34 micromol/L (2.0mg/dL) and alkaline phosphatase, gamma GT AST or SGPT > 2 x normal limit	Bilirubin > 2mg/dL and AST and LDH > 2 x normal	Bilirubin > 40 umol/L (2,3 mg/dL) and AAT > 40 U/L
	PT > 1.5 x control	Serum glutamic-pyruvate transaminanse > 2 x normal			
	Serum albumin < 2.0 g/dL	Hepatic encephalopathy			

Scoring system	Dorinsky and Gadek, 1990	Tran et al, 1990	Bone, 1991	Villar et al, 1991	Ruokonen et al, 1991
Haematological	Platelet < 50,000	Hct <= 20%	FDP > 1:40 or D-Dimers > 2.0	Platelets < 50,000/mm3	Platelet < 80 x 10^9/L
	WCC >1000	Leukocyte count <= 0.3 x 109/L	>25% decrease in platelets or abnormally low value	Elevated FDPs	Leukocyte count < 3.5 x 10^9/L
	Fibrinogen < 100ml/dL	Thrombocyte count <= 50 x 109/L	AND increased PT or APTT OR clinical evidence of bleeding	Fibrinogen level < 200mg/dL	
		DIC			
Gastrointestinal	Haemorrhage exceeding 1 g/dL Hb in 24 hours	Stress ucler requiring transfusion of > 2 units of blood/24 hours		GI bleeding requiring >= 2 units RBCs transfusion in 24 hours	Macroscopic GI bleeding
	Ileus/malabsorption	Haemorrhagic pancreatitis			Paralytic ileus
	Acalculous cholecystitis	Acalculous cholecystitis, necrotizing enterocolitis, bowel perforation			
	Pancreatitis				
Central nervous system	Confusion	GCS <= 6 in the absence of sedation	GCS < 15 or at least one point below baseline in absence of sedation	GCS < 8 in absence of sedation	GCS < 10 in absence of sedation
	Agitation				
	Seizures				
	Coma with GCS <6-8				
Endocrine					
Overall scoring system		Any single criteria met = OF. MOF if 2 or more systems failed.	Not stated	Based on Fry et al and Bell et al. Shock also considered as an organ system failure (separate to CV) defined as SBP < 85mmHg for over 2 hours with evidence of organ hypoperfusion or need for vasopressors to maintain SBP > 85mmHg. MOF defined as >= 2 organ systems in addition to respiratory	Sum score of OFs
Reference	Dorinsky PM, Gadek JE. Multiple organ failure clinics. *Clin Chest Med* 11:581-591, 1990	Tran DD, Groeneveld ABJ, van der Meulen J, Nauta JJO, Strack RJM, van Schijndel S, Thijs LG. Age, chronic disease, sepsis, organ system failure, and mortality in a medical intensive care unit. *Critical Care Medicine* 18(5), 474-479, 1990	Bone RL. Let's agree on terminology: definitions of sepsis. *Crit Care Med* 19:973-976, 1991	Villar J, Manzano JJ, Blazquez MA, Quintana J, Lubillo S. Multiple System Organ Failure in Acute Respiratory Failure. *Journal of Critical Care* 6(2), 75-80, 1991	Ruokonen E, Takala J, Kari A, Alhava E. Septic shock and multiple organ failure. *Crit Care Med* 19:1146-1151, 1991

Scoring system	Moore et al, 1991	Henao et al, 1991	Shoemaker et al, 1992	Martin et al, 1992	Dobb, 1992 (Royal Perth Hospital)	Hebert et al, 1993
Respiratory	1 = > 48 hours mechanical ventilation	Need for mechanical ventilation for at least 72 hours (due to hypoxia requiring > 40% FiO2 or progressive hypercapnia)	PaO2/FiO2 <250	Mechanical ventilatory support	PaCO2 > 50 mmHg	Ventilator-dependent with an A-a gradient > 250mmHg or a pulmonary shunt > 20%
	2 = > 72 hours mechanical ventilation		Qsp > 20%		AaDO2 > 350mm Hg	
	3 = > 72 hours mechanical ventilation with PEEP > 10 cm H20 or FiO2 > 0.50 or ARDS				FiO2 0.6, PEEP > 5 cm water (60mmHg)	
Cardiovascular	1 = minimal inotropes - dopamine < 5ug/kg/min	High filling pressures with inadequate circulation (via CO, WP or LVWI) or persistent arrythmias	CI < 2.5	Congestive hearth failure requiring therapy other than diuretics or digitalis	Inotrope dependent > 30 mins	Adrenergic agents to maintain MAP > 55 mmHg in the absence of hypovolaemia (PAWP > 6mmHg)
	2 = moderate inotropes - dopamine 5-10 ug/kg/min or treated arrythmia		Wedge pressure > 20mmHg	OR MI	Cardiac index <= 2.0 L/min/m2	
	3 = high inotropes - dopamine > 10 ug/kg/min or cardiac arrest				Balloon pump needed	
Renal	1 = creatinine > 1.8 mg/dL	Creatinine > 2mg/dL or double admission value	BUN > 50 mg/dl	Creatinine > 3.0 mg/dl	Creatinine clearance < 0-5 ml/sec	Creatinine > 300 micromol/L
	2 = creatinine > 2.5 mg/dL		Creatinine > 3 mg/dl			
	3 = creatinine > 5 mg/dL or haemodialysis					
Hepatic	1 = Bilirubin > 2.0 mg/dL or albumin < 2.8 mg/dL	Bilirubin > 3mg/dL and either LDH or SGOT 2 x normal or PT 25% above control		Bilirubin > 5mg/dL	2 from: bilirubin > 30 micromol/L, AST or gamma GT 2 x normal, PT >1.5 x control in absence of DIC	Bilirubin > 60 mmol/L or ALP > 350 U/L
	2 = bilirubin 4-8 mg/dL or albumin < 2.3 mg/dKL or PT > 2 secs over control			OR transaminase > 3 x upper limit of normal		
	3 = bilirubin > 8.0 mg/dL or albumin < 1.9 mg/dL or PT > 4 sec over control					
	Not due to biliary obstruction or resolving haematoma					

Scoring system	Moore et al, 1991	Henao et al, 1991	Shoemaker et al, 1992	Martin et al, 1992	Dobb, 1992 (Royal Perth Hospital)	Hebert et al, 1993
Haematological	1 = Platelets < 75,000/mm3	Platelets < 80,000 with prolongation of PT and PTT to 25% above control	Platelets < 75,000	Platelets < 50,000/mm3	WCC <=1000	WCC < 2.0 x 10^9/L
	2 = Platelets 50,000 - 75,000/ml or WBC < 5000/mm3		PT > 18/12 sec	OR PT > 30% higher than control	Platelets <=20,000	Platelet 40x 10^9/L
	3 = Platelets < 50,000/mm3 or WBC < 25,000/mm3		PTT > 2 x normal Fibrin split products		PT, aPTT, TCT >1,5 x control (excluding liver disease)	Abnormal coagulation I.e. PT > 2 x INR, PTT > 2 x normal, FDPs > 10mg/L
Gastrointestinal	1 = Mild enteral intolerance 2 = Moderate enteral intolerance or stress ulcers 3 = Severe entreal intolerance or stress bleed (> 2 units PRBC/24 hours)	Pancreatitis or gross GI bleeding requiring at least 2 units of blood in a 24 hour period		Drop in Hb of >= 2mg/dl, haematemesis, maelena, haematochezia or bright red blood in NG tube	GI haemorrhage needing transfusion Diarrhoea > 4 liquid stools per 24 hours Ileus > 3 days or pseudo-obstruction	Fresh blood in NG tube AND/OR melaena or fresh blood pr with fall in Hb > 20g/L requiring 2 units RBCs in 24 hours
Central nervous system	1 = GCS < 14 2 = GCS 9-12 3 = GCS <8		Coma		GCS <= 6	GCS < 10 or decrease in GCS of 3 if primary CNS injury present
Endocrine	1 = Insulin > 1U/hr 2 = Insulin 2-4 units/hr or trigylcerides > 250mg/dl 3 = Insulin > 4 U/hr or triglycerides > 350mg/dl No pre-existing DM					
Overall scoring system	MOF >8		OF present or absent, no of OF counted	No of OFs		No of OFs
Reference	Moore FA, Moore EE, Poggetti R, McAnena OJ, Peterson VM, Abernathy CM, Parsons PE. Gut bacterial transolocation via the portal vein: A clinical perspective with major torso trauma. *J Trauma* 31(5):629-636, 1991	Henao FJ, Daes JE, Dennis RJ. Risk factors of multiorgan failure: a case-control study. *J Trauma* 31:74-80, 1991	Shoemaker WC, Appel PL, Kram HB. Role of oxygen debt in the development of organ failure, sepsis and death in high-risk surgical patients. *Chest* 102, 208-215, 1992	Martin LF, Booth FV, Reines D, Deysach, L, Kochman RL, Erhardt LJ, Geis GS. Stress ulcers and organ failure in intubated patients in surgical intensive care units. *AnnSurg* 215(4), 332-337, 1992	Dobb GJ. Multiple organ failure - "Words mean what I say they mean" *Intensive Care World* 14:61-63, 1992	Hebert PC, Drummond AJ, Singer J, Bernard GR, Russell JA. A simple multiple system organ failure scoring system predicts mortality of patients who have sepsis syndrome. *Chest* 104:230-235, 1993

Scoring system	Kollef M, 1993	Fagon et al, 1993 (ODIN)	Saffle et al, 1993	Marshall et al, 1995 = MODS score	Moore et al, 1996	SOFA - Vincent et al, 1996
Respiratory	Mechanical ventilation for LRTI, COPD, asthma, pulmonary oedema or PaO2 < 60mmHg with FiO2 > 0.5 or PEEP > 10	PaO2 < 60mmHg on FiO2 = 0.21	Graded 0-5 - normal to intubation > 10 days or tracheotomy	1 = pO2/FiO2 226-300	1 = ARDS score > 5	1 = pO2/FiO2 < 400
		OR need for ventilatory support		2 = pO2/FiO2 151-225	2 = ARDS score > 9	2 = pO2/FiO2 < 300
				3 = pO2/FiO2 76-150	3 = ARDS score > 13	3 = pO2/FiO2 < 200 with respiratory support
				4 = pO2/FiO2 ≤ 75		4 = pO2/FiO2 < 100 with respiratory support
Cardiovascular	Acute MI	Systolic arterial pressure < 90mmHg with signs of peripheral hypoperfusion	Graded 0-6 - normal to shock, high filling pressures and inadequate CO	1 = PAR 10.1-15.0	1 = minimal inotropes (Cardiac index < 3.0 L/min/m2 - dopamine or dobutamine < 5ug/kg/min)	1 = MAP < 70 mmHg
	Cardiac arrest	OR continuous infusion of vasopressor or inotropic agents required to maintain systolic pressure > 90mmHg		2 = PAR 15.1 - 20.0	2 = moderate inotropes - dopamine or dobutamine 5-15 ug/kg/min	2 = Dopamine ≤5 or any dose dobutamine
	Congestive heart failure	AND absence of hypovolaemia		3 = PAR 20.1-30.0	3 = high inotropes - dopamine or dobutamine > 15ug/kg/min	3 = Dopamine > 5 or epinephrine ≤0.1 or norepinephrine ≤ 0.1
				4 = PAR > 30.0		4 = Dopamine > 15 or epinephrine > 0.1 or norepinephrine > 0.1
Renal	2 x increase in baseline creatinine or increase by 176.8 micromol/L (2.0 mg/dL)	Creatinine > 300umol/L	Graded 0-6 - normal to plasma apheresis required.	1 = Creatinine 101-200	1 = creatinine > 1.8 mg/dL	1 = Creatinine 1.2-1.9 mg/dL
		OR Urine output < 500ml/24 hrs or 180ml/8 hr		2 = Creatinine 201-350	2 = creatinine > 2.5 mg/dL	2 = Creatinine 2.0-3.4 mg/dL
		OR need for haemodialysis or peritoneal dialysis		3 = Creatinine 351-500	3 = creatinine > 5 mg/dL	3 = Creatinine 3.5-4.9 mg/dL or urine output < 500ml /day
				4 = Creatinine > 500		4 = Creatinine > 5.0 mg/dL or urine output < 200ml/day
Hepatic	Bilirubin > 34.2 umol/l (2.0mg/dL)	Bilbirubin > 100umol/L		1 = Bilirubin 21-60	1 = Bilirubin > 2.0 mg/dL	1 = Bilirubin 20-32
		OR Alkaline phosphatase > 3 x normal		2 = Bilirubin 61-120	2 = bilirubin > 4.0 mg/dL	2 = Bilirubin 33-101
				3 = Bilirubin 121-240	3 = bilirubin > 8.0 mg/dL	3 = Bilirubin 102-204
				3 = Bilirubin 121-240	Not due to biliary obstruction or resolving haematoma	3 = Bilirubin > 204

Scoring system	**Kollef M, 1993**	**Fagon et al, 1993 (ODIN)**	**Saffle et al, 1993**	**Marshall et al, 1995 = MODS score**	**Moore et al, 1996**	**SOFA - Vincent et al, 1996**
Haematological	DIC WCC <1.0 x 10^9/l Platelet < 75 x 10^9/L	Haematocrit <= 20% OR WCC < 2000/mm3 OR Platelet < 40000/mm3		1 = Platelets 81-120 2 = Platelets 51-80 3 = Platelets 21-50 4 = Platelets ≤20		1 = Platelets < 150 2 = Platelets < 100 3 = Platelets < 50 4 = Platelets < 20
Gastrointestinal	Gi haemorrhage requiring transfusion Ileus Diarrhoea lasting > 24 hours and not related to previous bowel surgery		Graded 0-4 - normal to TPN required for pancreatitis or GI bleeding			
Central nervous system	New focal deficit or generalized process	GCS <= 6 in absence of sedation OR Sudden onset confusion or psychosis	Graded 0-6 - normal to coma	1 = GCS 13-14 2 = GCS 10-12 3 = GCS 7-9 4 = GCS ≤6		1 = GCS 13-14 2 = GCS 10-12 3 = GCS 6-9 4 = GCS < 6
Endocrine						
Overall scoring system	Two groups with cut-off score of 3.	Additional infection criteria if clinical evidence of infection AND 2 or more positive blood cultures OR presence of gross pus in an enclosed space OR source of infection confirmed. Worst score over 24 hour period. OF either present or absent for each system.	Additional grading of infection 0-6 - normal to clinical sepsis. Total score = 33 points. Specifically developed for burns patients.	Daily calculations, admission scores, aggregate scores, delta scores, mortality-adjusted scores.	Worst score for each day, SOF ≥ 2, MOF ≥ 4 Original group now argue for use as continuous scale. No scores in 1st 48 hours.	Descriptive score, worst value for each organ system for each day recorded/
Reference	Kollef M. Ventilator-associated penumonia. A mutlivariate analysis. *JAMA* 270:1965-1970, 1993	Fagon J-Y, Chastre J, Novara A, Medioni P, Gilbert C. Characterization of intensive care unit patients using a model based on the presence or absence of organ dysfunctions and/or infection: the ODIN model. *Intensive Care Med* 19:137-144, 1993	Saffle JR,Sullivan JJ, Tuohig GM, Larson CM. Multiple organ failure in patients with thermal injury. *Crit Care Med* 21:1673-1683, 1993	Marshall JC, Cook DJ, Christou NV, Bernard GR, Sprung CL, Sibbald WJ. Multiple Organ Dysfunction ScoreL A reliable descriptor of a complex clinical outcome. *Critical Care Medicine* 23 (10), 1638-1652, 1995	Moore FA, Sauaia A, Moore EE, Haenel JB, Burch JM, Lezotte DC. Postinjury multiple organ failure: a bimodal phenomenon. *J Trauma* 40:501-510, 1996	Vincent J-L, Moreno R, Takala J, Willatts S, De Mendonca A, Bruining H, Reinhart CK, Suter PM, Thijs LG. The SOFA (Sepsis-related Organ Failure Assessment) score to describe organ dysfunction/failure. *Intensive Care Med* 22:707-710, 1996

Scoring system	LOD System, Le Gall et al, 1996	Waydhas et al, 1996	Brussels score, 1997	Denver score modification, 2004	Denver score current modification, 2006
Respiratory	Based on PaO2/FiO2, max 3 LOD points	Need for mechanical ventilation	Mild = PaO2/FiO2 400-301	0 = PaO2/FiO2 > 250	0 = PaO2/FiO2 > 250
		AND PaO2/FiO2 < 280	Mod = PaO2/FiO2 300-201 (ALI)	1 = PaO2/FiO2 250-175	1 = PaO2/FiO2 250-175
		OR PEEP > 8 cm H2O for > 48 hours	Severe = PaO2/FiO2 200-101 (ARDS)	2 = PaO2/FiO2 = 175-100	2 = PaO2/FiO2 = 175-100
			Extreme = PaO2/FiO2 <100 (Severe ARDS)	3 = PaO2/FiO2 < 100 (All values readjusted for sea level)	3 = PaO2/FiO2 < 100 (All values readjusted for sea level)
Cardiovascular	Heart rate and systolic bp, max 5 LOD points		Mild = systolic bp ≤90 (responsive to fluids)	0 = No inotropes and CI > 3.0 L/min/m2	0 = No inotropes
			Moderate = systolic bp ≤ 90 (not responsive to fluids)	1 = Minimal inotropes or CI > 3.0 L/min/m2	1 = Only one inotrope at small dose
			Severe = systolic bp ≤ 90 with pH ≤7.3	2 = Moderate inotropes	2 = Any inotrope at moderate dose or > 1 agent, all at small doses
			Extreme = systolic bp ≤ 90 with pH ≤7.2	3 = High inotropes	3 = Any inotrope at large dose or > 2 agents at moderate doses
Renal	Urea, urea nitrogen and creatinine, max 5 LOD points	Creatinine > 177 umol/L for > 48 hours	Mild = Creatinine 1.5-1.9 mg/dl	0 = Creatinine < 1.8 mg/dL	0 = Creatinine < 1.8 mg/dL
			Mod = Creatinine 2.0-3.4 mg/dL	1 = Creatinine 1.8-2.5 mg/dL	1 = Creatinine 1.8-2.5 mg/dL
			Severe = Creatinine 3.5-4.9 mg/dL	2 = Creatinine 2.5-5.0 mg/dL	2 = Creatinine 2.5-5.0 mg/dL
			Extreme = Creatinine ≥ 5.0 mg/dL	3 = Creatinine > 5.0 mg/dL	3 = Creatinine > 5.0 mg/dL
Hepatic	Bilirubin and PT, max 1 LOD point	Bilirubin > 51 umol/L for > 48 hours	Mild = Bilirubin 1.2-1.9 mg/dL	0 = Bilirubin < 2.0 mg/dL	0 = Bilirubin < 2.0 mg/dL
			Mod = Bilirubin 2.0-5.9 mg/dL	1 = Bilirubin 2.0-4.0 mg/dL	1 = Bilirubin 2.0-4.0 mg/dL
			Severe = Bilirubin 6.0-11.9 mg/dL	2 = Bilirubin 4.0-8.0 mg/dL	2 = Bilirubin 4.0-8.0 mg/dL
			Extreme = Bilirubin ≥12 mg/dl	3 = Bilirubin > 8.0 mg/dL	3 = Bilirubin > 8.0 mg/dL

Scoring system	LOD System, Le Gall et al, 1996	Waydhas et al, 1996	Brussels score, 1997	Denver score modification, 2004	Denver score current modification, 2006
Haematological	WCC and platelets, max 3 LOD points		Mild = Platelets 120-81 Mod = Platelets 80-51 Severe = Platelets 50-21 Extreme = Platelets ≤20		
Gastrointestinal					
Central nervous system	GCS, max 5 LOD points		Mild = GCS 14-13 Mod = GCS 12-10 Severe = GCS 9-6 Extreme = GCS ≤5		
Endocrine					
Overall scoring system	Maximum total score = 22 points. Accounts for relative severity among organ systems as well as severity within a system. Each organ system has severity 1,2,3 equated to LOD points 1,3,5. Accounts for derangements in both directions.	OF within 48 hours of operation or deterioration of pre-existing organ dysfunction by > 20% from baseline within 48 hours and for at least 2 days.	Most abnormal values for each day, descriptive scale. No of organ failure free days can be calculated.	Worst score each day.	Worst score each day
Reference	Le Gall Jr, Klar J, Lemeshow S, et al. for the ICU Scoring Group. The Logistic Organ Dysfunction System. A new way to assess organ dysfinction in the intensive care unit. *JAMA* 276, 802-810, 1996	Waydhas C, Nast-Kolb D, Trupka A, Zettle R, Kick M, Wiesholler J. Posttraumatic inflammatory response, secondary operations and late multiple organ failure. *J Trauma* 40(4), 624-631, 1996.	Bernard G. The Brussels Score. *Sepsis* 1:43-44, 1997.	Ciesla DJ, Moore EE, Johnson JL, Sauaia A, Cothren CC, Moore JB, Burch JM. Multiple Organ Dysfunction during resuscitation is not postinjury multiple organ failure. *Arch Surg* 139:590-595, 2004	Ciesla DJ, Moore EE, Johnson JL, Burch JM, Cothren CC, Sauaia A. Obesity increases risk of organ failure after severe trauma. *J Am Coll Surg* 203(4): 539-545, 2006

APPENDIX 7 DATA EXTRACTION TABLES

7.1. CIS DATA EXTRACTION TABLES

7.1.1. INPUT VARIABLES - PATIENT

BMI

BMI				
CIS Tables	**Potential rows - propName**	**Potential rows - display Label**	**Used for data storage?**	**Extracted**
Observation	heightObs	Height	Yes	Yes
	ptWeightObs	Weight	Yes	Yes

7.1.2. INPUT VARIABLES - INJURY

GCS

GCS				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	GCS_Total_ScoreInt	GCS Total Score	No	
	GCSEyesObs	GCS Eyes	Yes	Yes
	GCSMotorObs	GCS Motor	Yes	Yes
	GCSObs	GCS Total	Yes	Yes
	GCSVerbalObs	GCS Verbal	Yes	Yes
Intervention	TraumaGCSInt	GCS	Yes	Yes
	GCSInt	GCS	Yes	Yes

7.1.3. INPUT VARIABLES – PHYSIOLOGY

BLOOD PRESSURE

Blood pressure				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	BPModeObs	BP Mode	No	
	bpObs	BP	Yes	Yes
Intervention	arterialBPInt	ABP	Yes	Yes
	Systolic_blood_pressurePIM2Int	Systolic blood pressure	No	
	Systolic_BP_maintained_Int	Systolic blood pressure maintained	No	
	Systolic_BP_surgTTInt	Systolic bp (surg T+T)	Yes, not relevant	No
	Systolic_BP_TTInt	Systolic bp (T+T)	Yes, not relevant	No
	nonInvasiveBPInt	NIBP	Yes	Yes
	Diastolic_functionInt	Diastolic function	No	
	IABP_BPInt	IABP BP	Yes	Yes, data in CIS1 only

CARDIAC INDEX

Body surface area				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	BSAObs	BSA	Yes	Yes
Intervention	BSAInt	Body Surface Area (admit)	Yes	Yes

Cardiac Output				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	CardiacOutputObs	Cardiac Output	Yes	Yes, data in CIS4 and 5 only
	CCOObs	Continuous Cardiac Output	Yes	Yes, no data in CIS7
Intervention	CardiacOutputInt	Cardiac Output	Yes	Yes, data in CIS4 and 5 only
	CCO_LithiumInt	CCO Lithium	No	
	CCO_PAInt	CCO PA	No	
	CCOInt	CCO PICCO	No	
	Doppler_Cardiac_OutputInt	Doppler Cardiac Output	Yes	No data for trauma patients
	LiDCO_CCOInt	LiDCO CCO	No	
	FickCardiacOutputInt	Fick Cardiac Output	No	

Cardiac Index				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	CIObs	Cardiac Index	Yes	Yes, data in CIS4 and 5 only
	CCIObs	Continuous Cardiac Index	Yes	Yes, data in CIS2-6 only
Intervention	CCIInt	Continuous Cardiac Index	No	
	Doppler_Cardiac_IndexInt	Doppler Cardiac Index	Yes	Yes, data in CIS1-6 only
	LiDCO_CCIInt	LiDCO CCI	No	

FIO2

FiO2				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	FiO2FractionObs	FiO2 Fraction	No	
	FiO2Obs	FiO2 %	Yes	Yes
	PO2FIO2_RatioObs	PO2/FiO2 Ratio	Yes	Yes
	Oxygen_Flow_RateObs	Oxygen Flow Rate	Yes	Yes
	InspiredO2Obs	Inspired O2	No	
	EndtidalO2Obs	End-tidal O2	No	
Intervention	FiO2_Int	FiO2	No	
	FiO2Int	FiO2%	Yes	Yes
	paO2FiO2ratioInt	PaO2/FiO2 Ratio	Yes	Yes
	InspiredO2Int	Inspired O2	No	
	EndTidalO2Int	End-Tidal O2	No	

HEART RATE

HR				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	heartRateObs	HR	Yes	Yes
	HeartRateTTObs	Heart Rate	No	
	PulseObs	Pulse	No	
	PulseCharObs	Pulse Characteristics	Yes, not relevant	No
Intervention	Heart_Rate_surgTTInt	Heart Rate (Surg T+T)	Yes, not relevant	No
	Heart_Rate_TTInt	Heart Rate (T+T)	Yes, not relevant	No
	heartRateInt	Heart Rate	Yes	Yes
	Pulse_RateInt	Pulse Rate	No	
	PulseInt	Pulse	No	
	Doppler_Heart_RateInt	Doppler Heart Rate	No	

PCO2

PCO2				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	PCO2	PCO2	No	
	ArterialpCO2Obs	Arterial pCO2	No	
	VenouspCO2Obs	Venous pCO2	No	
	EtCO2Obs	End-Tidal CO2	Yes	Yes
Intervention	PCO2Int	PCO2	Yes	Yes
	ArterialpCO2Int	Arterial pCO2	No	
	VenouspCO2Int	Venous pCO2	No	
	EndtidalCO2Int	End-Tidal CO2	Yes	Yes

PO2

PO2				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	PO2Obs	PO2	Yes	Yes
	PO2FIO2_RatioObs	PO2/FiO2 Ratio	Yes	Yes
	ArterialO2ContentObs	Arterial O2 Content	No	
	ArterialpO2MsmtObs	Arterial pO2	No	
	ArterialSaO2Obs	Arterial SaO2	No	
	AagradientObs	A-a gradient	Yes	Yes
	VenousO2ContentObs	Venous O2 Content	No	
	VenouspO2Obs	Venous pO2	No	
	EndtidalO2Obs	End-Tidal O2	No	
Intervention	PO2Int	PO2	Yes	Yes
	PAO2Int	PAO2	No	
	paO2FiO2ratioInt	PaO2/FiO2 Ratio	Yes	Yes
	arterialpO2MsmtInt	Arterial pO2	No	
	ArterialSaO2Int	Arterial SaO2	No	
	AaDO2Int	AaDO2	No	
	AagradientInt	Aa gradient	Yes	Yes
	VenouspO2Int	Venous pO2	No	
	EndTidalO2Int	End-tidal O2	No	
	CaO2Int	Arterial O2 content	No	
	CaO2mlperdlInt	Arterial O2 content	No	

RESPIRATORY RATE

RR				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	RespCharObs	Respiratory Char	No	
	RespirationRateObs	Respiratory Rate	Yes	Yes
	Respiratory_RateTTObs	RR	No	
	VentModeObs	Ventilator Mode	Yes, not relevant	No
	VentObs	Ventilator Rate	Yes	Yes
Intervention	Resp_AssessInt	Respiratory Assessment	Yes, not relevant	No
	Resp_Assessment_completed_Int	Respiratory Assessment completed	No	
	Resp_AssessmentInt	Airway and Breathing	Yes, not relevant	No
	Resp_Effort_RT_Int	Respiratory Effort	No	
	RespAssessInt	Respiratory Assessment	No	
	RespirationRateInt	Respiration Rate	No	
	Respiratory_Rate_surgTT	Respiratory Rate (Surg T+T)	Yes, not relevant	No
	Respiratory_RateInt	Total Respiratory Rate	Yes	Yes
	RespiratoryInt	Respiratory	Yes, not relevant	No
	VentModeInt	Ventilation Mode	Yes, not relevant	No
	VentRateInt	Ventilator Rate	Yes	Yes
	Inv_Vent_viaETTInt	Invasive ventilation via ET tube	No	
	Inv_Vent_viaTTInt	Invasive ventilation via tracheostomy tube	No	

TEMPERATURE

Temperature				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	TemperatureObs	Temperature	Yes, not relevant	No
	TemperatureTypeObs	Temperature Alteration	No	
	tempObs	Temperature C	Yes	Yes
Intervention	Temp2_PeripheralInt	Temp 2 Peripheral	Yes	Yes
	Temperature_central_maint_Int	Temperature (central) maintained	No	
	Temperature_NoteInt	Temperature	Yes, not relevant	No
	Temperature_roomInt	Temperature (room)	No	
	Temperature_SettingInt	Temperature Setting	No	
	Temperature_TTInt	Temperature (T+T)	No	
	Temperature2	Temperature	No	
	temperatureInt	Temp1 Central	Yes	Yes
	TempFInt	Temperature F	No	
	TempInt	Temperature	Yes, not relevant	No
	TempTypesInt	Temperature Alteration	No	

URINE OUTPUT

Urine Output				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	Urine_Amount Obs	Urine Amount	Yes, not relevant	No
	UrineOutputObs	Urine Output	No	
	prop_24HOutputObs	24h Output	No	
Intervention	Urine_Int	Urine	No	
	Urine_output_1mlkghrINT	Urine output > 1ml/kg/hr	No	
	Urine_output_maintained_Int	Urine output maintained at 0.5-1ml/kg/hr	No	
	Urine_output_previous_24_Int	Urine output previous 24 hours	No	
	Urine_Output_TTInt	Urine Output (T+T)	No	
	urineOutputInt	Urine	No	
	UrineOut12hrInt	Urine Output 12 hr	No	
	UrineOutput24Int	Urine Output 24 hr	Yes	Yes
	urineOutput8hrInt	Urine Output 8 hr	No	
	UrineOutputInt	Urine Output	No	

7.1.4. INPUT VARIABLES – LABORATORY – HAEMATOLOGY

APTT

APTT				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	APTTObs	APTT	Yes	Yes
	APTTExtendedObs	APTT Extended	No	
	PTTObs	PTT	No	
Intervention	APTTInt	APTT	Yes	Yes
	APTT_ExtendedInt	APTT Extended	No	
	PTTInt	PTT	No	

FDP

FDPs				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	FDPObs	Fibrin Degradation Products	No	
Intervention	FDPInt	FDPs	No	

FIBRINOGEN

Fibrinogen				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	FibrinogenObs	Fibrinogen	Yes	Yes
Intervention	FibrinogenInt	Fibrinogen	Yes	Yes

HAEMATOCRIT

Hct				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	HematocritObs	Haematocrit	Yes	Yes
	Haematocrit_EstimatedObs	Haematocrit (Estimated)	Yes	Yes
Intervention	Haematocrit_EstimatedInt	Haematocrit (Estimated)	Yes	Yes

HAEMOGLOBIN

Hb				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	Hb_EstimatedObs	Hb (Estimated)	Yes	Yes
	HemoglobinObs	Haemoglobin	Yes	Yes
	RBCObs	RBCs	Yes	Yes
Intervention	HgbInt	Haemoglobin	Yes	Yes
	RBCInt	RBC	Yes	Yes

PLATELET COUNT

Hb				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	Hb_EstimatedObs	Hb (Estimated)	Yes	Yes
	HemoglobinObs	Haemoglobin	Yes	Yes
	RBCObs	RBCs	Yes	Yes
Intervention	HgbInt	Haemoglobin	Yes	Yes
	RBCInt	RBC	Yes	Yes

PT

PT				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	PTObs	PT	Yes	Yes
Intervention	PTInt	PT	Yes	Yes

WCC

WCC				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	WBCx1000Obs	WBC (x1000)	Yes	Yes
Intervention	WBCx1000Int	WCC (x1000 mcl)	Yes	Yes

7.1.5. INPUT VARIABLES – LABORATORY – BIOCHEMISTRY

ALBUMIN

Albumin				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	AlbuminObs	Albumin	Yes	Yes
Intervention	AlbuminInt	Albumin	Yes	Yes

BD

BD				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	BaseExcessObs	Base Excess	Yes	Yes
Intervention	BaseExcessInt	Base Excess	Yes	Yes
	Base_Excess_2Int	Base Excess (2)	No	

BILIRUBIN

Bilirubin				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	bilirubinTotalMsmtObs	Bilirubin Total	Yes	Yes
	DirectBiliObs	Bilirubin Conjugated	No	
Intervention	Bilirubin_TotalInt	Bilirubin Total	Yes	Yes
	Bilirubin_ConjugatedInt	Bilirubin Conjugated	No	
	DirectBiliInt	Direct Bilirubin	No	
	totalBilirubinMstInt	Total Bilirubin	No	

CK

CK				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	CreatineKinaseObs	Creatine Kinase	Yes	Yes, data in CIS 1,2,6 only
Intervention	Creatine_KinaseInt	Creatine Kinase	Yes	Yes, data in CIS 1,2,6 only

CREATININE

Creatinine				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	CreatinineObs	Creatinine	No	
	CreatinineserumObs	Creatinine 45-145	Yes	Yes, data in CIS 3-7 only
Intervention	CreatinineInt	Creatinine	Yes	Yes

ETHANOL

Ethanol				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	substanceUseObs	Substance Use	No	
Intervention	AlcoholDrug_IntoxicationInt	Alcohol/Drug Intoxication	No	
	alcoholUseInt	Alcohol Use	No	
	IntoxicationInt	Intoxication	Yes, not relevant	No
	Substance_Withdrawal_IssuesInt	Substance Withdrawal Issues	Yes	Yes, data in CIS 2,3,5 only
	substanceAbuseInt	Substance Abuse	No	

GLUCOSE

Glucose				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	GlucoseObs	Glucose	Yes	Yes
Intervention	Glucose_BGInt	Glucose (BG)	Yes	Yes
	GlucoseInt	Glucose	No	
	GlycaemicControlProtocolInt	Glycaemic Control Protocol	No	
	Blood_Glucose_CheckedInt	Blood glucose checked	Yes, not relevant	No
	Blood_Glucose_maintained_Int	Blood glucose maintained	No	
	Blood_Glucose_PCxInt	Blood glucose PCx	Yes	No data for trauma patients
	Actrapid_Sliding_ScaleInt	Actrapid sliding scale	Yes	No data for trauma patients
	FSBGInt	Finger Stick Blood Glucose	No	

LACTATE

Lactate				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	LactateObs	Lactate	Yes	Yes
	LacticAcidObs	Lactic Acid	No	
Intervention	Lactate_BG	Lactate(BG)	Yes	Yes
	LactateInt	Lactate	Yes, very limited	No data for trauma patients
	LacticAcidInt	Lactic Acid	No	

PH

pH				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	pH_BGObs	pH (BG)	Yes	Yes
	ArterialpHObs	Arterial pH	No	
	VenouspHObs	Venous pH	No	
Intervention	PhInt	pH	Yes	Yes
	ArterialpHInt	Arterial pH	No	
	VenouspHInt	Venous pH	No	

POTASSIUM

K+				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	Potassium_BGObs	Potassium (BG)	Yes	Yes
	PotassiummEqLObs	Potassium (mEq/L)	No	
	PotassiumObs	Potassium	Yes	Yes
Intervention	Potassium_BGInt	Potassium (BG)	Yes	Yes
	Potassium_mmoldInt	Potassium (mmol/d)	No	
	PotassiumInt	Potassium	Yes	Yes
	PotassiummEqLInt	Potassium (mEq/L)	No	
	Serum_K_maintained_Int	Serum K+ maintained	No	

SODIUM

Na+				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	Sodium_BGObs	Sodium (BG)	Yes	Yes
	SodiummEqLObs	Sodium (mEq/L)	No	
	SodiumObs	Sodium	Yes	Yes
Intervention	Sodium_BGInt	Sodium (BG)	Yes	Yes
	Sodium_mmoldInt	Sodium (mmol/d)	No	
	SodiumInt	Sodium	Yes	Yes
	SodiummEqLInt	Sodium (mEq/L)	No	

UREA

Urea				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	serumUreaObs	Urea	Yes	Yes
Intervention	serumUreaInt	Serum Urea	Yes	Yes
	UrCrRatioInt	Urine/Serum creatinine ratio	Yes	No data for trauma patients

7.1.6. INPUT VARIABLES – MANAGEMENT

TRANFUSION

Transfusion				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	*None*	*None*	*N/A*	
Intervention	Blood_transfusionInt	Blood transfusion	Yes	No data for trauma patients
	BloodIN_24_Total	Blood In (24 hr)	No	
	bloodProductInt	Blood Infusion	Yes, product not listed	Yes, used to confirm Order
	FFP_Transfusion_Int	FFP Transfusion	No	
	Platelet_TransfusionInt	Platelet Transfusion	No	
	Cryo_Transfusion_Int	Cryo Transfusion	No	
	Potential fields - terseLabel	**Potential fields - propName**		
Order	05 Bld Products	bloodInfusionOrd	Yes	Yes
PtOrder	16 PtOrders linked to bloodInfusionOrd for Red Blood Cells - all matched to same OrderId			
	10 PtOrders linked to bloodInfusionOrd for Fresh Frozen Plasma - all matched to same OrderId			
	6 PtOrders linked to bloodInfusionOrd for Platelets - all matched to same OrderId			
	2 PtOrders linked to bloodInfusionOrd for Cryoprecipitate - all matched to same OrderId			

No field to indicate age of transfused blood

EMERGENCY SURGERY

Emergency surgery				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	Chest_Drain_TypeObs	Chest Drain Type	No	
	Chest_Drain_PositionObs	Chest Drain Position	No	
	ICPObs	ICP	Yes	Yes
	ProcedureInterventionObs	Procedure/Intervention	Yes	Yes
	Procedure Obs	Procedure	No	
	Tracheostomy_Inserted_ByObs	Tracheostomy inserted by	No	
Intervention	Surgery_TypeInt	Surgery Type	Yes	Yes
	Classification_of_SurgeryInt	Classification of Surgery	No	
	CTInsertionInt	Chest Tube Insertion	No	
	Chest_Drain_Int	Chest Drain (1 to 6)	Yes	Yes, no data for CIS4
	Date_of_Primary_SurgeryInt	Date of Primary Surgery	Yes	No data for trauma patients
	Details_of_SurgeryInt	Details of Surgery	Yes	Yes
	ProcedureInt	Procedure (1 to 16)	Yes	Yes
	ProcedureInterventionInt	Procedure (10 to 19)	No	
	ProceduresInt	Procedure	No	
	ProcedurePerformedInt	Procedure Performed	No	
	ICPInt	ICP	Yes	Yes
	ICP_monitoringInt	Intracranial pressure monitoring	Yes	No data for trauma patients
	ICP_Bolt_5Int	ICP Bolt (5)	Yes	Yes, no data for CIS4

EMERGENCY INTERVENTION – GENERAL

Emergency intervention				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	ETTplacementObs	ETT placement	No	
	InfusionListObs	Infusion List	Yes	Yes
	Invasive_MonitoringObs	Invasive Monitoring	Yes, includes non-invasive	Yes
	NormetadrenalineObs	Normetadrenaline	No	
	VentModeObs	Ventilator Mode	Yes	Yes
Intervention	Inotropes_Inf	Inotropes	No	
	VasopressorsInt	Vasopressors	No	
	Adrenaline_03mgkgInt	Adrenaline 0.3mg/kg	No	
	AdrenalineInt	Adrenaline	No	
	IV_FluidsInt	IV Fluids	No	
	IVInfusionTotal24hrInt	IV Fluid Total 24 hours	Yes, limited data	Data present for single patient only
	ivinfusionInt	IV infusion	Yes	Yes
	COLLOID_BALANCEInt	COLLOID BALANCE	No	
	COLLOID_TOTAL_ININt	COLLOID TOTAL IN	Yes	Yes, data for CIS3-7 only
	colloidsInt	Colloids	Yes	Yes
	CRYSTALLOID_BALANCEInt	CRYSTALLOID BALANCE	No	
	CRYSTALLOID_TOTAL_ININt	CRYSTALLOID TOTAL IN	Yes	No data for trauma patients
	Crystalloids	Crystalloids	No	
	Fluid_ResuscitationInt	Fluid Resuscitation	Yes	Yes
	IntubatedInt	Intubated?	Yes, limited data	Yes
	IntubationInt	Intubation	No	
	Days_of_Invasive_VentilationInt	Days of Invasive Ventilation	Yes	No data for trauma patients
	DaysofNonInvasiveVentilationInt	Days of non-invasive ventilation	Yes	No data for trauma patients
	Inv_Vent_via_ETTInt	Invasive ventilation via ET tube	Yes, limited data	No data for trauma patients
	Inv_Vent_via_TTInt	Invasive ventilation via tracheostomy tube	No	
	Noninvasive_ventilatoryInt	Non-invasive ventilatory support	Yes, limited data	No data for trauma patients
	CPR_within_24_hrs_before_ICUInt	CPR within 24hrs before ICU Admit	Yes	Yes
	Cardiac_ArrestInt	Cardiac arrest within last 24 hours	Yes	Yes
Order	02 Drug Infusion	dripOrd	Yes	Covers wide range medications
PtOrders	*List of inotropes*			
	List of IV fluids			

EMERGENCY INTERVENTION – VASOPRESSORS/INOTROPES

Emergency intervention - vasopressors/inotropes				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	InfusionListObs	Infusion List	Yes	Yes
	NormetadrenalineObs	Normetadrenaline	No	
Intervention	Inotropes_Inf	Inotropes	No	
	VasopressorsInt	Vasopressors	No	
	Adrenaline_03mgkgInt	Adrenaline 0.3mg/kg	No	
	AdrenalineInt	Adrenaline	No	
	Potential fields - terseLabel	**Potential fields - propName**		
Order	02 Drug Infusion	dripOrd	Yes	Covers wide range medications
	Potential fields - terseForm	**Potential fields - verboseForm**		
PtOrders	Adrenaline	Adrenaline	Yes	CIS 1,2,4 5 only
(multiple fields	Ephedrine	Ephedrine	Yes	No data for trauma patients
dependent on dose and	Metaraminol	Metaraminol	Yes	CIS 2,4,5,6 only
administration route -	Phenylephrine	Phenylephrine	Yes	No data for trauma patients
queried using wildcard	Noradrenaline	Noradrenaline	Yes	Yes
searches (%))	Dopamine	Dopamine	Yes	No data for trauma patients
	Dopexamine	Dopexamine	Yes	No data for trauma patients
	Dobutamine	Dobutamine	Yes	No data for trauma patients
	GTN	GTN	Yes	CIS 1 and 4 only

EMERGENCY INTERVENTION – IV FLUIDS

Emergency intervention - IV fluid volumes				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	InfusionListObs	Infusion List	Yes	Yes
Intervention	IV_FluidsInt	IV Fluids	No	
	IVInfusionTotal24hrInt	IV Fluid Total 24 hours	Yes, limited data	Data present for single patient only
	ivinfusionInt	IV infusion	Yes	Yes
	COLLOID_BALANCEInt	COLLOID BALANCE	No	
	COLLOID_TOTAL_ININt	COLLOID TOTAL IN	Yes	Yes, data for CIS3-7 only
	colloidsInt	Colloids	Yes	Yes
	CRYSTALLOID_BALANCEInt	CRYSTALLOID BALANCE	No	
	CRYSTALLOID_TOTAL_ININt	CRYSTALLOID TOTAL IN	Yes	No data for trauma patients
	Crystalloids	Crystalloids	No	
	Fluid_ResuscitationInt	Fluid Resuscitation	Yes	Yes
	Potential fields - terseLabel	**Potential fields - propName**		
Order	04 Colloids	colloidOrd	Yes	Yes
	Colloids	colloidOrd	Yes	Yes
	03 IV Fluids	IVInfusionOrd	Yes	Yes
	Potential fields - terseForm	**Potential fields - verboseForm**		
PtOrders	Gelofusine	Gelofusine	Yes	Yes
(multiple fields dependent on dose-queried using wildcard searches (%))	Hartmanns	Compound Sodium Lactate (Hartmanns)	Yes	Yes
	NaCl	Sodium Chloride	Yes	Yes, includes other uses
	Sodium Chloride	Sodium Chloride	Yes	Yes, includes other uses
	Glucose 5%	Glucose 5%	Yes	Yes, includes other uses
	Glucose 10%	Glucose 10%	Yes	Yes, includes other uses
	Dextran	Dextran	No data found	

EMERGENCY INTERVENTION – INTUBATION/VENTILATION

Emergency intervention - Intubation/Ventilation				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	ETTplacementObs	ETT placement	No	
	Invasive_MonitoringObs	Invasive Monitoring	Yes, includes non-invasive	Yes
	VentModeObs	Ventilator Mode	Yes	Yes
Intervention	IntubatedInt	Intubated?	Yes, limited data	Yes
	IntubationInt	Intubation	No	
	Days_of_Invasive_VentilationInt	Days of Invasive Ventilation	Yes	No data for trauma patients
	DaysofNonInvasiveVentilationInt	Days of non-invasive ventilation	Yes	No data for trauma patients
	Inv_Vent_via_ETTInt	Invasive ventilation via ET tube	Yes, limited data	No data for trauma patients
	Inv_Vent_via_TTInt	Invasive ventilation via tracheostomy tube	No	
	Noninvasive_ventilatoryInt	Non-invasive ventilatory support	Yes, limited data	No data for trauma patients

EMERGENCY INTERVENTION - CPR

Emergency Intervention - CPR				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Intervention	CPR_within_24_hrs_before_ICUInt	CPR within 24hrs before ICU Admit	Yes	Yes
	Cardiac_ArrestInt	Cardiac arrest within last 24 hours	Yes	Yes

7.1.7. OUTCOME MEASURES – MOF VARIABLES

FIO2

FiO2				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	FiO2FractionObs	FiO2 Fraction	No	
	FiO2Obs	FiO2 %	Yes	Yes
	PO2FIO2_RatioObs	PO2/FiO2 Ratio	Yes	Yes
	Oxygen_Flow_RateObs	Oxygen Flow Rate	Yes	Yes
	InspiredO2Obs	Inspired O2	No	
	EndtidalO2Obs	End-tidal O2	No	
Intervention	FiO2_Int	FiO2	No	
	FiO2Int	FiO2%	Yes	Yes
	paO2FiO2ratioInt	PaO2/FiO2 Ratio	Yes	Yes
	InspiredO2Int	Inspired O2	No	
	EndTidalO2Int	End-Tidal O2	No	

PO2

PO2				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	PO2Obs	PO2	Yes	Yes
	PO2FIO2_RatioObs	PO2/FiO2 Ratio	Yes	Yes
	ArterialO2ContentObs	Arterial O2 Content	No	
	ArterialpO2MsmtObs	Arterial pO2	No	
	ArterialSaO2Obs	Arterial SaO2	No	
	AagradientObs	A-a gradient	Yes	Yes
	VenousO2ContentObs	Venous O2 Content	No	
	VenouspO2Obs	Venous pO2	No	
	EndtidalO2Obs	End-Tidal O2	No	
Intervention	PO2Int	PO2	Yes	Yes
	PAO2Int	PAO2	No	
	paO2FiO2ratioInt	PaO2/FiO2 Ratio	Yes	Yes
	arterialpO2MsmtInt	Arterial pO2	No	
	ArterialSaO2Int	Arterial SaO2	No	
	AaDO2Int	AaDO2	No	
	AagradientInt	Aa gradient	Yes	Yes
	VenouspO2Int	Venous pO2	No	
	EndTidalO2Int	End-tidal O2	No	
	CaO2Int	Arterial O2 content	No	
	CaO2mlperdlInt	Arterial O2 content	No	
	ABGsInt	ABG	Yes	Yes

CREATININE

Creatinine				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	CreatinineObs	Creatinine	No	
	CreatinineserumObs	Creatinine 45-145	Yes	Yes, data in CIS 3-7 only
Intervention	CreatinineInt	Creatinine	Yes	Yes

BILIRUBIN

Bilirubin				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	bilirubinTotalMsmtObs	Bilirubin Total	Yes	Yes
	DirectBiliObs	Bilirubin Conjugated	No	
Intervention	Bilirubin_TotalInt	Bilirubin Total	Yes	Yes
	Bilirubin_ConjugatedInt	Bilirubin Conjugated	No	
	DirectBiliInt	Direct Bilirubin	No	
	totalBilirubinMstInt	Total Bilirubin	No	

VASOPRESSORS/INOTROPES

Emergency intervention - vasopressors/inotropes					
CIS Tables	**Drug name**	**MOF score**	**Relevant field in CIS?**	**Used for data storage?**	**Extracted**
PtOrders	Milrinone	Denver	Yes	No data	
(multiple fields dependent on dose and administration route - queried using wildcard searches (%))	Vasopressin	Denver	Yes	Data in CIS 1,3,5,6	Yes
	Dopamine	Denver/SOFA	Yes	Data in CIS 3	Yes
	Dobutamine	Denver/SOFA	Yes	Data in CIS 1	Yes
	Epinephrine	Denver/SOFA	Yes	No data	Yes
	Adrenaline	Denver/SOFA	Yes	Data in CIS 1-6	Yes
	Norepinephrine	Denver/SOFA	Yes	No data	
	Noradrenaline	Denver/SOFA	Yes	Data in CIS 1-7	Yes
	Phenylephrine	Denver	Yes	No data	
	Ephedrine	None, but used locally	Yes	Data in CIS1,6	Yes
	Metaraminol	None, but used locally	Yes	Data in CIS 1-6	Yes
	Dopexamine	None, but used locally	Yes	No data	

BP

Blood pressure				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	BPModeObs	BP Mode	No	
	bpObs	BP	Yes	Yes
Intervention	arterialBPInt	ABP	Yes	Yes
	Systolic_blood_pressurePIM2Int	Systolic blood pressure	No	
	Systolic_BP_maintained_Int	Systolic blood pressure maintained	No	
	Systolic_BP_surgTTInt	Systolic bp (surg T+T)	Yes, not relevant	No
	Systolic_BP_TTInt	Systolic bp (T+T)	Yes, not relevant	No
	nonInvasiveBPInt	NIBP	Yes	Yes
	Diastolic_functionInt	Diastolic function	No	
	IABP_BPInt	IABP BP	Yes	Yes, data in CIS1 only

HR

HR				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	heartRateObs	HR	Yes	Yes
	HeartRateTTObs	Heart Rate	No	
	PulseObs	Pulse	No	
	PulseCharObs	Pulse Characteristics	Yes, not relevant	No
Intervention	Heart_Rate_surgTTInt	Heart Rate (Surg T+T)	Yes, not relevant	No
	Heart_Rate_TTInt	Heart Rate (T+T)	Yes, not relevant	No
	heartRateInt	Heart Rate	Yes	Yes
	Pulse_RateInt	Pulse Rate	No	
	PulseInt	Pulse	No	
	Doppler_Heart_RateInt	Doppler Heart Rate	No	

CVP

CVP				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	CVPObs	CVP	Yes	Yes
Intervention	CVPInt	CVP	Yes	Yes

PLATELET COUNT

Platelet count				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	PlateletsObs	Platelets	Yes	Yes
Intervention	PlateletsInt	Platelets	Yes	Yes

GCS

GCS				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	GCS_Total_ScoreInt	GCS Total Score	No	
	GCSEyesObs	GCS Eyes	Yes	No
	GCSMotorObs	GCS Motor	Yes	No
	GCSObs	GCS Total	Yes	Yes
	GCSVerbalObs	GCS Verbal	Yes	No
Intervention	TraumaGCSInt	GCS	Yes	Yes
	GCSInt	GCS	Yes	Yes

7.2. ISM DATA EXTRACTION

7.2.1. INPUT VARIABLES – PATIENT

BMI

BMI				
ISM Tables	Potential rows - ItemId	Potential rows - Label	Used for data storage?	Extracted
Chartitems	413	Height	No	
	414	Height cms	Yes	Yes
	942	Weight	No	
	957	Weight kgs	Yes	Yes
	1325	Patient weight	No	
	5400	Weight	No	
	9044	Patient weight	No	

7.2.2. INPUT VARIABLES – INJURY

GCS

GCS				
ISM Tables	Potential rows - ItemId	Potential rows - Label	Used for data storage?	Extracted
Chartitems	382	GCS0	Yes, not relevant	
	383	GCS1	Yes, not relevant	
	384	GCS2	Yes, not relevant	
	385	GCS3	Yes, not relevant	
	386	GCS4	Yes, not relevant	
	887	Total GCS	No	
	888	Total GCS Score	Yes	Yes
	1234	GCS	No	
	1399	GCS	No	
	4250	GCS	No	
	4985	GCS	No	
	8276	GCS (latest)	No	

7.2.3. INPUT VARIABLES – PHYSIOLOGY

BP

Blood pressure				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	40	ABP	Yes	Yes
	41	ABP Diastolic	No	
	42	ABP Mean	No	
	43	ABP Systol	No	
	428	IABP BP	Yes, limited data	Yes
	430	IABP MAP	Yes, limited data	Yes
	515	MAP	Yes	Yes
	546	NIBP	Yes	Yes
	547	NIBP Mean	Yes	Yes
	578	Other BP Mode	No	
	1228	BP	No	
	1715	Monitoring of	No	
	3028	NIBP L Calf	No	
	3029	NIBP R Calf	No	
	3030	NIBP Right arm	No	
	3031	NIBP right arm mean	No	
	3807	Monitor Blood Pressure	No	
	4727	LEFT LEG BP	Yes, not relevant	No
	4729	RIGHT LEG BP	Yes, not relevant	No
	6646	Left arm NIBP	No	
	6647	right arm NIBP	No	
	7790	FEM SHEATH ABP	No	
	7791	FEM SHEATH MAP	No	

CARDIAC INDEX

Body surface area				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	129	BSA	No	
	130	BSA - English	No	
	131	BSA - Metric	Yes	Yes

Cardiac Output				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	174	CO 4.0-8.0	Yes	Yes
	175	CO Measurement	Yes, not relevant	No
	2187	Cardiac Output	No	
	2424	CO	No	
	2430	CARDIAC OUTPUT	No	
	3171	CARDIAC OUTPUT	No	
	3219	CO Oesophageal Dop	No	
	3343	CCO	No	
	3574	Cardiac Output	No	
	3646	Cardiac Output	No	
	3650	CARDIAC OUTPUT L/MIN	No	
	3712	Dopplar CO	No	
	3727	DOPPLAR CO	No	
	3767	Doppler CO	No	
	3841	cardiac output	No	
	3916	D-CO 4.0-8.0	Yes	Yes
	8360	CO vigileo	No	
	8388	vigilio CO	No	

Cardiac Index				
ISM Tables	Potential rows - ItemId	Potential rows - Label	Used for data storage?	Extracted
Chartitems	170	CI 2.5-4.0	Yes	Yes
	2442	est cardiac index	No	
	3591	CI	No	
	3766	Doppler CI	No	
	3915	D-CI 2.5-4.0	Yes	Yes
	8359	CI vigileo	No	

FIO2

FiO2				
ISM Tables	Potential rows - ItemId	Potential rows - Label	Used for data storage?	Extracted
Chartitems	347	FIO2	Yes	Yes
	614	PaO2/FiO2	Yes	Yes
	615	PaO2/FiO2 mmHg	Yes	Yes
	1232	FiO2	No	
	7402	FI O2	No	

HEART RATE

HR				
ISM Tables	Potential rows - ItemId	Potential rows - Label	Used for data storage?	Extracted
Chartitems	401	HR	No	
	411	Heart Rate	Yes	Yes
	3713	Dopplar Heart Rate	No	
	3729	DOPPLAR HEART RATE	No	
	3917	D-Heart Rate	Yes	Yes
	5824	Pulse	No	
	6361	pulse rate	Yes, limited data	No, no data
	6517	PULSE RATE	No	
	6539	Pulse Rate	Yes, limited data	No, no data
	7164	PULSE	No	

PCO2

PCO2				
ISM Tables	Potential rows - ItemId	Potential rows - Label	Used for data storage?	Extracted
Chartitems	317	ETCO2	Yes	Yes
	607	PECO2	No	
	613	PACO2SR	No	
	1058	PaCO2	Yes	Yes
	1059	PaCO2 Wrong	No	
	1231	pCO2	No	
	1669	PCO2	No	
	4404	EtCO2	No	
	8880	etco2	No	

PO2

PO2				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	587	PAO2	No	
	616	PaO2/mmHg	Yes	Yes
	617	PaO2SR	No	
	1060	PaO2	Yes	Yes
	1061	PaO2wrong	No	
	1230	pO2	No	
	1668	PO2	No	

RESPIRATORY RATE

RR				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	25	2 Total Resp Rate	No	
	28	2 Vent Resp Rate	Yes, limited data	No, no data
	418	High Resp Rate	Yes	Yes
	890	Total RRATE	No	
	891	Total Resp Rate	Yes	Yes
	931	Ventilator Resp Rate	Yes	Yes
	2326	2c Resp Rate	No	
	2327	2d Total Resp Rate	No	

TEMPERATURE

Temperature				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	869	Temp. Site	No	
	870	Temp. Site/Value	No	
	872	Temperature	Yes	Yes
	873	Temperature core	No	
	874	Temperature skin	No	
	876	Temperature	Yes, not relevant	No
	877	Temperature - Axilla	Yes	Yes
	878	Temperature - Blood	Yes	Yes
	879	Temperature - Oral	Yes	Yes
	880	Temperature - Tympanic	Yes	Yes
	1297	Axilla temp.	No	
	2650	TEMP	No	
	2674	Temp	No	
	3699	Temperature	No	
	5392	temp	No	
	5668	Temperture - Tympanic	No	
	5766	Rectal temperature	No	
	6259	TEMPERATURE - RECTAL	No	
	6323	Temperature - oesoph	No	
	6682	Temp oral probe	Yes, limited data	No, no data
	7117	Esophageal temp	No	
	7655	Temp tympanic - R	Yes, limited data	Yes
	7697	TEMP. TYMP. RIGHT	No	
	8972	BODY TEMP (PA CATH)	No	

URINE OUTPUT

Urine Output				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	915	Urine Output/24 hrs	No	
	1233	Urine	No	
	1484	Urine Output Approx	No	
	4187	Measure and record urine output	No	
	4188	Hourly urine	No	
	4396	Urine	Yes, not relevant	No
	4580	Urine	Yes, not relevant	No
	4699	Urine	No	
	5793	Urine	No	
	6334	Urine Volume	No	
	6927	24 hours urine	No	
	7137	24o urine	No	
	8300	Urine Output	No	
IOitems	6	Cumulative Urine	No	
	18	Urine Out Total	Yes, in totalbalevents	Yes
	84	Urine catheter	Yes	Yes
	1302	Passed urine	No	
	3896	Urine	No	

7.2.4. INPUT VARIABLES – LABORATORY – HAEMATOLOGY

APTT

APTT				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	960	APTT Control	Yes	Yes
	961	APTT Patient	Yes	Yes
	962	APTT PatientWrong	No	
	1239	APTT	No	
	1537	APPT Pt	No	

FDP

FDPs				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	6492	F.D.P.	No	
	7708	FDP	No	

FIBRINOGEN

Fibrinogen				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	1007	Fibrinogen 1.5-3.5	Yes	Yes
	3383	FIBRINOGEN	No	
	4483	FIBRINOGIN	No	
	4710	Fibrinogen	No	
	5462	fibrinogen	Yes, limited data	Yes
	5931	fibrenogen	No	
	6523	FIBRINOGEN D PROD	No	

HAEMATOCRIT

Hct				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	402	HaematocritSR	No	
	1020	HaematocritSR	No	
	1021	Haematocrit	Yes	Yes
	1022	Haematocrit Lab	Yes	Yes
	1025	HematocritWrong	No	
	3913	Hematocrit	Yes, limited data	No data

HAEMOGLOBIN

Hb				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	410	Hb estimatedSR	No	
	1023	Haemoglobin	Yes	Yes
	1024	Hb Estimated	Yes	Yes
	1236	Hb	No	
	3800	Monitor haemoglobin	No	

PLATELET COUNT

Platelets				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	1069	Platelets 150-400	Yes	Yes
	1536	Plts	No	
	3277	Platelets	No	

PT

PT				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	663	Prothrombin ContSTAN	No	
	666	Prothrombin TimeSR	No	
	1057	PTT	No	
	1078	Prothrombin Control	Yes, limited data	Yes
	1081	Prothrombin Time	Yes	Yes
	1082	Prothrombin ContWrong	No	
	1083	Prothrombin TimeWrong	No	
	1084	Prothrombin Wrong	No	

WCC

WCC				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	936	WBC0	Yes, not relevant	No
	937	WBC1	Yes, not relevant	No
	938	WBC2	Yes, not relevant	No
	939	WBC3	Yes, not relevant	No
	1126	White Cells 4-11	Yes	Yes
	1237	WCC	No	
	1535	WBC	No	
	3276	White Cells 4-11	No	
	3820	Observe white blood cells	No	
	5026	WCC	No	

7.2.5. INPUT VARIABLES – LABORATORY – BIOCHEMISTRY

ALBUMIN

Albumin				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	79	Albumin old	No	
	80	AlbuminStand	No	
	965	Albumin 35-50	Yes	Yes
	1533	Alb	No	

BD

BD				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	137	Base ExcessSR	No	
	138	Base Excesswrong	No	
	972	Base Excess	Yes	Yes

BILIRUBIN

Bilirubin				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	885	Tot.BilirubinStand	No	
	886	Total Bilirubin old	No	
	992	Conj.Bilirubin 0-5	Yes, limited data	No, no data
	1110	Tot.Bilirubin 3-17	Yes	Yes
	1111	Total BilirubinWrong	No	
	5385	uncongucated Bili	No	
	6737	BILIRUBIN	No	
	7785	Bilirubin	No	

CK

CK				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	995	Creat Kinase 75-200	Yes	Yes
	2957	ck	No	
	4411	CK	Yes, limited data	Yes
	6049	CREATININE KINASE	No	
	7615	CK level	No	

CREATININE

Creatinine				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	255	Creat0	Yes, not relevant	No
	256	Creat1	Yes, not relevant	No
	257	Creat2	Yes, not relevant	No
	258	Creat3	Yes, not relevant	No
	259	Creat4	Yes, not relevant	No
	260	Creatinine old	No	
	261	CreatinineStand	No	
	792	Serum Creatinine	No	
	996	Creatinine 70-150	Yes	Yes
	998	CreatinineWrong	No	
	1242	Creat	No	
	3279	Creatinine	No	
	4491	Serum Creatinine inc	No	

ETHANOL

Ethanol				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	1006	Ethanol	Yes, limited data	Yes
	2942	ETHANOL	No	
	4237	Alcohol/Drug intoxication	No	
	4647	Ethanol/Methanol	No	
	6140	ethanol	No	
	7714	ETHANYL LEVELS	No	
	7929	Ethanol level	Yes, not relevant	No
	8996	alcohol	No	
	9151	ETHANOL LEVEL	No	

GLUCOSE

Glucose				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	392	GlucoseStand	No	
	976	Blood Glucose	Yes	Yes
	1013	Glucose 3-5.5	Yes	Yes
	1015	Glucose Old	No	
	1016	GlucoseWrong	No	
	1534	Glucose	No	
	3173	GLUCOSE	No	
	4868	Problem: Inability to maintain blood glucose w	No	
	6911	BLOOD SUGAR	Yes, limited data	No, no data
	6951	cap blood glucose	No	
	7030	CAPILLARY GLUCOSE	No	
	7171	BLOOD GLUCOSE	No	
	9065	Blood Sugar	No	

LACTATE

Lactate				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	494	Lactate Sample Sent	No	
	495	Lactatewrong	No	
	1032	Lactate	Yes	Yes
	1956	lactate	No	
	3304	LACTATE	No	

PH

pH				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	1125	Venous pH	No	
	1129	pH	Yes	Yes
	5376	PH	No	
	7222	Ph level	No	
	9168	Ph	No	

POTASSIUM

K+				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	653	Potassium old	No	
	654	PotassiumStand	No	
	655	PotassiumWrong3	No	
	1027	K	Yes	Yes
	1070	Potassium 3.5-5	Yes	Yes
	1072	PotassiumWrong	No	
	1073	PotassiumWrong2	No	
	1529	K+	No	
	2884	potassium	No	
	3280	Potassium	No	
	5901	POTASSIUM	Yes, not relevant	No
	8296	Serum Potassium	No	

SODIUM

Na+				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	809	Sodium old	No	
	810	SodiumStand	No	
	1047	Na	Yes	Yes
	1100	Sodium 135-145	Yes	Yes
	1102	SodiumWrong	No	
	3281	Sodium	No	
	6661	SODIUM	No	
	6897	SODIUM	No	
	8295	Serum Sodium	No	

UREA

Urea				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	909	Urea old	No	
	910	UreaStand	No	
	911	UreaWrong3	No	
	1116	Urea 2.5-6.7	Yes	Yes
	1117	UreaWrong	No	
	1118	UreaWrong2	No	
	1243	Urea	No	
	4176	Urea + Creatinine within normal limits	No	
	4756	Problem: inability to maintain normal urea + cr	No	
	4865	Urea and Creatinine	No	

7.2.6. INPUT VARIABLES – MANAGEMENT

TRANFUSION

Transfusion				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	528	Massive Blood Transf	Yes	Yes
	3798	Give blood transfusion	No	
	4155	Give blood transfusion - units available	No	
	4157	Blood units	No	
	4748	Blood	No	
	5238	Give blood transfusion - units available	No	
Meditems	1	Packed RBCs	No	
	2	Whole Blood	No	
	4	Washed PRBCs	No	
	5	Fresh Frozen Plasma	No	
	6	Platelets	No	
	7	Cryoprecipitate	No	
	325	Blood	No	
	472	blood	No	
	520	BLOOD	No	
	534	FFP	No	
	536	PLATELETS	No	
	1205	PACKED RBC	No	
	1403	FRESH FROZEN PLASMA	No	
	3681	PLATELET INFUSION	No	
	4586	Platlets irradiated	No	
	4587	Platelets irradiated	No	
IOitems	*79 rows*	*%Blood%*	Yes	Yes
	82 rows	*%RBC%*	Yes	Yes
	1 row	*%FFP%*	No	
	57 rows	*%Fresh frozen%*	Yes	Yes
	69 rows	*%Platelet%*	Yes	Yes
	23 rows	*%Cryo%*	Yes	Yes

No field to indicate age of transfused blood

EMERGENCY SURGERY

Emergency surgery/procedures				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	215	Chest Drain 1	Yes	Yes
	216	Chest Drain 2	Yes	Yes
	217	Chest Drain 3	Yes	Yes
	218	Chest Drain 4	Yes	Yes
	219	Chest Drain 1	Yes	Yes
	220	Chest Drain 2	Yes	Yes
	221	Chest Drain 3	Yes	Yes
	222	Chest Drain 4	Yes	Yes
	223	Chest Drain Insert	No	
	224	Chest Drains	Yes	Yes
	225	Chest Opening	No	
	229	Chest drains	No	
	324	Emergency op last 24h	Yes	Yes
	427	IABP	No	
	435	ICP	Yes	Yes
	436	ICP Bolt	Yes	Yes
	437	ICP Monitoring	Yes	Yes
	439	ICP	No	
	894	Tracheostomy last 24h	Yes	Yes
	1222	Trachy	No	
	1223	ICP Monitor	No	
	1559	Surgery	No	
	1730	Surgery	No	
	1767	CHEST DRAIN 5	No	
	1929	Mini-trachestomy	No	
	2300	ICP PROBE	No	
	2527	Chest Drain 5	Yes, limited data	No relevant data
	2528	Chest Drain 6	No	
	2529	Chest Drain 5	No	
	2530	Chest Drain 6	No	
	4190	Theatre	No	
	4215	Chest Drain	No	
	4915	Requires return to theatre	No	
	5726	CHEST DRAIN 7	No	
	5727	CHEST DRAIN 8	No	
	5728	Chest Drain 7	No	
	5729	Chest Drain 8	No	
	5746	CHEST DRAIN 9	No	
	5748	CHEST DRAIN 10	No	
	6459	TRACHEOSTOMY	Yes, limited data	No relevant data
	7642	CHEST DRAIN	No	
	8489	Patient has ICP monitoring	No	
	8566	Chest drain S/D/B	No	

EMERGENCY INTERVENTION - GENERAL

Emergency intervention				
CIS Tables	**Potential fields - propName**	**Potential fields - display Label**	**Used for data storage?**	**Extracted**
Observation	ETTplacementObs	ETT placement	No	
	InfusionListObs	Infusion List	Yes	Yes
	Invasive_MonitoringObs	Invasive Monitoring	Yes, includes non-invasive	Yes
	NormetadrenalineObs	Normetadrenaline	No	
	VentModeObs	Ventilator Mode	Yes	Yes
Intervention	Inotropes_Inf	Inotropes	No	
	VasopressorsInt	Vasopressors	No	
	Adrenaline_03mgkgInt	Adrenaline 0.3mg/kg	No	
	AdrenalineInt	Adrenaline	No	
	IV_FluidsInt	IV Fluids	No	
	IVInfusionTotal24hrInt	IV Fluid Total 24 hours	Yes, limited data	Data present for single patient only
	ivinfusionInt	IV infusion	Yes	Yes
	COLLOID_BALANCEInt	COLLOID BALANCE	No	
	COLLOID_TOTAL_ININt	COLLOID TOTAL IN	Yes	Yes, data for CIS3-7 only
	colloidsInt	Colloids	Yes	Yes
	CRYSTALLOID_BALANCEInt	CRYSTALLOID BALANCE	No	
	CRYSTALLOID_TOTAL_ININt	CRYSTALLOID TOTAL IN	Yes	No data for trauma patients
	Crystalloids	Crystalloids	No	
	Fluid_ResuscitationInt	Fluid Resuscitation	Yes	Yes
	IntubatedInt	Intubated?	Yes, limited data	Yes
	IntubationInt	Intubation	No	
	Days_of_Invasive_VentilationInt	Days of Invasive Ventilation	Yes	No data for trauma patients
	DaysofNonInvasiveVentilationInt	Days of non-invasive ventilation	Yes	No data for trauma patients
	Inv_Vent_via_ETTInt	Invasive ventilation via ET tube	Yes, limited data	No data for trauma patients
	Inv_Vent_via_TTInt	Invasive ventilation via tracheostomy tube	No	
	Noninvasive_ventilatoryInt	Non-invasive ventilatory support	Yes, limited data	No data for trauma patients
	CPR_within_24_hrs_before_ICUInt	CPR within 24hrs before ICU Admit	Yes	Yes
	Cardiac_ArrestInt	Cardiac arrest within last 24 hours	Yes	Yes
Order	02 Drug Infusion	dripOrd	Yes	Covers wide range medications
PtOrders	*List of inotropes*			
	List of IV fluids			

EMERGENCY INTERVENTION – VASOPRESSORS/INOTROPES

Emergency intervention - vasopressors/inotropes - general				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	3	1 Inotrope/CVS drug	Yes	Yes
	36	>1 Inotrope/CVS drug	Yes	Yes
	460	Inotrope/CVSdrugTISS	No	
	1227	Inotropes	No	
	1282	Inotropic support	No	
	4741	Give inotropic support	No	
IOitems	*0 rows*	*%inotrope%*		

Emergency intervention - vasopressors/inotropes - Adrenaline				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	71	Adrenaline	No	
	1783	adrenaline 4mg	No	
	2615	ADRENALINE 2MGS/50	No	
	3693	ADRENALINE 10MG/50MS	No	
	4850	Adrenaline 2mg/ml	No	
	5542	ADRENALINE 1MG	No	
	6753	Adrenaline 5mg in 50ml 5% dextrose	No	
	6887	ADRENALINE	No	
Meditems	66	Adrenaline	Yes	Yes
	211	Adrenaline 4mgs	No	
	212	Adrenaline 8mgs	No	
	213	Adrenaline 16 mgs	No	
	214	Adrenaline 32mgs	No	
	326	Adrenaline 4mgs/50ml	No	
	327	Adrenaline 8mgs/50ml	No	
	328	Adrenaline 16mgs/50ml	No	
	329	Adrenaline 32mgs/50ml	No	
	331	adrenaline	No	
	404	Adrenaline 4mg	Yes	Yes
	405	Adrenaline 8mg	Yes	Yes
	406	Adrenaline 16mg	Yes	Yes
	407	Adrenaline 32mg	No	
	1076	ADRENALINE	No	
	2058	_Adrenaline	No	
IOitems	*76 rows*	*%Adrenaline%*	(NB. Will contain Noradrenaline)	Yes

Emergency intervention - vasopressors/inotropes - Ephedrine				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	1785	ephedrine	No	
	2455	EPHIDRINE	No	
	2515	EPHEDRINE	No	
	5035	Ephedrine	No	
	5819	EPHRIDRINE	No	
Meditems	202	Ephedrine	Yes	Yes
	1351	ephedrine	No	
IOitems	*0 rows*	*%Ephedrine%*		

Emergency intervention - vasopressors/inotropes - Metaraminol				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	1908	metaraminol	No	
	2902	METARAMINOL 1MG/ML	No	
	2909	Metaraminol (mg/hr)	No	
	5327	Metaraminol	No	
	5368	Metaraminol 50mg in 50ml of N-saline	No	
	5535	METARAMINOL (MG)	No	
	6285	metaraminol 10mg	No	
	6817	METARAMINOL	Yes, limited data	Yes
	7046	Metaraminal	No	
	7413	METARANOMIL 1MG/ML	No	
	9084	METARAMINOL MCG/HR	No	
	9164	Metaraminol 10mg/500	No	
Meditems	348	Metaraminol	Yes	Yes
	2496	!Metaraminol	No	
	3091	Metaraminol 10mg	No	
IOitems	*4 rows*	*%Metaraminol%*	Yes	Yes

Emergency intervention - vasopressors/inotropes - Phenylephrine				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	4071	Phenylephrine	No	
Meditems	1717	Phenylephrine Hydro.	No	
	3572	phenylephrine 10%	No	
	4253	phenylephrine 2.5%	No	
	4965	PHENYLEPHRINE 2.5%	Yes	Yes
	5180	Phenylephrine 2.5%	No	
IOitems	*1 row*	*Phenylephrine*	Yes	Yes

Emergency intervention - vasopressors/inotropes - Noradrenaline				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	4448	Noradrenaline 10mg	No	
	4621	NORADRENALINE 2MG	No	
	5587	NORADRENALINE 4MG	No	
	6166	noradrenaline 2mg/50	No	
	8491	Noradrenaline in progress	No	
	8937	NORADRENALINE 2MG/ML	No	
Meditems	53	Noradrenaline	No	
	54	Noradrenaline - DRIP	No	
	216	Noradrenaline 4mgs	No	
	217	Noradrenaline 8mgs	No	
	218	Noradrenaline 16mgs	No	
	219	Noradrenaline 32mgs	No	
	408	Noradrenaline 4mgs	Yes	Yes
	409	Noradrenaline 8mgs	Yes	Yes
	410	Noradrenaline 16mgs	Yes	Yes
	411	Noradrenaline 32mgs	Yes	Yes
	443	NORADRENALINE	No	
	675	noradrenaline	No	
	734	NORADRENALIN	No	
IOitems	*45 rows*	*%Norad%*	Yes	Yes

Emergency intervention - vasopressors/inotropes - Dopamine				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	285	Dopamine	No	
	688	Renal Dose Dopamine	Yes, not relevant	No
Meditems	43	dopamine	Yes	Yes
	225	Dopamine 200mgs	No	
	226	Dopamine 400mgs	No	
IOitems	*7 rows*	*%Dopamine%*	Yes	Yes

Emergency intervention - vasopressors/inotropes - Dopexamine				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	5678	Dopexamine	No	
Meditems	170	Dopexamine	Yes, limited data	No relevant data
IOitems	*5 rows*	*%Dopex%*	Yes	No relevant data

Emergency intervention - vasopressors/inotropes - Dobutamine				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	278	Dobutamine	No	
Meditems	42	Dobutamine	Yes	Yes
	227	Dobutamine 250mgs	No	
	228	Dobutamine 500mgs	No	
IOitems	*15 rows*	*%Dobutamine%*	Yes	Yes

Emergency intervention - vasopressors/inotropes - GTN				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	*None*	*None*	*N/A*	
Meditems	1721	GTN INFUSION	Yes	No relevant data
	4341	GTN infusion	No	
IOitems	*0 rows*	*%GTN%*		

EMERGENCY INTERVENTION – IV FLUIDS

Emergency intervention - IV fluid volumes				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Totalbalevents	16	TOTAL IN	Yes	Yes

EMERGENCY INTERVENTION – INTUBATION/VENTILATION

Emergency intervention - Intubation/Ventilation				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	441	ITU intubation 24 hrs	Yes	Yes
	472	Intubation	No	
	1218	Ventilation	No	
	1274	Ventilated days	No	
	1886	IPPV	No	
	4225	Intubated	No	
	5024	Intubated	No	
	7208	NIPPY	No	

EMERGENCY INTERVENTION – CPR

Emergency intervention				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	691	Resuscitation in last 48 hrs	Yes	Yes
	7822	CPR prior to admission?	No	

7.2.7. OUTCOME MEASURES – MOF VARIABLES

FIO2

FiO2				
ISM Tables	Potential rows - ItemId	Potential rows - Label	Used for data storage?	Extracted
Chartitems	347	FIO2	Yes	Yes
	614	PaO2/FiO2	Yes	Yes
	615	PaO2/FiO2 mmHg	Yes	Yes
	1232	FiO2	No	
	7402	FI O2	No	

PO2

PO2				
ISM Tables	Potential rows - ItemId	Potential rows - Label	Used for data storage?	Extracted
Chartitems	587	PAO2	No	
	616	PaO2/mmHg	Yes	Yes
	617	PaO2SR	No	
	1060	PaO2	Yes	Yes
	1061	PaO2wrong	No	
	1230	pO2	No	
	1668	PO2	No	

CREATININE

Creatinine				
ISM Tables	Potential rows - ItemId	Potential rows - Label	Used for data storage?	Extracted
Chartitems	255	Creat0	Yes, not relevant	No
	256	Creat1	Yes, not relevant	No
	257	Creat2	Yes, not relevant	No
	258	Creat3	Yes, not relevant	No
	259	Creat4	Yes, not relevant	No
	260	Creatinine old	No	
	261	CreatinineStand	No	
	792	Serum Creatinine	No	
	996	Creatinine 70-150	Yes	Yes
	998	CreatinineWrong	No	
	1242	Creat	No	
	3279	Creatinine	No	
	4491	Serum Creatinine inc	No	

BILIRUBIN

Bilirubin				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	885	Tot.BilirubinStand	No	
	886	Total Bilirubin old	No	
	992	Conj.Bilirubin 0-5	Yes, limited data	No, no data
	1110	Tot.Bilirubin 3-17	Yes	Yes
	1111	Total BilirubinWrong	No	
	5385	uncongucated Bili	No	
	6737	BILIRUBIN	No	
	7785	Bilirubin	No	

VASOPRESSORS/INOTROPES

Emergency intervention - vasopressors/inotropes						
ISM Tables	**Drug name**	**MOF score**	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	Inotropes - general	None - general	3	1 Inotrope/CVS drug	Yes	Yes
			36	>1 Inotrope/CVS drug	Yes	Yes
Meditems	Milrinone	Denver	76	Milrinone	No	
			1182	Milrinone	No	
			1564	Milrinone	No	
			1824	Milrinone	No	
			3120	Milrinone lactate	No	
	Vasopressin	Denver	51	Vasopressin	Yes, limited data	Yes
			1714	Vasopressin	No	
			1830	Vasopressin	No	
			2153	Arginine Vasopressin	No	
	Dopamine	Denver/SOFA	43	Dopamine	Yes, limited data	Yes
			225	Dopamine 200mgs	No	
			226	Dopamine 400mgs	No	
	Dobutamine	Denver/SOFA	42	Dobutamine	Yes, limited data	Yes
			227	Dobutamine 250mgs	No	
			228	Dobutamine 500mgs	No	
	Epinephrine	Denver/SOFA	44	Epinephrine	No	
	Adrenaline	Denver/SOFA	66	Adrenaline	Yes, limited data	Yes
			211	Adrenaline 4mgs	No	
			212	Adrenaline 8mgs	No	
			213	Adrenaline 16mgs	No	
			214	Adrenaline 32mgs	No	
			326	Adrenaline 4mgs/50ml	No	
			327	Adrenaline 8mgs/50ml	No	
			328	Adrenaline 16mgs/50ml	No	
			329	Adrenaline 32mgs/50ml	No	
			331	Adrenaline	No	
			404	Adrenaline 4mg	Yes	Yes
			405	Adrenaline 8mg	Yes	Yes
			406	Adrenaline 16mg	Yes	Yes
			407	Adrenaline 32mg	No	
			2059	_Adrenaline	No	
	Norepinephrine	Denver/SOFA	*None*	*None*		
	Noradrenaline	Denver/SOFA	53	Noradrenaline	No	
			54	Noradrenaline - DRIP	No	
			216	Noradrenaline 4mgs	No	
			217	Noradrenaline 8mgs	No	
			218	Noradrenaline 16mgs	No	
			219	Noradrenaline 32 mgs	No	
			408	Noradrenaline 4mg	Yes	Yes
			409	Noradrenaline 8mg	Yes	Yes
			410	Noradrenaline 16mg	Yes	Yes
			411	Noradrenaline 32mg	Yes	Yes
			443	NORADRENALINE	No	
			675	noradrenaline	No	
	Phenylephrine	Denver	1717	Phenylephrine Hydro	No	
			3572	Phenylephrine 10%	No	
			4253	Phenylephrine 2.5%	No	
			4965	PHENYLEPHRINE 2.5%	Yes, limited data	No relevant data
			5180	Phenylephrine 2.5%	No	
	Ephedrine	None, but used locally	202	Ephedrine	Yes	Yes
			1351	ephedrine	No	
	Metaraminol	None, but used locally	348	Metaraminol	Yes	Yes
			2496	!Metaraminol	No	
			3091	Metaraminol 10mg	No	
	Dopexamine	None, but used locally	170	Dopexamine	Yes, limited data	No relevant data
IOItems	Milrinone	Denver	*3 rows*	*%Milrinone%*	No	
(multiple fields	Vasopressin	Denver	*12 rows*	*%Vasopress%*	Yes, limited data	Yes
dependent on dose and	Dopamine	Denver/SOFA	*7 rows*	*%Dopamine%*	Yes	Yes
administration - queried	Dobutamine	Denver/SOFA	*15 rows*	*%Dobutamine%*	Yes	Yes
using wildcard searches	Epinephrine	Denver/SOFA	*0 rows*	*%Epineph%*		
(%))	Adrenaline	Denver/SOFA	*76 rows*	*%Adrenaline%*	(NB. Will contain Noradrenaline)	Yes
	Norepinephrine	Denver/SOFA	*0 rows*	*%Norepi%*		
	Noradrenaline	Denver/SOFA	*45 rows*	*%Norad%*	Yes	Yes
	Phenylephrine	Denver	*1 row*	*%Phenylephrine%*	No	
	Ephedrine	Local use	*0 rows*	*%Ephedrine%*		
	Metaraminol	Local use	*4 rows*	*%Metaraminol%*	Yes	No relevant data
	Dopexamine	Local use	*5 rows*	*%Dopex%*	Yes	Yes

BP

Blood pressure				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	40	ABP	Yes	Yes
	41	ABP Diastolic	No	
	42	ABP Mean	No	
	43	ABP Systol	No	
	428	IABP BP	Yes, limited data	Yes
	430	IABP MAP	Yes, limited data	Yes
	515	MAP	Yes	Yes
	546	NIBP	Yes	Yes
	547	NIBP Mean	Yes	Yes
	578	Other BP Mode	No	
	1228	BP	No	
	1715	Monitoring of	No	
	3028	NIBP L Calf	No	
	3029	NIBP R Calf	No	
	3030	NIBP Right arm	No	
	3031	NIBP right arm mean	No	
	3807	Monitor Blood Pressure	No	
	4727	LEFT LEG BP	Yes, not relevant	No
	4729	RIGHT LEG BP	Yes, not relevant	No
	6646	Left arm NIBP	No	
	6647	right arm NIBP	No	
	7790	FEM SHEATH ABP	No	
	7791	FEM SHEATH MAP	No	

HR

HR				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	401	HR	No	
	411	Heart Rate	Yes	Yes
	3713	Dopplar Heart Rate	No	
	3729	DOPPLAR HEART RATE	No	
	3917	D-Heart Rate	Yes	Yes
	5824	Pulse	No	
	6361	pulse rate	Yes, limited data	No, no data
	6517	PULSE RATE	No	
	6539	Pulse Rate	Yes, limited data	No, no data
	7164	PULSE	No	

CVP

CVP				
ISM Tables	**Potential rows - ItemId**	**Potential rows - Label**	**Used for data storage?**	**Extracted**
Chartitems	192	CVP	Yes	Yes
	193	CVP	No	
	194	CVP (not 3 lumen)	Yes	Yes
	195	CVPWrong	No	
	3882	CVP DIASTOLIC	No	
	4741	CVP monitoring	No	

PLATELET COUNT

Platelets				
ISM Tables	Potential rows - ItemId	Potential rows - Label	Used for data storage?	Extracted
Chartitems	1069	Platelets 150-400	Yes	Yes
	1536	Plts	No	
	3277	Platelets	No	

GCS

GCS				
ISM Tables	Potential rows - ItemId	Potential rows - Label	Used for data storage?	Extracted
Chartitems	382	GCS0	Yes, not relevant	
	383	GCS1	Yes, not relevant	
	384	GCS2	Yes, not relevant	
	385	GCS3	Yes, not relevant	
	386	GCS4	Yes, not relevant	
	887	Total GCS	No	
	888	Total GCS Score	Yes	Yes
	1234	GCS	No	
	1399	GCS	No	
	4250	GCS	No	
	4985	GCS	No	
	8276	GCS (latest)	No	

7.3. TARN DATA EXTRACTION

7.3.1. INPUT VARIABLES – PATIENT

BASIC PATIENT DATA

Basic patient data		
TARN field name	**Content**	**TraumaDB**
PATIENT_AGE_1	Age	Used
PATIENT_GENDER_1	Sex	Used
PATIENT_WEIGHT_1	Weight	Not used

CHRONIC HEALTH CONDITIONS

Chronic health		
TARN field name	**Content**	**TraumaDB**
OUT_PRE_DISEASE_1_1	PMH	Used
OUT_PRE_DISEASE_1_2	PMH	Used
OUT_PRE_DISEASE_1_3	PMH	Used
OUT_PRE_DISEASE_1_4	PMH	Used
OUT_PRE_DISEASE_1_5	PMH	Used
OUT_PRE_DISEASE_1_6	PMH	Used
OUT_PRE_DISEASE_1_7	PMH	Used
OUT_PRE_DISEASE_1_8	PMH	Used

7.3.2. INPUT VARIABLES – INJURY

INJURY SEVERITY - INJURIES

Injury severity - injuries		
TARN field name	**Content**	**TraumaDB**
ISS	ISS - calculated field	Used
NISS	NISS - calculated field	Used
AISHeadNeckCSpine	AIS region - calculated field	Used
AISFace	AIS region - calculated field	Used
AISChestSpine	AIS region - calculated field	Used
AISAbdoLSpine	AIS region - calculated field	Used
AISLimbsPelvis	AIS region - calculated field	Not used
AISExternal	AIS region - calculated field	Not used
AIS_DESCRIPTION_1	Text description	Not used
AIS_DESCRIPTION_10	Text description	Not used
AIS_DESCRIPTION_11	Text description	Used
AIS_DESCRIPTION_12	Text description	Used
AIS_DESCRIPTION_13	Text description	Used
AIS_DESCRIPTION_14	Text description	Used
AIS_DESCRIPTION_15	Text description	Used
AIS_DESCRIPTION_16	Text description	Used
AIS_DESCRIPTION_17	Text description	Used
AIS_DESCRIPTION_18	Text description	Used
AIS_DESCRIPTION_19	Text description	Not used
AIS_DESCRIPTION_2	Text description	Not used
AIS_DESCRIPTION_20	Text description	Not used
AIS_DESCRIPTION_21	Text description	Not used
AIS_DESCRIPTION_22	Text description	Not used
AIS_DESCRIPTION_23	Text description	Not used
AIS_DESCRIPTION_24	Text description	Not used
AIS_DESCRIPTION_25	Text description	Not used
AIS_DESCRIPTION_26	Text description	Used
AIS_DESCRIPTION_3	Text description	Used
AIS_DESCRIPTION_4	Text description	Used
AIS_DESCRIPTION_5	Text description	Used
AIS_DESCRIPTION_6	Text description	Used
AIS_DESCRIPTION_7	Text description	Used
AIS_DESCRIPTION_8	Text description	Used
AIS_DESCRIPTION_9	Text description	Used
AIS_SEVERITY_1	AIS value for injury	Used
AIS_SEVERITY_10	AIS value for injury	Not used
AIS_SEVERITY_11	AIS value for injury	Not used
AIS_SEVERITY_12	AIS value for injury	Not used
AIS_SEVERITY_13	AIS value for injury	Not used
AIS_SEVERITY_14	AIS value for injury	Not used
AIS_SEVERITY_15	AIS value for injury	Not used
AIS_SEVERITY_16	AIS value for injury	Used
AIS_SEVERITY_17	AIS value for injury	Used
AIS_SEVERITY_18	AIS value for injury	Used
AIS_SEVERITY_19	AIS value for injury	Used
AIS_SEVERITY_2	AIS value for injury	Used
AIS_SEVERITY_20	AIS value for injury	Used
AIS_SEVERITY_21	AIS value for injury	Used
AIS_SEVERITY_22	AIS value for injury	Used
AIS_SEVERITY_23	AIS value for injury	Used
AIS_SEVERITY_24	AIS value for injury	Used
AIS_SEVERITY_25	AIS value for injury	Used
AIS_SEVERITY_26	AIS value for injury	Used

AIS_SEVERITY_3	AIS value for injury	Not used
AIS_SEVERITY_4	AIS value for injury	Not used
AIS_SEVERITY_5	AIS value for injury	Not used
AIS_SEVERITY_6	AIS value for injury	Not used
AIS_SEVERITY_7	AIS value for injury	Not used
AIS_SEVERITY_8	AIS value for injury	Not used
AIS_SEVERITY_9	AIS value for injury	Not used
AISCODE_1	Injury code	Not used
AISCODE_10	Injury code	Not used
AISCODE_11	Injury code	Not used
AISCODE_12	Injury code	Not used
AISCODE_13	Injury code	Not used
AISCODE_14	Injury code	Not used
AISCODE_15	Injury code	Not used
AISCODE_16	Injury code	Not used
AISCODE_17	Injury code	Not used
AISCODE_18	Injury code	Not used
AISCODE_19	Injury code	Not used
AISCODE_2	Injury code	Not used
AISCODE_20	Injury code	Not used
AISCODE_21	Injury code	Not used
AISCODE_22	Injury code	Not used
AISCODE_23	Injury code	Used
AISCODE_24	Injury code	Used
AISCODE_25	Injury code	Used
AISCODE_26	Injury code	Used
AISCODE_3	Injury code	Used
AISCODE_4	Injury code	Used
AISCODE_5	Injury code	Used
AISCODE_6	Injury code	Not used
AISCODE_7	Injury code	Not used
AISCODE_8	Injury code	Not used
AISCODE_9	Injury code	Not used

AT_DISCHARGE_INJURIES_INJURY_DESCRIPTION_1	Text description	Not used
INJURY_ABDO_ORGAN_1	Presence/absence	Not used
INJURY_ABDO_OTHER_1	Presence/absence	Used
INJURY_ABDO_UROL_1	Presence/absence	Used
INJURY_ABDO_VESSEL_1	Presence/absence	Used
INJURY_BSKIN_BSKIN_1	Presence/absence	Used
INJURY_BSKIN_DEGLOVE_1	Presence/absence	Used
INJURY_BURN_FULL_1	Presence/absence	Used
INJURY_BURN_SUPERF_1	Presence/absence	Used
INJURY_DESC_ABDOMEN_1	Presence/absence	Used
INJURY_DESC_BSKIN_1	Presence/absence	Used
INJURY_DESC_BURNS_1	Presence/absence	Used
INJURY_DESC_FACE_1	Presence/absence	Used
INJURY_DESC_HEAD_1	Presence/absence	Not used
INJURY_DESC_LIMBS_1	Presence/absence	Not used
INJURY_DESC_NECK_1	Presence/absence	Not used
INJURY_DESC_PELVIS_1	Presence/absence	Not used
INJURY_DESC_PTRATE_1	Presence/absence	Not used
INJURY_DESC_SPINE_1	Presence/absence	Not used
INJURY_DESC_THORACIC_1	Presence/absence	Not used
INJURY_DESCRIPTION_1	Text description	Not used
INJURY_FACE_EYE_1	Presence/absence	Not used
INJURY_FACE_OPSKEL_1	Presence/absence	Used
INJURY_FACE_OTHER_1	Presence/absence	Used
INJURY_HEAD_DEPFRAC_1	Presence/absence	Used
INJURY_HEAD_ICRAN_1	Presence/absence	Not used
INJURY_HEAD_OTHER_1	Presence/absence	Not used
INJURY_HEAD_OTHSKULL_1	Presence/absence	Used
INJURY_HEAD_UNC_1	Presence/absence	Used
INJURY_LIMBS_CHAND_1	Presence/absence	Used
INJURY_LIMBS_NFEM_1	Presence/absence	Used
INJURY_LIMBS_OPEN_1	Presence/absence	Used
INJURY_LIMBS_OTHER_1	Presence/absence	Used
INJURY_LIMBS_VASC_1	Presence/absence	Used
INJURY_NECK_ORGAN_1	Presence/absence	Not used
INJURY_NECK_OTHER_1	Presence/absence	Not used
INJURY_NECK_VESSEL_1	Presence/absence	Used
INJURY_PELV_HIPDIS_1	Presence/absence	Used
INJURY_PELV_OTHER_1	Presence/absence	Used
INJURY_PELV_UNST_1	Presence/absence	Used
INJURY_PTRATE_SKIN_1	Presence/absence	Used
INJURY_SHOOT_WEAPON_1	Presence/absence	Used
INJURY_SPINE_CORD_1	Presence/absence	Used
INJURY_SPINE_OTHER_1	Presence/absence	Used
INJURY_SPINE_UNSTBL_1	Presence/absence	Used
INJURY_THOR_HPTHORAX_1	Presence/absence	Used
INJURY_THOR_ORGAN_1	Presence/absence	Used
INJURY_THOR_OTHER_1	Presence/absence	Used
INJURY_THOR_RIBFRAC_1	Presence/absence	Used
INJURY_THOR_VESSEL_1	Presence/absence	Used

INJURY SEVERITY - GCS

Injury severity - GCS		
TARN field name	**Content**	**TraumaDB**
AT_SCENE_GCS_ASSESS_GCS_EYE_1	GCS component	Used
AT_SCENE_GCS_ASSESS_GCS_EYE_2	GCS component	Used
AT_SCENE_GCS_ASSESS_GCS_LEFT_EYE_1	Pupil size	Not used
AT_SCENE_GCS_ASSESS_GCS_LEFT_EYE_2	Pupil size	Not used
AT_SCENE_GCS_ASSESS_GCS_MOTOR_1	GCS component	Used
AT_SCENE_GCS_ASSESS_GCS_MOTOR_2	GCS component	Used
AT_SCENE_GCS_ASSESS_GCS_RCT_LEFT_1	Pupil reactivity	Not used
AT_SCENE_GCS_ASSESS_GCS_RCT_LEFT_2	Pupil reactivity	Not used
AT_SCENE_GCS_ASSESS_GCS_RCT_RIGHT_1	Pupil reactivity	Not used
AT_SCENE_GCS_ASSESS_GCS_RCT_RIGHT_2	Pupil reactivity	Not used
AT_SCENE_GCS_ASSESS_GCS_RIGHT_EYE_1	Pupil size	Not used
AT_SCENE_GCS_ASSESS_GCS_RIGHT_EYE_2	Pupil size	Not used
AT_SCENE_GCS_ASSESS_GCS_TOTAL_1	GCS	Used
AT_SCENE_GCS_ASSESS_GCS_TOTAL_2	GCS	Used
AT_SCENE_GCS_ASSESS_GCS_VERBAL_1	GCS component	Used
AT_SCENE_GCS_ASSESS_GCS_VERBAL_2	GCS component	Used
AT_SCENE_GCS_DATETIME_1	Datetime	Used
AT_SCENE_GCS_DATETIME_2	Datetime	Used
AT_SCENE_OBSERVATIONS_ASSESS_GCS_PSIZE_1	Recorded/not recorded	Not used
AT_SCENE_OBSERVATIONS_ASSESS_GCS_PUPIL_1	Recorded/not recorded	Not used
AT_SCENE_PUPIL_REACTIVITY_ASSESS_GCS_RCT_LEFT_1	Pupil reactivity	Not used
AT_SCENE_PUPIL_REACTIVITY_ASSESS_GCS_RCT_RIGHT_1	Pupil reactivity	Not used
AT_SCENE_PUPIL_REACTIVITY_DATETIME_1	Datetime	Not used
AT_SCENE_PUPIL_SIZE_ASSESS_GCS_LEFT_EYE_1	Pupil size	Not used
AT_SCENE_PUPIL_SIZE_ASSESS_GCS_RIGHT_EYE_1	Pupil size	Not used
AT_SCENE_PUPIL_SIZE_DATETIME_1	Datetime	Not used
CRITICAL_CARE_GCS_ASSESS_GCS_EYE_1	GCS component	Used
CRITICAL_CARE_GCS_ASSESS_GCS_EYE_2	GCS component	Used
CRITICAL_CARE_GCS_ASSESS_GCS_EYE_3	GCS component	Used
CRITICAL_CARE_GCS_ASSESS_GCS_LEFT_EYE_1	Pupil size	Not used
CRITICAL_CARE_GCS_ASSESS_GCS_LEFT_EYE_2	Pupil size	Not used
CRITICAL_CARE_GCS_ASSESS_GCS_LEFT_EYE_3	Pupil size	Not used
CRITICAL_CARE_GCS_ASSESS_GCS_MOTOR_1	GCS component	Used
CRITICAL_CARE_GCS_ASSESS_GCS_MOTOR_2	GCS component	Used
CRITICAL_CARE_GCS_ASSESS_GCS_MOTOR_3	GCS component	Used
CRITICAL_CARE_GCS_ASSESS_GCS_RCT_LEFT_1	Pupil reactivity	Not used
CRITICAL_CARE_GCS_ASSESS_GCS_RCT_LEFT_2	Pupil reactivity	Not used
CRITICAL_CARE_GCS_ASSESS_GCS_RCT_LEFT_3	Pupil reactivity	Not used
CRITICAL_CARE_GCS_ASSESS_GCS_RCT_RIGHT_1	Pupil reactivity	Not used
CRITICAL_CARE_GCS_ASSESS_GCS_RCT_RIGHT_2	Pupil reactivity	Not used
CRITICAL_CARE_GCS_ASSESS_GCS_RCT_RIGHT_3	Pupil reactivity	Not used
CRITICAL_CARE_GCS_ASSESS_GCS_RIGHT_EYE_1	Pupil size	Not used
CRITICAL_CARE_GCS_ASSESS_GCS_RIGHT_EYE_2	Pupil size	Not used
CRITICAL_CARE_GCS_ASSESS_GCS_RIGHT_EYE_3	Pupil size	Not used
CRITICAL_CARE_GCS_ASSESS_GCS_TOTAL_1	GCS	Used
CRITICAL_CARE_GCS_ASSESS_GCS_TOTAL_2	GCS	Used
CRITICAL_CARE_GCS_ASSESS_GCS_TOTAL_3	GCS	Used
CRITICAL_CARE_GCS_ASSESS_GCS_VERBAL_1	GCS component	Used
CRITICAL_CARE_GCS_ASSESS_GCS_VERBAL_2	GCS component	Used
CRITICAL_CARE_GCS_ASSESS_GCS_VERBAL_3	GCS component	Used
CRITICAL_CARE_GCS_DATETIME_1	Datetime	Used
CRITICAL_CARE_GCS_DATETIME_2	Datetime	Used
CRITICAL_CARE_GCS_DATETIME_3	Datetime	Used

CRITICAL_CARE_OBSERVATIONS_ASSESS_GCS_1	Recorded/not recorded	Not used
CRITICAL_CARE_OBSERVATIONS_ASSESS_GCS_PSIZE_1	Recorded/not recorded	Not used
CRITICAL_CARE_OBSERVATIONS_ASSESS_GCS_PSIZE_2	Recorded/not recorded	Not used
CRITICAL_CARE_OBSERVATIONS_ASSESS_GCS_PSIZE_3	Recorded/not recorded	Not used
CRITICAL_CARE_OBSERVATIONS_ASSESS_GCS_PUPIL_1	Recorded/not recorded	Not used
CRITICAL_CARE_OBSERVATIONS_ASSESS_GCS_PUPIL_2	Recorded/not recorded	Not used
CRITICAL_CARE_OBSERVATIONS_ASSESS_GCS_PUPIL_3	Recorded/not recorded	Not used
CRITICAL_CARE_PUPIL_REACTIVITY_ASSESS_GCS_RCT_LEFT_1	Pupil reactivity	Not used
CRITICAL_CARE_PUPIL_REACTIVITY_ASSESS_GCS_RCT_LEFT_2	Pupil reactivity	Not used
CRITICAL_CARE_PUPIL_REACTIVITY_ASSESS_GCS_RCT_LEFT_3	Pupil reactivity	Not used
CRITICAL_CARE_PUPIL_REACTIVITY_ASSESS_GCS_RCT_RIGHT_1	Pupil reactivity	Not used
CRITICAL_CARE_PUPIL_REACTIVITY_ASSESS_GCS_RCT_RIGHT_2	Pupil reactivity	Not used
CRITICAL_CARE_PUPIL_REACTIVITY_ASSESS_GCS_RCT_RIGHT_3	Pupil reactivity	Not used
CRITICAL_CARE_PUPIL_REACTIVITY_DATETIME_1	Datetime	Not used
CRITICAL_CARE_PUPIL_REACTIVITY_DATETIME_2	Datetime	Not used
CRITICAL_CARE_PUPIL_REACTIVITY_DATETIME_3	Datetime	Not used
CRITICAL_CARE_PUPIL_SIZE_ASSESS_GCS_LEFT_EYE_1	Pupil size	Not used
CRITICAL_CARE_PUPIL_SIZE_ASSESS_GCS_LEFT_EYE_2	Pupil size	Not used
CRITICAL_CARE_PUPIL_SIZE_ASSESS_GCS_RIGHT_EYE_1	Pupil size	Not used
CRITICAL_CARE_PUPIL_SIZE_ASSESS_GCS_RIGHT_EYE_2	Pupil size	Not used
CRITICAL_CARE_PUPIL_SIZE_DATETIME_1	Datetime	Not used
CRITICAL_CARE_PUPIL_SIZE_DATETIME_2	Datetime	Not used
ED_GCS_ASSESS_GCS_EYE_1	GCS component	Used
ED_GCS_ASSESS_GCS_EYE_2	GCS component	Used
ED_GCS_ASSESS_GCS_LEFT_EYE_1	Pupil size	Not used
ED_GCS_ASSESS_GCS_LEFT_EYE_2	Pupil size	Not used
ED_GCS_ASSESS_GCS_LEFT_EYE_3	Pupil size	Not used
ED_GCS_ASSESS_GCS_MOTOR_1	GCS component	Used
ED_GCS_ASSESS_GCS_MOTOR_2	GCS component	Used
ED_GCS_ASSESS_GCS_RCT_LEFT_1	Pupil reactivity	Not used
ED_GCS_ASSESS_GCS_RCT_LEFT_2	Pupil reactivity	Not used
ED_GCS_ASSESS_GCS_RCT_LEFT_3	Pupil reactivity	Not used
ED_GCS_ASSESS_GCS_RCT_RIGHT_1	Pupil reactivity	Not used
ED_GCS_ASSESS_GCS_RCT_RIGHT_2	Pupil reactivity	Not used
ED_GCS_ASSESS_GCS_RCT_RIGHT_3	Pupil reactivity	Not used
ED_GCS_ASSESS_GCS_RIGHT_EYE_1	Pupil size	Not used
ED_GCS_ASSESS_GCS_RIGHT_EYE_2	Pupil size	Not used
ED_GCS_ASSESS_GCS_RIGHT_EYE_3	Pupil size	Not used
ED_GCS_ASSESS_GCS_TOTAL_1	GCS	Used
ED_GCS_ASSESS_GCS_TOTAL_2	GCS	Used
ED_GCS_ASSESS_GCS_TOTAL_3	GCS	Used
ED_GCS_ASSESS_GCS_VERBAL_1	GCS component	Used
ED_GCS_ASSESS_GCS_VERBAL_2	GCS component	Used
ED_GCS_DATETIME_1	Datetime	Used
ED_GCS_DATETIME_2	Datetime	Used
ED_GCS_DATETIME_3	Datetime	Used
ED_OBSERVATIONS_ASSESS_GCS_1	Recorded/not recorded	Not used
ED_OBSERVATIONS_ASSESS_GCS_PSIZE_1	Recorded/not recorded	Not used
ED_OBSERVATIONS_ASSESS_GCS_PUPIL_1	Recorded/not recorded	Not used
ED_PUPIL_REACTIVITY_ASSESS_GCS_RCT_LEFT_1	Pupil reactivity	Not used
ED_PUPIL_REACTIVITY_ASSESS_GCS_RCT_RIGHT_1	Pupil reactivity	Not used
ED_PUPIL_REACTIVITY_DATETIME_1	Datetime	Not used
ED_PUPIL_SIZE_ASSESS_GCS_LEFT_EYE_1	Pupil size	Not used
ED_PUPIL_SIZE_ASSESS_GCS_RIGHT_EYE_1	Pupil size	Not used
ED_PUPIL_SIZE_DATETIME_1	Datetime	Not used

ENROUTE_GCS_ASSESS_GCS_EYE_1	GCS component	Used
ENROUTE_GCS_ASSESS_GCS_LEFT_EYE_1	GCS component	Used
ENROUTE_GCS_ASSESS_GCS_MOTOR_1	GCS component	Used
ENROUTE_GCS_ASSESS_GCS_RCT_LEFT_1	Pupil reactivity	Not used
ENROUTE_GCS_ASSESS_GCS_RCT_RIGHT_1	Pupil reactivity	Not used
ENROUTE_GCS_ASSESS_GCS_RIGHT_EYE_1	GCS component	Used
ENROUTE_GCS_ASSESS_GCS_TOTAL_1	GCS	Used
ENROUTE_GCS_ASSESS_GCS_VERBAL_1	GCS component	Used
ENROUTE_GCS_DATETIME_1	Datetime	Used
OPERATIONS_GCS_ASSESS_GCS_EYE_1	GCS component	Used
OPERATIONS_GCS_ASSESS_GCS_LEFT_EYE_1	Pupil size	Not used
OPERATIONS_GCS_ASSESS_GCS_MOTOR_1	GCS component	Used
OPERATIONS_GCS_ASSESS_GCS_RCT_LEFT_1	Pupil reactivity	Not used
OPERATIONS_GCS_ASSESS_GCS_RCT_RIGHT_1	Pupil reactivity	Not used
OPERATIONS_GCS_ASSESS_GCS_RIGHT_EYE_1	Pupil size	Not used
OPERATIONS_GCS_ASSESS_GCS_TOTAL_1	GCS	Used
OPERATIONS_GCS_ASSESS_GCS_VERBAL_1	GCS component	Used
OPERATIONS_GCS_DATETIME_1	Datetime	Used
WARD_GCS_ASSESS_GCS_EYE_1	GCS component	Used
WARD_GCS_ASSESS_GCS_EYE_2	GCS component	Used
WARD_GCS_ASSESS_GCS_EYE_3	GCS component	Used
WARD_GCS_ASSESS_GCS_EYE_4	GCS component	Used
WARD_GCS_ASSESS_GCS_LEFT_EYE_1	Pupil size	Not used
WARD_GCS_ASSESS_GCS_LEFT_EYE_2	Pupil size	Not used
WARD_GCS_ASSESS_GCS_LEFT_EYE_3	Pupil size	Not used
WARD_GCS_ASSESS_GCS_LEFT_EYE_4	Pupil size	Not used
WARD_GCS_ASSESS_GCS_MOTOR_1	GCS component	Used
WARD_GCS_ASSESS_GCS_MOTOR_2	GCS component	Used
WARD_GCS_ASSESS_GCS_MOTOR_3	GCS component	Used
WARD_GCS_ASSESS_GCS_MOTOR_4	GCS component	Used
WARD_GCS_ASSESS_GCS_RCT_LEFT_1	Pupil reactivity	Not used
WARD_GCS_ASSESS_GCS_RCT_LEFT_2	Pupil reactivity	Not used
WARD_GCS_ASSESS_GCS_RCT_LEFT_3	Pupil reactivity	Not used
WARD_GCS_ASSESS_GCS_RCT_LEFT_4	Pupil reactivity	Not used
WARD_GCS_ASSESS_GCS_RCT_RIGHT_1	Pupil reactivity	Not used
WARD_GCS_ASSESS_GCS_RCT_RIGHT_2	Pupil reactivity	Not used
WARD_GCS_ASSESS_GCS_RCT_RIGHT_3	Pupil reactivity	Not used
WARD_GCS_ASSESS_GCS_RCT_RIGHT_4	Pupil reactivity	Not used
WARD_GCS_ASSESS_GCS_RIGHT_EYE_1	Pupil size	Not used
WARD_GCS_ASSESS_GCS_RIGHT_EYE_2	Pupil size	Not used
WARD_GCS_ASSESS_GCS_RIGHT_EYE_3	Pupil size	Not used
WARD_GCS_ASSESS_GCS_RIGHT_EYE_4	Pupil size	Not used
WARD_GCS_ASSESS_GCS_TOTAL_1	GCS	Used
WARD_GCS_ASSESS_GCS_TOTAL_2	GCS	Used
WARD_GCS_ASSESS_GCS_TOTAL_3	GCS	Used
WARD_GCS_ASSESS_GCS_TOTAL_4	GCS	Used
WARD_GCS_ASSESS_GCS_VERBAL_1	GCS component	Used
WARD_GCS_ASSESS_GCS_VERBAL_2	GCS component	Used
WARD_GCS_ASSESS_GCS_VERBAL_3	GCS component	Used
WARD_GCS_ASSESS_GCS_VERBAL_4	GCS component	Used
WARD_GCS_DATETIME_1	Datetime	Used
WARD_GCS_DATETIME_2	Datetime	Used
WARD_GCS_DATETIME_3	Datetime	Used
WARD_GCS_DATETIME_4	Datetime	Used

WARD_OBSERVATIONS_ASSESS_GCS_1	Recorded/not recorded	Not used
WARD_OBSERVATIONS_ASSESS_GCS_3	Recorded/not recorded	Not used
WARD_OBSERVATIONS_ASSESS_GCS_4	Recorded/not recorded	Not used
WARD_OBSERVATIONS_ASSESS_GCS_5	Recorded/not recorded	Not used
WARD_OBSERVATIONS_ASSESS_GCS_PSIZE_1	Recorded/not recorded	Not used
WARD_OBSERVATIONS_ASSESS_GCS_PSIZE_2	Recorded/not recorded	Not used
WARD_OBSERVATIONS_ASSESS_GCS_PSIZE_3	Recorded/not recorded	Not used
WARD_OBSERVATIONS_ASSESS_GCS_PSIZE_4	Recorded/not recorded	Not used
WARD_OBSERVATIONS_ASSESS_GCS_PSIZE_5	Recorded/not recorded	Not used
WARD_OBSERVATIONS_ASSESS_GCS_PUPIL_1	Recorded/not recorded	Not used
WARD_OBSERVATIONS_ASSESS_GCS_PUPIL_2	Recorded/not recorded	Not used
WARD_OBSERVATIONS_ASSESS_GCS_PUPIL_3	Recorded/not recorded	Not used
WARD_OBSERVATIONS_ASSESS_GCS_PUPIL_4	Recorded/not recorded	Not used
WARD_OBSERVATIONS_ASSESS_GCS_PUPIL_5	Recorded/not recorded	Not used
WARD_PUPIL_REACTIVITY_ASSESS_GCS_RCT_LEFT_1	Pupil reactivity	Not used
WARD_PUPIL_REACTIVITY_ASSESS_GCS_RCT_LEFT_2	Pupil reactivity	Not used
WARD_PUPIL_REACTIVITY_ASSESS_GCS_RCT_LEFT_3	Pupil reactivity	Not used
WARD_PUPIL_REACTIVITY_ASSESS_GCS_RCT_LEFT_4	Pupil reactivity	Not used
WARD_PUPIL_REACTIVITY_ASSESS_GCS_RCT_RIGHT_1	Pupil reactivity	Not used
WARD_PUPIL_REACTIVITY_ASSESS_GCS_RCT_RIGHT_2	Pupil reactivity	Not used
WARD_PUPIL_REACTIVITY_ASSESS_GCS_RCT_RIGHT_3	Pupil reactivity	Not used
WARD_PUPIL_REACTIVITY_ASSESS_GCS_RCT_RIGHT_4	Pupil reactivity	Not used
WARD_PUPIL_REACTIVITY_DATETIME_1	Datetime	Not used
WARD_PUPIL_REACTIVITY_DATETIME_2	Datetime	Not used
WARD_PUPIL_REACTIVITY_DATETIME_3	Datetime	Not used
WARD_PUPIL_REACTIVITY_DATETIME_4	Datetime	Not used
WARD_PUPIL_SIZE_ASSESS_GCS_LEFT_EYE_1	Pupil size	Not used
WARD_PUPIL_SIZE_ASSESS_GCS_LEFT_EYE_2	Pupil size	Not used
WARD_PUPIL_SIZE_ASSESS_GCS_LEFT_EYE_3	Pupil size	Not used
WARD_PUPIL_SIZE_ASSESS_GCS_LEFT_EYE_4	Pupil size	Not used
WARD_PUPIL_SIZE_ASSESS_GCS_RIGHT_EYE_1	Pupil size	Not used
WARD_PUPIL_SIZE_ASSESS_GCS_RIGHT_EYE_2	Pupil size	Not used
WARD_PUPIL_SIZE_ASSESS_GCS_RIGHT_EYE_3	Pupil size	Not used
WARD_PUPIL_SIZE_ASSESS_GCS_RIGHT_EYE_4	Pupil size	Not used
WARD_PUPIL_SIZE_DATETIME_1	Datetime	Not used
WARD_PUPIL_SIZE_DATETIME_2	Datetime	Not used
WARD_PUPIL_SIZE_DATETIME_3	Datetime	Not used
WARD_PUPIL_SIZE_DATETIME_4	Datetime	Not used

INJURY DETAILS

Injury details		
TARN field name	**Content**	**TraumaDB**
INJURY_INTENT_1	Intent	Not used
INJURY_MECHANISM_1	Mechanism	Used
INJURY_PTRATE_SKIN_1	No data	Not used
INJURY_SHOOT_WEAPON_1	No data	Not used
INJURY_STAB_WEAPON_1	No data	Not used
INJURY_TRAPPED_1	Yes/No	Used
INJURY_TRAPPED_TIME_1	No data	Not used
INJURY_TYPE_1	Blunt/penetrating	Used
INJURY_VI_POS_1	Category injury type	Used
INJURY_VI_PROT_1_1	Protection	Used
INJURY_VI_PROT_1_2	Protection	Used
INJURY_VI_PROT_1_3	Protection	Used
INCIDENT_SCENEDESC_1	Text description	Not used
INCIDENT_SCENEDETAIL_1	Recorded/not recorded	Not used

7.3.3. INPUT VARIABLES – PHYSIOLOGY

			At Scene	Enroute	ED	Imaging	Critical Care	Operation	Ward	Total number of fields
PHYSIOLOGY	All	Urine output	0	0	0	0	0	0	0	**0**
		Temp	1	0	3	0	9	2	11	**26**
		CI	0	0	0	0	0	0	0	**0**
		CO	0	0	0	0	0	0	0	**0**
		BSA	0	0	0	0	0	0	0	**0**
		BP	7	3	7	0	15	3	16	**51**
		HR	7	4	2	0	8	2	11	**34**
		RR	8	2	7	0	10	0	11	**38**
		FiO2	0	0	2	2	2	2	4	**12**
		pO2	0	0	10	2	34	4	18	**68**
		pCO2	0	0	10	2	34	4	18	**68**

BP

Blood Pressure		
TARN field name	**Content**	**TraumaDB**
AT_SCENE_BLOOD_PRESSURE_ASSESS_DIABP_VAL_1	Value	Used
AT_SCENE_BLOOD_PRESSURE_ASSESS_DIABP_VAL_2	Value	Used
AT_SCENE_BLOOD_PRESSURE_ASSESS_SYSBP_VAL_1	Value	Used
AT_SCENE_BLOOD_PRESSURE_ASSESS_SYSBP_VAL_2	Value	Used
AT_SCENE_BLOOD_PRESSURE_DATETIME_1	Datetime	Used
AT_SCENE_BLOOD_PRESSURE_DATETIME_2	Datetime	Used
AT_SCENE_OBSERVATIONS_ASSESS_BLOODPRESSURE_1	Recorded/not recorded	Not used
CRITICAL_CARE_BLOOD_PRESSURE_ASSESS_DIABP_VAL_1	Value	Used
CRITICAL_CARE_BLOOD_PRESSURE_ASSESS_DIABP_VAL_2	Value	Used
CRITICAL_CARE_BLOOD_PRESSURE_ASSESS_DIABP_VAL_3	Value	Used
CRITICAL_CARE_BLOOD_PRESSURE_ASSESS_SYSBP_VAL_1	Value	Used
CRITICAL_CARE_BLOOD_PRESSURE_ASSESS_SYSBP_VAL_2	Value	Used
CRITICAL_CARE_BLOOD_PRESSURE_ASSESS_SYSBP_VAL_3	Value	Used
CRITICAL_CARE_BLOOD_PRESSURE_DATETIME_1	Datetime	Used
CRITICAL_CARE_BLOOD_PRESSURE_DATETIME_2	Datetime	Used
CRITICAL_CARE_BLOOD_PRESSURE_DATETIME_3	Datetime	Used
CRITICAL_CARE_BP_CALCULATED_MEAN_ASSESS_CMEANBP_VAL_1	Value	Used
CRITICAL_CARE_BP_CALCULATED_MEAN_DATETIME_1	Datetime	Used
CRITICAL_CARE_BP_MEAN_ASSESS_MEANBP_VAL_1	Value	Used
CRITICAL_CARE_BP_MEAN_DATETIME_1	Datetime	Used
CRITICAL_CARE_OBSERVATIONS_ASSESS_BLOODPRESSURE_1	Recorded/not recorded	Not used
CRITICAL_CARE_OBSERVATIONS_ASSESS_BLOODPRESSURE_2	Recorded/not recorded	Not used
ED_BLOOD_PRESSURE_ASSESS_DIABP_VAL_1	Value	Used
ED_BLOOD_PRESSURE_ASSESS_DIABP_VAL_2	Value	Used
ED_BLOOD_PRESSURE_ASSESS_SYSBP_VAL_1	Value	Used
ED_BLOOD_PRESSURE_ASSESS_SYSBP_VAL_2	Value	Used
ED_BLOOD_PRESSURE_DATETIME_1	Datetime	Used
ED_BLOOD_PRESSURE_DATETIME_2	Datetime	Used
ED_OBSERVATIONS_ASSESS_BLOODPRESSURE_1	Recorded/not recorded	Not used
ENROUTE_BLOOD_PRESSURE_ASSESS_DIABP_VAL_1	Value	Used
ENROUTE_BLOOD_PRESSURE_ASSESS_SYSBP_VAL_1	Value	Used
ENROUTE_BLOOD_PRESSURE_DATETIME_1	Datetime	Used
OPERATIONS_BLOOD_PRESSURE_ASSESS_DIABP_VAL_1	Value	Used
OPERATIONS_BLOOD_PRESSURE_ASSESS_SYSBP_VAL_1	Value	Used
OPERATIONS_BLOOD_PRESSURE_DATETIME_1	Datetime	Used
WARD_BLOOD_PRESSURE_ASSESS_DIABP_VAL_1	Value	Used
WARD_BLOOD_PRESSURE_ASSESS_DIABP_VAL_2	Value	Used
WARD_BLOOD_PRESSURE_ASSESS_DIABP_VAL_3	Value	Used
WARD_BLOOD_PRESSURE_ASSESS_DIABP_VAL_4	Value	Used
WARD_BLOOD_PRESSURE_ASSESS_DIABP_VAL_5	Value	Used
WARD_BLOOD_PRESSURE_ASSESS_SYSBP_VAL_1	Value	Used
WARD_BLOOD_PRESSURE_ASSESS_SYSBP_VAL_2	Value	Used
WARD_BLOOD_PRESSURE_ASSESS_SYSBP_VAL_3	Value	Used
WARD_BLOOD_PRESSURE_ASSESS_SYSBP_VAL_4	Value	Used
WARD_BLOOD_PRESSURE_ASSESS_SYSBP_VAL_5	Value	Used
WARD_BLOOD_PRESSURE_DATETIME_1	Datetime	Used
WARD_BLOOD_PRESSURE_DATETIME_2	Datetime	Used
WARD_BLOOD_PRESSURE_DATETIME_3	Datetime	Used
WARD_BLOOD_PRESSURE_DATETIME_4	Datetime	Used
WARD_BLOOD_PRESSURE_DATETIME_5	Datetime	Used
WARD_OBSERVATIONS_ASSESS_BLOODPRESSURE_1	Recorded/not recorded	Not used

CARDIAC INDEX

No fields

FIO2

FiO2		
TARN field name	**Content**	**TraumaDB**
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_FIO2_1	Value	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_1	Datetime	Used
ED_BLOOD_GASES_ASSESS_BGAS_FIO2_1	Value	Used
ED_BLOOD_GASES_DATETIME_1	Datetime	Used
IMAGING_BLOOD_GASES_ASSESS_BGAS_FIO2_1	No data	Not used
IMAGING_BLOOD_GASES_DATETIME_1	No data	Not used
OPERATIONS_BLOOD_GASES_ASSESS_BGAS_FIO2_1	Value	Used
OPERATIONS_BLOOD_GASES_DATETIME_1	Datetime	Used
WARD_BLOOD_GASES_ASSESS_BGAS_FIO2_1	Value	Used
WARD_BLOOD_GASES_ASSESS_BGAS_FIO2_2	Value	Used
WARD_BLOOD_GASES_DATETIME_1	Datetime	Used
WARD_BLOOD_GASES_DATETIME_2	Datetime	Used

HEART RATE

Heart Rate		
TARN field name	**Content**	**TraumaDB**
AT_SCENE_OBSERVATIONS_ASSESS_PULSE_1	Recorded/Not recorded	Not used
AT_SCENE_PULSE_RATE_ASSESS_PULSE_VAL_1	Value	Used
AT_SCENE_PULSE_RATE_ASSESS_PULSE_VAL_2	Value	Used
AT_SCENE_PULSE_RATE_ASSESS_PULSE_VAL_3	Value	Used
AT_SCENE_PULSE_RATE_DATETIME_1	Datetime	Used
AT_SCENE_PULSE_RATE_DATETIME_2	Datetime	Used
AT_SCENE_PULSE_RATE_DATETIME_3	Datetime	Used
CRITICAL_CARE_OBSERVATIONS_ASSESS_PULSE_1	Recorded/Not recorded	Not used
CRITICAL_CARE_OBSERVATIONS_ASSESS_PULSE_2	Recorded/Not recorded	Not used
CRITICAL_CARE_PULSE_RATE_ASSESS_PULSE_VAL_1	Value	Used
CRITICAL_CARE_PULSE_RATE_ASSESS_PULSE_VAL_2	Value	Used
CRITICAL_CARE_PULSE_RATE_ASSESS_PULSE_VAL_3	Value	Used
CRITICAL_CARE_PULSE_RATE_DATETIME_1	Datetime	Used
CRITICAL_CARE_PULSE_RATE_DATETIME_2	Datetime	Used
CRITICAL_CARE_PULSE_RATE_DATETIME_3	Datetime	Used
ED_OBSERVATIONS_ASSESS_PULSE_1	Recorded/Not recorded	Not used
ED_PULSE_RATE_ASSESS_PULSE_VAL_1	Value	Used
ED_PULSE_RATE_ASSESS_PULSE_VAL_2	Value	Used
ED_PULSE_RATE_DATETIME_1	Datetime	Used
ED_PULSE_RATE_DATETIME_2	Datetime	Used
ENROUTE_PULSE_RATE_ASSESS_PULSE_VAL_1	Value	Used
ENROUTE_PULSE_RATE_DATETIME_1	Datetime	Used
OPERATIONS_PULSE_RATE_ASSESS_PULSE_VAL_1	Value	Used
OPERATIONS_PULSE_RATE_DATETIME_1	Datetime	Used
WARD_OBSERVATIONS_ASSESS_PULSE_1	Recorded/Not recorded	Not used
WARD_PULSE_RATE_ASSESS_PULSE_VAL_1	Value	Used
WARD_PULSE_RATE_ASSESS_PULSE_VAL_2	Value	Used
WARD_PULSE_RATE_ASSESS_PULSE_VAL_3	Value	Used
WARD_PULSE_RATE_ASSESS_PULSE_VAL_4	Value	Used
WARD_PULSE_RATE_ASSESS_PULSE_VAL_5	Value	Used
WARD_PULSE_RATE_DATETIME_1	Datetime	Used
WARD_PULSE_RATE_DATETIME_2	Datetime	Used
WARD_PULSE_RATE_DATETIME_3	Datetime	Used
WARD_PULSE_RATE_DATETIME_4	Datetime	Used
WARD_PULSE_RATE_DATETIME_5	Datetime	Used

PCO2

PCO2		
TARN field name	**Content**	**TraumaDB**
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PC02_1	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PC02_10	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PC02_11	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PC02_12	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PC02_13	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PC02_14	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PC02_15	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PC02_16	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PC02_17	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PC02_2	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PC02_3	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PC02_4	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PC02_5	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PC02_6	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PC02_7	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PC02_8	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PC02_9	Value	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_1	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_10	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_11	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_12	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_13	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_14	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_15	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_16	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_17	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_2	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_3	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_4	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_5	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_6	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_7	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_8	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_9	Datetime	Used

ED_BLOOD_GASES_ASSESS_BGAS_PC02_1	Value	Used
ED_BLOOD_GASES_ASSESS_BGAS_PC02_2	Value	Used
ED_BLOOD_GASES_ASSESS_BGAS_PC02_3	Value	Used
ED_BLOOD_GASES_ASSESS_BGAS_PC02_4	Value	Used
ED_BLOOD_GASES_ASSESS_BGAS_PC02_5	Value	Used
ED_BLOOD_GASES_DATETIME_1	Datetime	Used
ED_BLOOD_GASES_DATETIME_2	Datetime	Used
ED_BLOOD_GASES_DATETIME_3	Datetime	Used
ED_BLOOD_GASES_DATETIME_4	Datetime	Used
ED_BLOOD_GASES_DATETIME_5	Datetime	Used
IMAGING_BLOOD_GASES_ASSESS_BGAS_PC02_1	Value	Used
IMAGING_BLOOD_GASES_DATETIME_1	Datetime	Used
OPERATIONS_BLOOD_GASES_ASSESS_BGAS_PC02_1	Value	Used
OPERATIONS_BLOOD_GASES_ASSESS_BGAS_PC02_2	Value	Used
OPERATIONS_BLOOD_GASES_DATETIME_1	Datetime	Used
OPERATIONS_BLOOD_GASES_DATETIME_2	Datetime	Used
WARD_BLOOD_GASES_ASSESS_BGAS_PC02_1	Value	Used
WARD_BLOOD_GASES_ASSESS_BGAS_PC02_10	Value	Used
WARD_BLOOD_GASES_ASSESS_BGAS_PC02_2	Value	Used
WARD_BLOOD_GASES_ASSESS_BGAS_PC02_3	Value	Used
WARD_BLOOD_GASES_ASSESS_BGAS_PC02_4	Value	Used
WARD_BLOOD_GASES_ASSESS_BGAS_PC02_5	Value	Used
WARD_BLOOD_GASES_ASSESS_BGAS_PC02_8	Value	Used
WARD_BLOOD_GASES_ASSESS_BGAS_PC02_9	Value	Used
WARD_BLOOD_GASES_DATETIME_1	Datetime	Used
WARD_BLOOD_GASES_DATETIME_10	Datetime	Used
WARD_BLOOD_GASES_DATETIME_2	Datetime	Used
WARD_BLOOD_GASES_DATETIME_3	Datetime	Used
WARD_BLOOD_GASES_DATETIME_4	Datetime	Used
WARD_BLOOD_GASES_DATETIME_5	Datetime	Used
WARD_BLOOD_GASES_DATETIME_8	Datetime	Used
WARD_BLOOD_GASES_DATETIME_9	Datetime	Used

PO2

PO2		
TARN field name	**Content**	**TraumaDB**
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PO2_1	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PO2_10	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PO2_11	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PO2_12	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PO2_13	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PO2_14	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PO2_15	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PO2_16	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PO2_17	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PO2_2	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PO2_3	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PO2_4	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PO2_5	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PO2_6	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PO2_7	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PO2_8	Value	Used
CRITICAL_CARE_BLOOD_GASES_ASSESS_BGAS_PO2_9	Value	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_1	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_10	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_11	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_12	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_13	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_14	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_15	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_16	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_17	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_2	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_3	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_4	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_5	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_6	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_7	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_8	Datetime	Used
CRITICAL_CARE_BLOOD_GASES_DATETIME_9	Datetime	Used

ED_BLOOD_GASES_ASSESS_BGAS_PO2_1	Value	Used
ED_BLOOD_GASES_ASSESS_BGAS_PO2_2	Value	Used
ED_BLOOD_GASES_ASSESS_BGAS_PO2_3	Value	Used
ED_BLOOD_GASES_ASSESS_BGAS_PO2_4	Value	Used
ED_BLOOD_GASES_ASSESS_BGAS_PO2_5	Value	Used
ED_BLOOD_GASES_DATETIME_1	Datetime	Used
ED_BLOOD_GASES_DATETIME_2	Datetime	Used
ED_BLOOD_GASES_DATETIME_3	Datetime	Used
ED_BLOOD_GASES_DATETIME_4	Datetime	Used
ED_BLOOD_GASES_DATETIME_5	Datetime	Used
IMAGING_BLOOD_GASES_ASSESS_BGAS_PO2_1	Value	Used
IMAGING_BLOOD_GASES_DATETIME_1	Datetime	Used
OPERATIONS_BLOOD_GASES_ASSESS_BGAS_PO2_1	Value	Used
OPERATIONS_BLOOD_GASES_ASSESS_BGAS_PO2_2	Value	Used
OPERATIONS_BLOOD_GASES_DATETIME_1	Datetime	Used
OPERATIONS_BLOOD_GASES_DATETIME_2	Datetime	Used
WARD_BLOOD_GASES_ASSESS_BGAS_PO2_1	Value	Used
WARD_BLOOD_GASES_ASSESS_BGAS_PO2_10	Value	Used
WARD_BLOOD_GASES_ASSESS_BGAS_PO2_2	Value	Used
WARD_BLOOD_GASES_ASSESS_BGAS_PO2_3	Value	Used
WARD_BLOOD_GASES_ASSESS_BGAS_PO2_4	Value	Used
WARD_BLOOD_GASES_ASSESS_BGAS_PO2_5	Value	Used
WARD_BLOOD_GASES_ASSESS_BGAS_PO2_8	Value	Used
WARD_BLOOD_GASES_ASSESS_BGAS_PO2_9	Value	Used
WARD_BLOOD_GASES_DATETIME_1	Datetime	Used
WARD_BLOOD_GASES_DATETIME_10	Datetime	Used
WARD_BLOOD_GASES_DATETIME_2	Datetime	Used
WARD_BLOOD_GASES_DATETIME_3	Datetime	Used
WARD_BLOOD_GASES_DATETIME_4	Datetime	Used
WARD_BLOOD_GASES_DATETIME_5	Datetime	Used
WARD_BLOOD_GASES_DATETIME_8	Datetime	Used
WARD_BLOOD_GASES_DATETIME_9	Datetime	Used

RESPIRATORY RATE

Respiratory Rate		
TARN field name	**Content**	**TraumaDB**
AT_SCENE_OBSERVATIONS_ASSESS_DATE_RESP_1	Date	Not used
AT_SCENE_OBSERVATIONS_ASSESS_OBS_RESP_1	Recorded/not recorded	Not used
AT_SCENE_OBSERVATIONS_ASSESS_RESP_RATE_1	Recorded/not recorded	Not used
AT_SCENE_OBSERVATIONS_ASSESS_TIME_RESP_1	Time	Not used
AT_SCENE_RESPIRATORY_RATE_ASSESS_RESP_RATE_VAL_1	Value	Used
AT_SCENE_RESPIRATORY_RATE_ASSESS_RESP_RATE_VAL_2	Value	Used
AT_SCENE_RESPIRATORY_RATE_DATETIME_1	Datetime	Used
AT_SCENE_RESPIRATORY_RATE_DATETIME_2	Datetime	Used
CRITICAL_CARE_OBSERVATIONS_ASSESS_DATE_RESP_1	Date	Not used
CRITICAL_CARE_OBSERVATIONS_ASSESS_RESP_RATE_1	Recorded/not recorded	Not used
CRITICAL_CARE_OBSERVATIONS_ASSESS_RESP_RATE_2	Recorded/not recorded	Not used
CRITICAL_CARE_OBSERVATIONS_ASSESS_TIME_RESP_1	Time	Not used
CRITICAL_CARE_RESPIRATORY_RATE_ASSESS_RESP_RATE_VAL_1	Value	Used
CRITICAL_CARE_RESPIRATORY_RATE_ASSESS_RESP_RATE_VAL_2	Value	Used
CRITICAL_CARE_RESPIRATORY_RATE_ASSESS_RESP_RATE_VAL_3	Value	Used
CRITICAL_CARE_RESPIRATORY_RATE_DATETIME_1	Datetime	Used
CRITICAL_CARE_RESPIRATORY_RATE_DATETIME_2	Datetime	Used
CRITICAL_CARE_RESPIRATORY_RATE_DATETIME_3	Datetime	Used
ED_OBSERVATIONS_ASSESS_DATE_RESP_1	Date	Not used
ED_OBSERVATIONS_ASSESS_RESP_RATE_1	Recorded/not recorded	Not used
ED_OBSERVATIONS_ASSESS_TIME_RESP_1	Time	Not used
ED_RESPIRATORY_RATE_ASSESS_RESP_RATE_VAL_1	Value	Used
ED_RESPIRATORY_RATE_ASSESS_RESP_RATE_VAL_2	Value	Used
ED_RESPIRATORY_RATE_DATETIME_1	Datetime	Used
ED_RESPIRATORY_RATE_DATETIME_2	Datetime	Used
ENROUTE_RESPIRATORY_RATE_ASSESS_RESP_RATE_VAL_1	Value	Used
ENROUTE_RESPIRATORY_RATE_DATETIME_1	Datetime	Used
WARD_OBSERVATIONS_ASSESS_RESP_RATE_1	Recorded/not recorded	Not used
WARD_OBSERVATIONS_ASSESS_RESP_RATE_3	Recorded/not recorded	Not used
WARD_OBSERVATIONS_ASSESS_RESP_RATE_5	Recorded/not recorded	Not used
WARD_RESPIRATORY_RATE_ASSESS_RESP_RATE_VAL_1	Value	Used
WARD_RESPIRATORY_RATE_ASSESS_RESP_RATE_VAL_2	Value	Used
WARD_RESPIRATORY_RATE_ASSESS_RESP_RATE_VAL_3	Value	Used
WARD_RESPIRATORY_RATE_ASSESS_RESP_RATE_VAL_4	Value	Used
WARD_RESPIRATORY_RATE_DATETIME_1	Datetime	Used
WARD_RESPIRATORY_RATE_DATETIME_2	Datetime	Used
WARD_RESPIRATORY_RATE_DATETIME_3	Datetime	Used
WARD_RESPIRATORY_RATE_DATETIME_4	Datetime	Used

TEMPERATURE

Temperature		
TARN field name	**Content**	**TraumaDB**
AT_SCENE_OBSERVATIONS_ASSESS_TEMP_1	Recorded/not recorded	Not used
CRITICAL_CARE_OBSERVATIONS_ASSESS_TEMP_1	Recorded/not recorded	Not used
CRITICAL_CARE_OBSERVATIONS_ASSESS_TEMP_2	Recorded/not recorded	Not used
CRITICAL_CARE_OBSERVATIONS_ASSESS_TEMP_3	Recorded/not recorded	Not used
CRITICAL_CARE_TEMPERATURE_ASSESS_TEMP_SITE_1	Site	Not used
CRITICAL_CARE_TEMPERATURE_ASSESS_TEMP_SITE_2	Site	Not used
CRITICAL_CARE_TEMPERATURE_ASSESS_TEMP_SITE_3	Site	Not used
CRITICAL_CARE_TEMPERATURE_DATETIME_1	Datetime	Not used
CRITICAL_CARE_TEMPERATURE_DATETIME_2	Datetime	Not used
CRITICAL_CARE_TEMPERATURE_DATETIME_3	Datetime	Not used
ED_OBSERVATIONS_ASSESS_TEMP_1	Recorded/not recorded	Not used
ED_TEMPERATURE_ASSESS_TEMP_SITE_1	Site	Not used
ED_TEMPERATURE_DATETIME_1	Datetime	Not used
OPERATIONS_TEMPERATURE_ASSESS_TEMP_SITE_1	Site	Not used
OPERATIONS_TEMPERATURE_DATETIME_1	Datetime	Not used
WARD_OBSERVATIONS_ASSESS_TEMP_1	Recorded/not recorded	Not used
WARD_OBSERVATIONS_ASSESS_TEMP_2	Recorded/not recorded	Not used
WARD_OBSERVATIONS_ASSESS_TEMP_4	Recorded/not recorded	Not used
WARD_TEMPERATURE_ASSESS_TEMP_SITE_1	Site	Not used
WARD_TEMPERATURE_ASSESS_TEMP_SITE_2	Site	Not used
WARD_TEMPERATURE_ASSESS_TEMP_SITE_3	Site	Not used
WARD_TEMPERATURE_ASSESS_TEMP_SITE_4	Site	Not used
WARD_TEMPERATURE_DATETIME_1	Datetime	Not used
WARD_TEMPERATURE_DATETIME_2	Datetime	Not used
WARD_TEMPERATURE_DATETIME_3	Datetime	Not used
WARD_TEMPERATURE_DATETIME_4	Datetime	Not used

URINE OUTPUT

No fields

7.3.4. INPUT VARIABLES – LABORATORY

		At Scene	Enroute	ED	Imaging	Critical Care	Operation	Ward	Total number of fields
LABORATORY	Haematology								
	Plts	0	0	6	0	12	0	2	**20**
	PT	0	0	6	0	12	0	0	**18**
	Fibrinogen	0	0	4	0	6	0	0	**10**
	FDPs	0	0	0	0	0	0	0	**0**
	APTT	0	0	6	0	8	0	0	**14**
	Hct	0	0	0	0	0	0	0	**0**
	WCC	0	0	6	0	12	0	6	**24**
	Hb	0	0	8	2	18	2	7	**37**

			At Scene	Enroute	ED	Imaging	Critical Care	Operation	Ward	Total number of fields
LABORATORY	Biochemistry	BD	0	0	2	2	20	4	8	**36**
		Lactate	0	0	10	2	34	4	20	**70**
		pH	0	0	10	2	34	4	16	**66**
		CK	0	0	0	0	0	0	0	**0**
		Ethanol	0	0	0	0	0	0	0	**0**
		Glucose	3	0	9	2	40	2	19	**75**
		Na+	0	0	4	2	40	2	18	**66**
		K+	0	0	4	2	40	2	20	**68**
		Cr	0	0	4	0	10	0	12	**26**
		Urea	0	0	4	0	10	0	12	**26**
		Albumin	0	0	0	0	0	0	0	**0**
		Bilirubin	0	0	0	0	0	0	0	**0**

Minimal data found in any fields – data not extracted or used

7.3.5. INPUT VARIABLES – MANAGEMENT

			At Scene	Enroute	ED	Imaging	Critical Care	Operation	Ward	Total number of fields
MANAGEMENT	Transfusion	Blood products	0	0	34	5	54	28	9	**130**
	Emergency surgery	Operative procedure	0	0	0	0	0	135	0	**135**
		Other procedure	39	1	51		59	6	17	**173**
	Emergency intervention	Vasopressors/inotropes	3	0	9	0	3	3	3	**21**
		IV fluids	14	5	55	13	66	27	15	**195**
		Intubation	27	3	16	0	18	10	18	**92**
		Ventilation	14	6	12	0	19	6	18	**75**
		CPR	6	0	9	0	9	3	6	**33**

TRANSFUSION

Transfusion		
TARN field name	**Content**	**TraumaDB**
CRITICAL_CARE_BPROD_24_HRS_INTER_BPROD_ENDTIME_1	Time	Not used
CRITICAL_CARE_BPROD_24_HRS_INTER_BPROD_ENDTIME_2	Time	Not used
CRITICAL_CARE_BPROD_24_HRS_INTER_BPROD_ENDTIME_3	Time	Not used
CRITICAL_CARE_BPROD_24_HRS_INTER_BPROD_ENDTIME_5	Time	Not used
CRITICAL_CARE_BPROD_24_HRS_INTER_BPROD_ENDTIME_6	Time	Not used
CRITICAL_CARE_BPROD_24_HRS_INTER_DATE_BPROD_1	Date	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_DATE_BPROD_2	Date	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_DATE_BPROD_3	Date	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_DATE_BPROD_4	Date	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_DATE_BPROD_5	Date	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_DATE_BPROD_6	Date	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_DATE_BPROD_7	Date	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_DATE_BPROD_8	Date	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_DATE_BPROD_9	Date	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_TNSTYPE_1_1	Blood product type	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_TNSTYPE_1_2	Blood product type	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_TNSTYPE_1_3	Blood product type	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_TNSTYPE_1_4	Blood product type	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_TNSTYPE_2	Blood product type	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_TNSTYPE_3	Blood product type	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_TNSTYPE_4	Blood product type	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_TNSTYPE_5	Blood product type	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_TNSTYPE_6	Blood product type	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_TNSTYPE_7	Blood product type	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_TNSTYPE_8	Blood product type	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_TNSTYPE_9	Blood product type	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_UNITS_1	Blood products units	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_UNITS_2	Blood products units	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_UNITS_3	Blood products units	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_UNITS_4	Blood products units	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_UNITS_5	Blood products units	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_UNITS_6	Blood products units	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_UNITS_7	Blood products units	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_UNITS_8	Blood products units	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_FLUID_UNITS_9	Blood products units	Used

CRITICAL_CARE_BPROD_24_HRS_INTER_TIME_BPROD_1	Time	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_TIME_BPROD_2	Time	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_TIME_BPROD_3	Time	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_TIME_BPROD_4	Time	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_TIME_BPROD_5	Time	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_TIME_BPROD_6	Time	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_TIME_BPROD_7	Time	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_TIME_BPROD_8	Time	Used
CRITICAL_CARE_BPROD_24_HRS_INTER_TIME_BPROD_9	Time	Used
CRITICAL_CARE_TOTAL_BPROD_25PLUS_HRS_INTER_BPROD2_BLOOD_1	Blood products units	Population description
CRITICAL_CARE_TOTAL_BPROD_25PLUS_HRS_INTER_BPROD2_BLOOD_2	Blood products units	Population description
CRITICAL_CARE_TOTAL_BPROD_25PLUS_HRS_INTER_BPROD2_FFP_1	Blood products units	Population description
CRITICAL_CARE_TOTAL_BPROD_25PLUS_HRS_INTER_BPROD2_FFP_2	Blood products units	Population description
CRITICAL_CARE_TOTAL_BPROD_25PLUS_HRS_INTER_BPROD2_PLATE_1	Blood products units	Population description
CRITICAL_CARE_TOTAL_BPROD_25PLUS_HRS_INTER_BPROD2_PLATE_2	Blood products units	Population description
ED_BPROD_24_HRS_INTER_BPROD_ENDTIME_1	Time	Not used
ED_BPROD_24_HRS_INTER_BPROD_ENDTIME_2	Time	Not used
ED_BPROD_24_HRS_INTER_DATE_BPROD_1	Date	Used
ED_BPROD_24_HRS_INTER_DATE_BPROD_2	Date	Used
ED_BPROD_24_HRS_INTER_DATE_BPROD_3	Date	Used
ED_BPROD_24_HRS_INTER_DATE_BPROD_4	Date	Used
ED_BPROD_24_HRS_INTER_DATE_BPROD_5	Date	Used
ED_BPROD_24_HRS_INTER_FLUID_TNSTYPE_1_1	Blood product type	Used
ED_BPROD_24_HRS_INTER_FLUID_TNSTYPE_1_2	Blood product type	Used
ED_BPROD_24_HRS_INTER_FLUID_TNSTYPE_1_3	Blood product type	Used
ED_BPROD_24_HRS_INTER_FLUID_TNSTYPE_1_4	Blood product type	Used
ED_BPROD_24_HRS_INTER_FLUID_TNSTYPE_2_1	Blood product type	Used
ED_BPROD_24_HRS_INTER_FLUID_TNSTYPE_2_2	Blood product type	Used
ED_BPROD_24_HRS_INTER_FLUID_TNSTYPE_2_3	Blood product type	Used
ED_BPROD_24_HRS_INTER_FLUID_TNSTYPE_2_4	Blood product type	Used
ED_BPROD_24_HRS_INTER_FLUID_TNSTYPE_3	Blood product type	Used
ED_BPROD_24_HRS_INTER_FLUID_TNSTYPE_4	Blood product type	Used
ED_BPROD_24_HRS_INTER_FLUID_TNSTYPE_5	Blood product type	Used
ED_BPROD_24_HRS_INTER_FLUID_UNITS_1	Blood product units	Used
ED_BPROD_24_HRS_INTER_FLUID_UNITS_2	Blood product units	Used
ED_BPROD_24_HRS_INTER_FLUID_UNITS_3	Blood product units	Used
ED_BPROD_24_HRS_INTER_FLUID_UNITS_4	Blood product units	Used
ED_BPROD_24_HRS_INTER_FLUID_UNITS_5	Blood product units	Used
ED_BPROD_24_HRS_INTER_TIME_BPROD_1	Time	Used
ED_BPROD_24_HRS_INTER_TIME_BPROD_2	Time	Used
ED_BPROD_24_HRS_INTER_TIME_BPROD_3	Time	Used
ED_BPROD_24_HRS_INTER_TIME_BPROD_4	Time	Used
ED_BPROD_24_HRS_INTER_TIME_BPROD_5	Time	Used
ED_TOTAL_BPROD_25PLUS_HRS_INTER_BPROD2_BLOOD_1	Blood product units	Population description
ED_TOTAL_BPROD_25PLUS_HRS_INTER_BPROD2_FFP_1	Blood product units	Population description

IMAGING_BPROD_24_HRS_INTER_DATE_BPROD_1	Date	Used
IMAGING_BPROD_24_HRS_INTER_FLUID_TNSTYPE_1	Blood product type	Used
IMAGING_BPROD_24_HRS_INTER_FLUID_UNITS_1	Blood product units	Used
IMAGING_BPROD_24_HRS_INTER_TIME_BPROD_1	Time	Used
OPERATIONS_BPROD_24_HRS_INTER_BPROD_ENDTIME_1	Time	Not used
OPERATIONS_BPROD_24_HRS_INTER_BPROD_ENDTIME_2	Time	Not used
OPERATIONS_BPROD_24_HRS_INTER_DATE_BPROD_1	Date	Used
OPERATIONS_BPROD_24_HRS_INTER_DATE_BPROD_2	Date	Used
OPERATIONS_BPROD_24_HRS_INTER_DATE_BPROD_3	Date	Used
OPERATIONS_BPROD_24_HRS_INTER_DATE_BPROD_4	Date	Used
OPERATIONS_BPROD_24_HRS_INTER_FLUID_TNSTYPE_1_1	Blood product type	Used
OPERATIONS_BPROD_24_HRS_INTER_FLUID_TNSTYPE_1_2	Blood product type	Used
OPERATIONS_BPROD_24_HRS_INTER_FLUID_TNSTYPE_1_3	Blood product type	Used
OPERATIONS_BPROD_24_HRS_INTER_FLUID_TNSTYPE_2	Blood product type	Used
OPERATIONS_BPROD_24_HRS_INTER_FLUID_TNSTYPE_3	Blood product type	Used
OPERATIONS_BPROD_24_HRS_INTER_FLUID_TNSTYPE_4	Blood product type	Used
OPERATIONS_BPROD_24_HRS_INTER_FLUID_UNITS_1	Blood product units	Used
OPERATIONS_BPROD_24_HRS_INTER_FLUID_UNITS_2	Blood product units	Used
OPERATIONS_BPROD_24_HRS_INTER_FLUID_UNITS_3	Blood product units	Used
OPERATIONS_BPROD_24_HRS_INTER_FLUID_UNITS_4	Blood product units	Used
OPERATIONS_BPROD_24_HRS_INTER_TIME_BPROD_1	Time	Used
OPERATIONS_BPROD_24_HRS_INTER_TIME_BPROD_2	Time	Used
OPERATIONS_BPROD_24_HRS_INTER_TIME_BPROD_3	Time	Used
OPERATIONS_BPROD_24_HRS_INTER_TIME_BPROD_4	Time	Used
OPERATIONS_TOTAL_BPROD_25PLUS_HRS_INTER_BPROD2_BLOOD_1	Blood product units	Population description
OPERATIONS_TOTAL_BPROD_25PLUS_HRS_INTER_BPROD2_BLOOD_2	Blood product units	Population description
OPERATIONS_TOTAL_BPROD_25PLUS_HRS_INTER_BPROD2_CRYOPRE_1	Blood product units	Population description
OPERATIONS_TOTAL_BPROD_25PLUS_HRS_INTER_BPROD2_FFP_1	Blood product units	Population description
OPERATIONS_TOTAL_BPROD_25PLUS_HRS_INTER_BPROD2_PLATE_1	Blood product units	Population description
WARD_BPROD_24_HRS_INTER_BPROD_ENDTIME_1	Time	Not used
WARD_BPROD_24_HRS_INTER_DATE_BPROD_1	Date	Used
WARD_BPROD_24_HRS_INTER_FLUID_TNSTYPE_1	Blood product type	Used
WARD_BPROD_24_HRS_INTER_FLUID_UNITS_1	Blood product units	Used
WARD_BPROD_24_HRS_INTER_TIME_BPROD_1	Time	Used
WARD_TOTAL_BPROD_25PLUS_HRS_INTER_BPROD2_BLOOD_1	Blood product units	Population description
WARD_TOTAL_BPROD_25PLUS_HRS_INTER_BPROD2_FFP_1	Blood product units	Population description
WARD_TOTAL_BPROD_25PLUS_HRS_INTER_BPROD2_PLATE_1	Blood product units	Population description

EMERGENCY SURGERY

Surgery		
TARN field name	**Content**	**TraumaDB**
OPERATIONS_OPERATIVE_PROCEDURE_DATETIME_1	Datetime	Used
OPERATIONS_OPERATIVE_PROCEDURE_DATETIME_10	Datetime	Used
OPERATIONS_OPERATIVE_PROCEDURE_DATETIME_11	Datetime	Used
OPERATIONS_OPERATIVE_PROCEDURE_DATETIME_12	Datetime	Used
OPERATIONS_OPERATIVE_PROCEDURE_DATETIME_13	Datetime	Used
OPERATIONS_OPERATIVE_PROCEDURE_DATETIME_14	Datetime	Used
OPERATIONS_OPERATIVE_PROCEDURE_DATETIME_2	Datetime	Used
OPERATIONS_OPERATIVE_PROCEDURE_DATETIME_3	Datetime	Used
OPERATIONS_OPERATIVE_PROCEDURE_DATETIME_4	Datetime	Used
OPERATIONS_OPERATIVE_PROCEDURE_DATETIME_5	Datetime	Used
OPERATIONS_OPERATIVE_PROCEDURE_DATETIME_6	Datetime	Used
OPERATIONS_OPERATIVE_PROCEDURE_DATETIME_7	Datetime	Used
OPERATIONS_OPERATIVE_PROCEDURE_DATETIME_8	Datetime	Used
OPERATIONS_OPERATIVE_PROCEDURE_DATETIME_9	Datetime	Used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_DESC_1	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_DESC_10	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_DESC_11	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_DESC_12	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_DESC_13	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_DESC_14	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_DESC_2	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_DESC_3	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_DESC_4	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_DESC_5	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_DESC_6	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_DESC_7	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_DESC_8	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_DESC_9	Procedure	Not used

OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_1_1	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_1_2	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_1_3	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_1_4	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_1_5	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_1_6	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_1_7	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_1_8	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_10_1	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_10_2	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_11	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_12	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_13	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_14_1	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_14_2	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_14_3	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_14_4	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_2_1	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_2_2	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_2_3	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_2_4	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_2_5	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_2_6	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_3_1	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_3_2	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_3_3	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_3_4	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_3_5	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_3_6	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_3_7	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_4_1	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_4_2	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_4_3	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_4_4	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_4_5	Procedure	Not used

OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_5_1	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_5_2	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_5_3	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_5_4	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_6_1	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_6_2	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_6_3	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_6_4	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_6_5	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_7_1	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_7_2	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_8_1	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_8_2	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_9_1	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_PROC_9_2	Procedure	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPC2_1	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPC2_2	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPC2_3	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPC2_4	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPC2_5	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPC2_6	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPC2_7	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPC2_8	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPC2_9	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPC3_1	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPC3_2	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPC3_3	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPC3_4	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPC3_5	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPC3_6	Speciality	Not used

OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPEC_1	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPEC_10	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPEC_11	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPEC_12	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPEC_13	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPEC_14	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPEC_2	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPEC_3	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPEC_4	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPEC_5	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPEC_6	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPEC_7	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPEC_8	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_INTER_PROC_SURG_SPEC_9	Speciality	Not used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_DATE_1	Date	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_DATE_10	Date	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_DATE_11	Date	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_DATE_12	Date	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_DATE_13	Date	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_DATE_14	Date	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_DATE_2	Date	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_DATE_3	Date	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_DATE_4	Date	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_DATE_5	Date	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_DATE_6	Date	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_DATE_7	Date	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_DATE_8	Date	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_DATE_9	Date	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_TIME_1	Time	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_TIME_10	Time	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_TIME_11	Time	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_TIME_12	Time	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_TIME_13	Time	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_TIME_14	Time	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_TIME_2	Time	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_TIME_3	Time	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_TIME_4	Time	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_TIME_5	Time	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_TIME_6	Time	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_TIME_7	Time	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_TIME_8	Time	Used
OPERATIONS_OPERATIVE_PROCEDURE_THEATRE_DEP_TIME_9	Time	Used

EMERGENCY SURGERY – CHEST DRAIN INSERTION

Chest drain		
TARN field name	**Content**	**TraumaDB**
AT_SCENE_CHEST_DRAIN_DATETIME_1	Datetime	Used
AT_SCENE_CHEST_DRAIN_INTER_DATE_CDRAIN_1	Date	Used
AT_SCENE_CHEST_DRAIN_INTER_TIME_CDRAIN_1	Time	Used
AT_SCENE_INTERVENTIONS_INTER_CDRAIN_1	Recorded/not recorded	Not used
CRITICAL_CARE_CHEST_DRAIN_DATETIME_1	Datetime	Used
CRITICAL_CARE_CHEST_DRAIN_DATETIME_2	Datetime	Used
CRITICAL_CARE_CHEST_DRAIN_DATETIME_3	Datetime	Used
CRITICAL_CARE_CHEST_DRAIN_DATETIME_4	Datetime	Used
CRITICAL_CARE_CHEST_DRAIN_DATETIME_5	Datetime	Used
CRITICAL_CARE_CHEST_DRAIN_DATETIME_6	Datetime	Used
CRITICAL_CARE_CHEST_DRAIN_INTER_DATE_CDRAIN_1	Date	Used
CRITICAL_CARE_CHEST_DRAIN_INTER_DATE_CDRAIN_2	Date	Used
CRITICAL_CARE_CHEST_DRAIN_INTER_DATE_CDRAIN_3	Date	Used
CRITICAL_CARE_CHEST_DRAIN_INTER_DATE_CDRAIN_4	Date	Used
CRITICAL_CARE_CHEST_DRAIN_INTER_DATE_CDRAIN_5	Date	Used
CRITICAL_CARE_CHEST_DRAIN_INTER_DATE_CDRAIN_6	Date	Used
CRITICAL_CARE_CHEST_DRAIN_INTER_TIME_CDRAIN_1	Time	Used
CRITICAL_CARE_CHEST_DRAIN_INTER_TIME_CDRAIN_2	Time	Used
CRITICAL_CARE_CHEST_DRAIN_INTER_TIME_CDRAIN_3	Time	Used
CRITICAL_CARE_CHEST_DRAIN_INTER_TIME_CDRAIN_4	Time	Used
CRITICAL_CARE_CHEST_DRAIN_INTER_TIME_CDRAIN_5	Time	Used
CRITICAL_CARE_CHEST_DRAIN_INTER_TIME_CDRAIN_6	Time	Used
CRITICAL_CARE_INTERVENTIONS_INTER_CDRAIN_1	Recorded/not recorded	Not used
ED_CHEST_DRAIN_DATETIME_1	Datetime	Used
ED_CHEST_DRAIN_DATETIME_2	Datetime	Used
ED_CHEST_DRAIN_INTER_DATE_CDRAIN_1	Date	Used
ED_CHEST_DRAIN_INTER_DATE_CDRAIN_2	Date	Used
ED_CHEST_DRAIN_INTER_TIME_CDRAIN_1	Time	Used
ED_CHEST_DRAIN_INTER_TIME_CDRAIN_2	Time	Used
ED_INTERVENTIONS_INTER_CDRAIN_1	Recorded/not recorded	Not used
OPERATIONS_CHEST_DRAIN_DATETIME_1	Datetime	Used
OPERATIONS_CHEST_DRAIN_INTER_DATE_CDRAIN_1	Date	Not used
WARD_CHEST_DRAIN_DATETIME_1	Datetime	Used
WARD_CHEST_DRAIN_INTER_DATE_CDRAIN_1	Date	Used
WARD_CHEST_DRAIN_INTER_TIME_CDRAIN_1	Time	Used

EMERGENCY SURGERY – ICP BOLT

ICP Measurement		
TARN field name	**Content**	**TraumaDB**
CRITICAL_CARE_ICP_ASSESS_ICP_MEANP_1	Number	Not used
CRITICAL_CARE_ICP_ASSESS_ICP_MEANP_2	Number	Not used
CRITICAL_CARE_ICP_ASSESS_ICP_TYPE_1	ICP	Used
CRITICAL_CARE_ICP_ASSESS_ICP_TYPE_2	ICP	Used
CRITICAL_CARE_ICP_DATETIME_1	Datetime	Used
CRITICAL_CARE_ICP_DATETIME_2	Datetime	Used
ED_ICP_ASSESS_ICP_TYPE_1	ICP	Used
ED_ICP_DATETIME_1	Datetime	Used

EMERGENCY INTERVENTION = VASOPRESSORS/INOTROPES

Vasopressors/inotropes		
TARN field name	**Content**	**TraumaDB**
AT_SCENE_INOTROPES_VASOSUPRESSORS_DATETIME_1	Datetime	Used
AT_SCENE_INOTROPES_VASOSUPRESSORS_INTER_DATE_INON_VASO_1	Date	Not used
AT_SCENE_INOTROPES_VASOSUPRESSORS_INTER_TIME_INON_VASO_1	Time	Not used
CRITICAL_CARE_INOTROPES_VASOSUPRESSORS_DATETIME_1	Datetime	Used
CRITICAL_CARE_INOTROPES_VASOSUPRESSORS_INTER_DATE_INON_VASO_1	Date	Not used
CRITICAL_CARE_INOTROPES_VASOSUPRESSORS_INTER_TIME_INON_VASO_1	Time	Not used
ED_INOTROPES_VASOSUPRESSORS_DATETIME_1	Datetime	Used
ED_INOTROPES_VASOSUPRESSORS_INTER_DATE_INON_VASO_1	Date	Not used
ED_INOTROPES_VASOSUPRESSORS_INTER_TIME_INON_VASO_1	Time	Not used
INTER_VASO_ANALG_1	Coded	Not used
INTER_VASO_ANALG_2	Coded	Not used
INTER_VASO_CONTIN_1	Coded	Not used
INTER_VASO_CONTIN_2	Coded	Not used
INTER_VASO_DRUG_1	Coded	Not used
INTER_VASO_DRUG_2	Coded	Not used
OPERATIONS_INOTROPES_VASOSUPRESSORS_DATETIME_1	Datetime	Used
OPERATIONS_INOTROPES_VASOSUPRESSORS_INTER_DATE_INON_VASO_1	Date	Not used
OPERATIONS_INOTROPES_VASOSUPRESSORS_INTER_TIME_INON_VASO_1	Time	Not used
WARD_INOTROPES_VASOSUPRESSORS_DATETIME_1	Datetime	Used
WARD_INOTROPES_VASOSUPRESSORS_INTER_DATE_INON_VASO_1	Date	Not used
WARD_INOTROPES_VASOSUPRESSORS_INTER_TIME_INON_VASO_1	Time	Not used

EMERGENCY INTERVENTION – IV FLUIDS

IV fluids		
TARN field name	**Content**	**TraumaDB**
AT_SCENE_FLUID_DATETIME_1	Datetime	Used
AT_SCENE_FLUID_DATETIME_2	Datetime	Used
AT_SCENE_FLUID_INTER_DATE_FLUID_1	Date	Not used
AT_SCENE_FLUID_INTER_DATE_FLUID_2	Date	Not used
AT_SCENE_FLUID_INTER_FLUID_BLSTYPE_1	Colloid/crystalloid	Not used
AT_SCENE_FLUID_INTER_FLUID_BLSTYPE_2	Colloid/crystalloid	Not used
AT_SCENE_FLUID_INTER_FLUID_ENDTIME_1	Time	No data
AT_SCENE_FLUID_INTER_FLUID_TYPE_1	Type	Not used
AT_SCENE_FLUID_INTER_FLUID_VOL_1	Volume	Used
AT_SCENE_FLUID_INTER_FLUID_VOL_2	Volume	Used
AT_SCENE_FLUID_INTER_TIME_FLUID_1	Time	Not used
AT_SCENE_FLUID_INTER_TIME_FLUID_2	Time	Not used
AT_SCENE_INTERVENTIONS_INTER_FLUID_VOL_1	Volume	Not used
AT_SCENE_INTERVENTIONS_INTER_FLUIDBOLUS_1	Recorded/not recorded	Not used
CRITICAL_CARE_FLUID_DATETIME_1	Datetime	Not used
CRITICAL_CARE_FLUID_DATETIME_2	Datetime	Not used
CRITICAL_CARE_FLUID_DATETIME_3	Datetime	Not used
CRITICAL_CARE_FLUID_DATETIME_4	Datetime	Not used
CRITICAL_CARE_FLUID_DATETIME_5	Datetime	Not used
CRITICAL_CARE_FLUID_DATETIME_6	Datetime	Not used
CRITICAL_CARE_FLUID_DATETIME_7	Datetime	Not used
CRITICAL_CARE_FLUID_INTER_DATE_FLUID_1	Date	Not used
CRITICAL_CARE_FLUID_INTER_DATE_FLUID_2	Date	Not used
CRITICAL_CARE_FLUID_INTER_DATE_FLUID_3	Date	Not used
CRITICAL_CARE_FLUID_INTER_DATE_FLUID_4	Date	Not used
CRITICAL_CARE_FLUID_INTER_DATE_FLUID_5	Date	Not used
CRITICAL_CARE_FLUID_INTER_DATE_FLUID_6	Date	Not used
CRITICAL_CARE_FLUID_INTER_DATE_FLUID_7	Date	Not used
CRITICAL_CARE_FLUID_INTER_FLUID_BLSTYPE_1_1	Colloid/crystalloid	Not used
CRITICAL_CARE_FLUID_INTER_FLUID_BLSTYPE_1_2	Colloid/crystalloid	Not used
CRITICAL_CARE_FLUID_INTER_FLUID_BLSTYPE_2	Colloid/crystalloid	Not used
CRITICAL_CARE_FLUID_INTER_FLUID_BLSTYPE_3	Colloid/crystalloid	Not used
CRITICAL_CARE_FLUID_INTER_FLUID_BLSTYPE_4	Colloid/crystalloid	Not used
CRITICAL_CARE_FLUID_INTER_FLUID_BLSTYPE_5	Colloid/crystalloid	Not used
CRITICAL_CARE_FLUID_INTER_FLUID_BLSTYPE_6	Colloid/crystalloid	Not used
CRITICAL_CARE_FLUID_INTER_FLUID_BLSTYPE_7	Colloid/crystalloid	Not used
CRITICAL_CARE_FLUID_INTER_FLUID_ENDTIME_1	Time	No data
CRITICAL_CARE_FLUID_INTER_FLUID_ENDTIME_2	Time	No data

CRITICAL_CARE_FLUID_INTER_FLUID_TYPE_1	Type	Not used
CRITICAL_CARE_FLUID_INTER_FLUID_TYPE_2	Type	Not used
CRITICAL_CARE_FLUID_INTER_FLUID_VOL_1	Volume	Not used
CRITICAL_CARE_FLUID_INTER_FLUID_VOL_2	Volume	Not used
CRITICAL_CARE_FLUID_INTER_FLUID_VOL_3	Volume	Not used
CRITICAL_CARE_FLUID_INTER_FLUID_VOL_4	Volume	Not used
CRITICAL_CARE_FLUID_INTER_FLUID_VOL_5	Volume	Not used
CRITICAL_CARE_FLUID_INTER_FLUID_VOL_6	Volume	Not used
CRITICAL_CARE_FLUID_INTER_FLUID_VOL_7	Volume	Not used
CRITICAL_CARE_FLUID_INTER_TIME_FLUID_1	Time	Not used
CRITICAL_CARE_FLUID_INTER_TIME_FLUID_2	Time	Not used
CRITICAL_CARE_FLUID_INTER_TIME_FLUID_3	Time	Not used
CRITICAL_CARE_FLUID_INTER_TIME_FLUID_4	Time	Not used
CRITICAL_CARE_FLUID_INTER_TIME_FLUID_5	Time	Not used
CRITICAL_CARE_FLUID_INTER_TIME_FLUID_6	Time	Not used
CRITICAL_CARE_FLUID_INTER_TIME_FLUID_7	Time	Not used
CRITICAL_CARE_INTERVENTIONS_INTER_FLUIDBOLUS_1	Recorded/not recorded	Not used
ED_FLUID_DATETIME_1	Datetime	Used
ED_FLUID_DATETIME_2	Datetime	Used
ED_FLUID_DATETIME_3	Datetime	Used
ED_FLUID_DATETIME_4	Datetime	Used
ED_FLUID_DATETIME_5	Datetime	Used
ED_FLUID_DATETIME_6	Datetime	Used
ED_FLUID_INTER_DATE_FLUID_1	Date	Not used
ED_FLUID_INTER_DATE_FLUID_2	Date	Not used
ED_FLUID_INTER_DATE_FLUID_3	Date	Not used
ED_FLUID_INTER_DATE_FLUID_4	Date	Not used
ED_FLUID_INTER_DATE_FLUID_5	Date	Not used
ED_FLUID_INTER_DATE_FLUID_6	Date	Not used
ED_FLUID_INTER_FLUID_BLSTYPE_1	Colloid/crystalloid	Not used
ED_FLUID_INTER_FLUID_BLSTYPE_2	Colloid/crystalloid	Not used
ED_FLUID_INTER_FLUID_BLSTYPE_3	Colloid/crystalloid	Not used
ED_FLUID_INTER_FLUID_BLSTYPE_4	Colloid/crystalloid	Not used
ED_FLUID_INTER_FLUID_BLSTYPE_5	Colloid/crystalloid	Not used
ED_FLUID_INTER_FLUID_BLSTYPE_6	Colloid/crystalloid	Not used
ED_FLUID_INTER_FLUID_ENDTIME_1	Time	No data
ED_FLUID_INTER_FLUID_ENDTIME_2	Time	No data
ED_FLUID_INTER_FLUID_ENDTIME_3	Time	No data
ED_FLUID_INTER_FLUID_TYPE_1	Type	Not used
ED_FLUID_INTER_FLUID_TYPE_2	Type	Not used
ED_FLUID_INTER_FLUID_TYPE_3	Type	Not used

ED_FLUID_INTER_FLUID_VOL_1	Volume	Used
ED_FLUID_INTER_FLUID_VOL_2	Volume	Used
ED_FLUID_INTER_FLUID_VOL_3	Volume	Used
ED_FLUID_INTER_FLUID_VOL_4	Volume	Used
ED_FLUID_INTER_FLUID_VOL_5	Volume	Used
ED_FLUID_INTER_FLUID_VOL_6	Volume	Used
ED_FLUID_INTER_TIME_FLUID_1	Time	Not used
ED_FLUID_INTER_TIME_FLUID_2	Time	Not used
ED_FLUID_INTER_TIME_FLUID_3	Time	Not used
ED_FLUID_INTER_TIME_FLUID_4	Time	Not used
ED_FLUID_INTER_TIME_FLUID_5	Time	Not used
ENROUTE_FLUID_DATETIME_1	Datetime	Used
ENROUTE_FLUID_INTER_DATE_FLUID_1	Date	Not used
ENROUTE_FLUID_INTER_FLUID_BLSTYPE_1	Colloid/crystalloid	Not used
ENROUTE_FLUID_INTER_FLUID_TYPE_1	Type	Not used
ENROUTE_FLUID_INTER_FLUID_VOL_1	Volume	Used
IMAGING_FLUID_DATETIME_1	Datetime	Used
IMAGING_FLUID_DATETIME_2	Datetime	Used
IMAGING_FLUID_INTER_DATE_FLUID_1	Date	Not used
IMAGING_FLUID_INTER_DATE_FLUID_2	Date	Not used
IMAGING_FLUID_INTER_FLUID_BLSTYPE_1	Colloid/crystalloid	Not used
IMAGING_FLUID_INTER_FLUID_BLSTYPE_2	Colloid/crystalloid	Not used
IMAGING_FLUID_INTER_FLUID_TYPE_1	Type	Not used
IMAGING_FLUID_INTER_FLUID_TYPE_2	Type	Not used
IMAGING_FLUID_INTER_FLUID_VOL_1	Volume	Used
IMAGING_FLUID_INTER_FLUID_VOL_2	Volume	Used
OPERATIONS_FLUID_DATETIME_1	Datetime	Used
OPERATIONS_FLUID_DATETIME_2	Datetime	Used
OPERATIONS_FLUID_INTER_DATE_FLUID_1	Date	Not used
OPERATIONS_FLUID_INTER_DATE_FLUID_2	Date	Not used
OPERATIONS_FLUID_INTER_FLUID_BLSTYPE_1	Colloid/crystalloid	Not used
OPERATIONS_FLUID_INTER_FLUID_BLSTYPE_2	Colloid/crystalloid	Not used
OPERATIONS_FLUID_INTER_FLUID_ENDTIME_1	Time	No data
OPERATIONS_FLUID_INTER_FLUID_ENDTIME_2	Time	No data
OPERATIONS_FLUID_INTER_FLUID_TYPE_1	Type	Not used
OPERATIONS_FLUID_INTER_FLUID_TYPE_2	Type	Not used
OPERATIONS_FLUID_INTER_FLUID_VOL_1	Volume	Used
OPERATIONS_FLUID_INTER_FLUID_VOL_2	Volume	Used
OPERATIONS_FLUID_INTER_TIME_FLUID_1	Time	Not used
OPERATIONS_FLUID_INTER_TIME_FLUID_2	Time	Not used

WARD_FLUID_DATETIME_1	Datetime	Used
WARD_FLUID_DATETIME_2	Datetime	Used
WARD_FLUID_INTER_DATE_FLUID_1	Date	Not used
WARD_FLUID_INTER_DATE_FLUID_2	Date	Not used
WARD_FLUID_INTER_FLUID_BLSTYPE_1	Colloid/crystalloid	Not used
WARD_FLUID_INTER_FLUID_BLSTYPE_2	Colloid/crystalloid	Not used
WARD_FLUID_INTER_FLUID_ENDTIME_1	Time	No data
WARD_FLUID_INTER_FLUID_TYPE_1	Type	Not used
WARD_FLUID_INTER_FLUID_VOL_1	Volume	Used
WARD_FLUID_INTER_FLUID_VOL_2	Volume	Used
WARD_FLUID_INTER_TIME_FLUID_1	Time	Not used
WARD_FLUID_INTER_TIME_FLUID_2	Time	Not used

EMERGENCY INTERVENTION – INTUBATION/VENTILATION

Intubation		
TARN field name	**Content**	**TraumaDB**
AT_SCENE_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_1	Airway status	Not used
AT_SCENE_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_2	Airway status	Not used
AT_SCENE_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_3	Airway status	Not used
AT_SCENE_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_4	Airway status	Not used
AT_SCENE_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_5	Airway status	Not used
AT_SCENE_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_6	Airway status	Not used
AT_SCENE_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_7	Airway status	Not used
AT_SCENE_AIRWAY_STATUS_DATETIME_1	Datetime	Not used
AT_SCENE_AIRWAY_STATUS_DATETIME_2	Datetime	Not used
AT_SCENE_AIRWAY_STATUS_DATETIME_3	Datetime	Not used
AT_SCENE_AIRWAY_STATUS_DATETIME_4	Datetime	Not used
AT_SCENE_AIRWAY_STATUS_DATETIME_5	Datetime	Not used
AT_SCENE_AIRWAY_STATUS_DATETIME_6	Datetime	Not used
AT_SCENE_AIRWAY_STATUS_DATETIME_7	Datetime	Not used
AT_SCENE_AIRWAY_SUPPORT_DATETIME_1	Datetime	Used
AT_SCENE_AIRWAY_SUPPORT_DATETIME_2	Datetime	Used
AT_SCENE_AIRWAY_SUPPORT_DATETIME_3	Datetime	Used
AT_SCENE_AIRWAY_SUPPORT_INTER_AIRWAYSUPP_1	Airway intervention	Used
AT_SCENE_AIRWAY_SUPPORT_INTER_AIRWAYSUPP_2	Airway intervention	Used
AT_SCENE_AIRWAY_SUPPORT_INTER_AIRWAYSUPP_3	Airway intervention	Used
AT_SCENE_AIRWAY_SUPPORT_INTER_AIRWAYSUPP_4	No data	Not used
AT_SCENE_AIRWAY_SUPPORT_INTER_DATE_AIRSUPP_1	Date	Used
AT_SCENE_AIRWAY_SUPPORT_INTER_DATE_AIRSUPP_2	Date	Used
AT_SCENE_AIRWAY_SUPPORT_INTER_DATE_AIRSUPP_3	Date	Used
AT_SCENE_AIRWAY_SUPPORT_INTER_TIME_AIRSUPP_1	Time	Used
AT_SCENE_AIRWAY_SUPPORT_INTER_TIME_AIRSUPP_2	Time	Used
AT_SCENE_AIRWAY_SUPPORT_INTER_TIME_AIRSUPP_3	Time	Used
AT_SCENE_OBSERVATIONS_ASSESS_AIRWAYSTATUS_1	Recorded/not recorded	Not used
CRITICAL_CARE_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_1	Airway status	Used
CRITICAL_CARE_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_2	Airway status	Used
CRITICAL_CARE_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_3	Airway status	Used
CRITICAL_CARE_AIRWAY_STATUS_DATETIME_1	Datetime	Used
CRITICAL_CARE_AIRWAY_STATUS_DATETIME_2	Datetime	Used
CRITICAL_CARE_AIRWAY_STATUS_DATETIME_3	Datetime	Used
CRITICAL_CARE_AIRWAY_SUPPORT_DATETIME_1	Datetime	Used
CRITICAL_CARE_AIRWAY_SUPPORT_DATETIME_2	Datetime	Used
CRITICAL_CARE_AIRWAY_SUPPORT_DATETIME_3	Datetime	Used

CRITICAL_CARE_AIRWAY_SUPPORT_INTER_AIRWAYSUPP_1	Airway intervention	Used
CRITICAL_CARE_AIRWAY_SUPPORT_INTER_AIRWAYSUPP_2	Airway intervention	Used
CRITICAL_CARE_AIRWAY_SUPPORT_INTER_AIRWAYSUPP_3	Airway intervention	Used
CRITICAL_CARE_AIRWAY_SUPPORT_INTER_DATE_AIRSUPP_1	Date	Used
CRITICAL_CARE_AIRWAY_SUPPORT_INTER_DATE_AIRSUPP_2	Date	Used
CRITICAL_CARE_AIRWAY_SUPPORT_INTER_DATE_AIRSUPP_3	Date	Used
CRITICAL_CARE_AIRWAY_SUPPORT_INTER_TIME_AIRSUPP_1	Time	Used
CRITICAL_CARE_AIRWAY_SUPPORT_INTER_TIME_AIRSUPP_2	Time	Used
CRITICAL_CARE_AIRWAY_SUPPORT_INTER_TIME_AIRSUPP_3	Time	Used
CRITICAL_CARE_INTERVENTIONS_INTER_AIRWAYSUPPORT_1	No data	Not used
ED_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_1	Airway status	Used
ED_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_2	Airway status	Used
ED_AIRWAY_STATUS_DATETIME_1	Datetime	Used
ED_AIRWAY_STATUS_DATETIME_2	Datetime	Used
ED_AIRWAY_SUPPORT_DATETIME_1	Datetime	Used
ED_AIRWAY_SUPPORT_DATETIME_2	Datetime	Used
ED_AIRWAY_SUPPORT_DATETIME_3	Datetime	Used
ED_AIRWAY_SUPPORT_INTER_AIRWAYSUPP_1	Airway intervention	Used
ED_AIRWAY_SUPPORT_INTER_AIRWAYSUPP_2	Airway intervention	Used
ED_AIRWAY_SUPPORT_INTER_AIRWAYSUPP_3	Airway intervention	Used
ED_AIRWAY_SUPPORT_INTER_DATE_AIRSUPP_1	Date	Used
ED_AIRWAY_SUPPORT_INTER_DATE_AIRSUPP_2	Date	Used
ED_AIRWAY_SUPPORT_INTER_DATE_AIRSUPP_3	Date	Used
ED_AIRWAY_SUPPORT_INTER_TIME_AIRSUPP_1	Time	Used
ED_AIRWAY_SUPPORT_INTER_TIME_AIRSUPP_2	Time	Used
ED_AIRWAY_SUPPORT_INTER_TIME_AIRSUPP_3	Time	Used
ENROUTE_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_1	Airway status	Used
ENROUTE_AIRWAY_STATUS_DATETIME_1	Datetime	Used
ENROUTE_AIRWAY_SUPPORT_INTER_AIRWAYSUPP_1	Airway intervention	Used
OPERATIONS_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_1	Airway status	Used
OPERATIONS_AIRWAY_STATUS_DATETIME_1	Datetime	Used
OPERATIONS_AIRWAY_SUPPORT_DATETIME_1	Datetime	Used
OPERATIONS_AIRWAY_SUPPORT_DATETIME_2	Datetime	Used
OPERATIONS_AIRWAY_SUPPORT_INTER_AIRWAYSUPP_1	Airway intervention	Used
OPERATIONS_AIRWAY_SUPPORT_INTER_AIRWAYSUPP_2	Airway intervention	Used
OPERATIONS_AIRWAY_SUPPORT_INTER_DATE_AIRSUPP_1	Date	Used
OPERATIONS_AIRWAY_SUPPORT_INTER_DATE_AIRSUPP_2	Date	Used
OPERATIONS_AIRWAY_SUPPORT_INTER_TIME_AIRSUPP_1	Time	Used
OPERATIONS_AIRWAY_SUPPORT_INTER_TIME_AIRSUPP_2	Time	Used

WARD_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_1	Airway status	Used
WARD_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_2	Airway status	Used
WARD_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_3	Airway status	Used
WARD_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_4	Airway status	Used
WARD_AIRWAY_STATUS_ASSESS_AIRWAYS_VAL_5	Airway status	Used
WARD_AIRWAY_STATUS_DATETIME_1	Datetime	Used
WARD_AIRWAY_STATUS_DATETIME_2	Datetime	Used
WARD_AIRWAY_STATUS_DATETIME_3	Datetime	Used
WARD_AIRWAY_STATUS_DATETIME_4	Datetime	Used
WARD_AIRWAY_STATUS_DATETIME_5	Datetime	Used
WARD_AIRWAY_SUPPORT_DATETIME_1	Datetime	Used
WARD_AIRWAY_SUPPORT_DATETIME_2	Datetime	Used
WARD_AIRWAY_SUPPORT_INTER_AIRWAYSUPP_1	Airway intervention	Used
WARD_AIRWAY_SUPPORT_INTER_AIRWAYSUPP_2	Airway intervention	Used
WARD_AIRWAY_SUPPORT_INTER_DATE_AIRSUPP_1	Date	Used
WARD_AIRWAY_SUPPORT_INTER_DATE_AIRSUPP_2	Date	Used
WARD_AIRWAY_SUPPORT_INTER_TIME_AIRSUPP_1	Time	Used
WARD_AIRWAY_SUPPORT_INTER_TIME_AIRSUPP_2	Time	Used

EMERGENCY INTERVENTION – CPR

CPR		
TARN field name	**Content**	**TraumaDB**
AT_SCENE_CARDIO_RESPIRATORY_RESUSCITATION_DATETIME_1	Datetime	Used
AT_SCENE_CARDIO_RESPIRATORY_RESUSCITATION_INTER_DATE_CPR_1	Date	Used
AT_SCENE_CARDIO_RESPIRATORY_RESUSCITATION_INTER_TIME_CPR_1	Time	Used
CRITICAL_CARE_CARDIO_RESPIRATORY_RESUSCITATION_DATETIME_1	Datetime	Used
CRITICAL_CARE_CARDIO_RESPIRATORY_RESUSCITATION_DATETIME_2	Datetime	Used
CRITICAL_CARE_CARDIO_RESPIRATORY_RESUSCITATION_INTER_DATE_CPR_1	Date	Used
CRITICAL_CARE_CARDIO_RESPIRATORY_RESUSCITATION_INTER_DATE_CPR_2	Date	Used
CRITICAL_CARE_CARDIO_RESPIRATORY_RESUSCITATION_INTER_TIME_CPR_1	Time	Used
CRITICAL_CARE_CARDIO_RESPIRATORY_RESUSCITATION_INTER_TIME_CPR_2	Time	Used
ED_CARDIO_RESPIRATORY_RESUSCITATION_DATETIME_1	Datetime	Used
ED_CARDIO_RESPIRATORY_RESUSCITATION_DATETIME_2	Datetime	Used
ED_CARDIO_RESPIRATORY_RESUSCITATION_INTER_DATE_CPR_1	Date	Used
ED_CARDIO_RESPIRATORY_RESUSCITATION_INTER_DATE_CPR_2	Date	Used
ED_CARDIO_RESPIRATORY_RESUSCITATION_INTER_TIME_CPR_1	Time	Used
ED_CARDIO_RESPIRATORY_RESUSCITATION_INTER_TIME_CPR_2	Time	Used
OPERATIONS_CARDIO_RESPIRATORY_RESUSCITATION_DATETIME_1	Datetime	Used
OPERATIONS_CARDIO_RESPIRATORY_RESUSCITATION_INTER_DATE_CPR_1	Date	Used
OPERATIONS_CARDIO_RESPIRATORY_RESUSCITATION_INTER_TIME_CPR_1	Time	Used
WARD_CARDIO_RESPIRATORY_RESUSCITATION_DATETIME_1	Datetime	Used
WARD_CARDIO_RESPIRATORY_RESUSCITATION_INTER_DATE_CPR_1	Date	Used
WARD_CARDIO_RESPIRATORY_RESUSCITATION_INTER_TIME_CPR_1	Time	Used

APPENDIX 8 DATA DICTIONARY

8.1. INPUT VARIABLES – PATIENT

8.1.1. BASIC PATIENT DATA

AGE

VARIABLE:	AGE
CATEGORY	Input variable - Patient
SUB-CATEGORY	Basic patient data
DATA SOURCES:	
TARN	Opening Section
ICNARC	Patients - Age Patients - Month component for age Patients - Day component for age
CIS	PtPatientInfo - Age
ISM	ISMAdmissions - DoB
DATA DETAILS:	
DATA TYPE	Number 1 decimal place
UNITS	Years
DEFINITION	Age at time of injury
NORMAL RANGE	18 years +
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	ISM data - calculated field from DoB and time of injury - used only if no field available from TARN or ICNARC
TIMING VALIDATION	Fixed at time of injury
DUPLICATE VALUES	If more than one value for same patient, checked against hospital PAS system
VARIABLE RULES:	Non-calculated field - calculated field only if non-calculated data not available No timing element - fixed variable Discrepancies checked against PAS system

BMI

VARIABLE:	**BMI**
CATEGORY	Input variable - Patient
SUB-CATEGORY	Basic patient data
DATA SOURCES:	
TARN	Opening Section - Weight only
ICNARC	Patients - Body Mass Index Patients - Height Patients - Weight
CIS	ptWeightObs heightObs
ISM	414 - Height cms 957 - Weight kgs
DATA DETAILS:	
DATA TYPE	Number 2 decimal places
UNITS	kg/m^2
DEFINITION	$Weight(kg)/(Height(m))^2$
NORMAL RANGE	<18.5 = Underweight >30 = Obese
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Earliest recorded data after admission
DUPLICATE VALUES	If > 1 value, value closest to admission date/time used
VARIABLE RULES:	Calculated field No timing element - taken as fixed on admission TARN data not used as minimal data recorded

SEX

VARIABLE:	**SEX**
CATEGORY	Input variable - Patient
SUB-CATEGORY	Basic patient data
DATA SOURCES:	
TARN	Opening Section
ICNARC	Patients - Sex
CIS	PtPatientInfo - Gender
ISM	ISMAdmissions - Sex
DATA DETAILS:	
DATA TYPE	Categorical
UNITS	N/A
DEFINITION	Patient sex
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Fixed at time of injury
DUPLICATE VALUES	If any discrepancy for same patient, checked against hospital PAS system
VARIABLE RULES:	Non-calculated field No timing element - fixed variable Discrepancies checked against PAS system

8.1.2. CHRONIC HEALTH CONDITIONS

CARDIOVASCULAR DISEASE

VARIABLE:	CARDIOVASCULAR DISEASE
CATEGORY	Input variable - Patient
SUB-CATEGORY	Chronic health conditions
DATA SOURCES:	
TARN	Outcomes - Pre-existing disease Text descriptions included: Heart disease IHD MI Valvular heart disease CVA/TIA
ICNARC	PMH - Very severe CV disease
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Categorical
UNITS	N/A
DEFINITION	Presence or absence of CV disease
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	No timing - fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Presence or absence of disease Only categorised if PMH = Yes 2 categories = Yes/No

DIABETES

VARIABLE:	DIABETES
CATEGORY	Input variable - Patient
SUB-CATEGORY	Chronic health conditions
DATA SOURCES:	
TARN	Outcomes - Pre-existing disease Text descriptions included: Diabetes mellitus (insulin dependent) Diabetes mellitus (non-insulin dependent)
ICNARC	Not present
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Categorical
UNITS	N/A
DEFINITION	Presence or absence of diabetes
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	No timing - fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Presence or absence of disease Only categorised if PMH = Yes 2 categories = Yes/No

DRUGS/ALCOHOL

VARIABLE:	DRUGS/ALCOHOL
CATEGORY	Input variable - Patient
SUB-CATEGORY	Chronic health conditions
DATA SOURCES:	
TARN	Outcomes - Pre-existing disease Text descriptions included: Alcohol abuse Drug addiction
ICNARC	Not present
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Categorical
UNITS	N/A
DEFINITION	Presence or absence of drug or alcohol addiction
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	No timing - fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Presence or absence of disease Only categorised if PMH = Yes 2 categories = Yes/No

HEPATIC DISEASE

VARIABLE:	HEPATIC DISEASE
CATEGORY	Input variable - Patient
SUB-CATEGORY	Chronic health conditions
DATA SOURCES:	
TARN	Outcomes - Pre-existing disease Text descriptions included: Liver disease
ICNARC	PMH - Biopsy proven cirrhosis PMH - Portal hypertension PMH - Hepatic encephalopathy
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Categorical
UNITS	N/A
DEFINITION	Presence or absence of hepatic disease
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	No timing - fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Presence or absence of disease Only categorised if PMH = Yes 2 categories = Yes/No

IMMUNOCOMPROMISE

VARIABLE:	IMMUNOCOMPROMISE
CATEGORY	Input variable - Patient
SUB-CATEGORY	Chronic health conditions
DATA SOURCES:	
TARN	Outcomes - Pre-existing disease Text descriptions included: Immune disease HIV/AIDS
ICNARC	PMH - AIDS PMH - Steroid treatment PMH - Congenital immunohumoral or cellular immunodeficiency PMH - Chemotherapy PMH - HIV/AIDS
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Categorical
UNITS	N/A
DEFINITION	Presence or absence of immune compromise
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	No timing - fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Presence or absence of disease Only categorised if PMH = Yes 2 categories = Yes/No

MALIGNANCY

VARIABLE:	MALIGNANCY
CATEGORY	Input variable - Patient
SUB-CATEGORY	Chronic health conditions
DATA SOURCES:	
TARN	Outcomes - Pre-existing disease Text descriptions included: Cancer of bone Cancer of breast Cancer of GI tract Cancer of GU tract Cancer of kidney Cancer of skin Other neoplasms
ICNARC	PMH - Metastatic disease PMH - AML/ALL PMH - CML/CLL PMH - Lymphoma PMH - Radiotherapy
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Categorical
UNITS	N/A
DEFINITION	Presence or absence of malignancy
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	No timing - fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Presence or absence of disease Only categorised if PMH = Yes 2 categories = Yes/No

OTHER PMH

VARIABLE:	OTHER PMH
CATEGORY	Input variable - Patient
SUB-CATEGORY	Chronic health conditions
DATA SOURCES:	
TARN	Outcomes - Pre-existing disease Text descriptions included: Other disease/condition Anaemia Arthritis Crohn's/colitis Degenerative spinal disease Diabetes insipidus DVT Eye disease Epilepsy GU disease Hypercholesterolaemia Hypertension Musculoskeletal conditions Osteoarthritis Parkinson's Disease Spina bifida Thyroid disease Ulcer Vasculitis
ICNARC	PMH - Other condition
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Categorical
UNITS	N/A
DEFINITION	Presence or absence of disease not listed in other PMH categories
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	No timing - fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Presence or absence of disease not listed in other PMH categories Only categorised if PMH = Yes 2 categories = Yes/No

PMH

VARIABLE:	PMH
CATEGORY	Input variable - Patient
SUB-CATEGORY	Chronic health conditions
DATA SOURCES:	
TARN	Outcomes - Pre-existing disease
ICNARC	PMH (all fields)
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Categorical
UNITS	N/A
DEFINITION	Presence or absence of chronic disease
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	No timing - fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Presence or absence of chronic disease 3 categories - Yes/No/Unknown If any record of positive PMH, recorded as Yes

PSYCHIATRIC

VARIABLE:	PSYCHIATRIC
CATEGORY	Input variable - Patient
SUB-CATEGORY	Chronic health conditions
DATA SOURCES:	
TARN	Outcomes - Pre-existing disease Text descriptions included: Deliberate self-harm Dementia Depression Mental and behavioural conditions Personality disorder Schizophrenia
ICNARC	Not present
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Categorical
UNITS	N/A
DEFINITION	Presence or absence of psychiatric disease
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	No timing - fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Presence or absence of disease Only categorised if PMH = Yes 2 categories = Yes/No

RENAL DISEASE

VARIABLE:	RENAL DISEASE
CATEGORY	Input variable - Patient
SUB-CATEGORY	Chronic health conditions
DATA SOURCES:	
TARN	Outcomes - Pre-existing disease Text descriptions included: Renal disease
ICNARC	PMH - Chronic Renal Replacement therapy
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Categorical
UNITS	N/A
DEFINITION	Presence or absence of renal disease
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	No timing - fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Presence or absence of disease Only categorised if PMH = Yes 2 categories = Yes/No

RESPIRATORY DISEASE

VARIABLE:	RESPIRATORY DISEASE
CATEGORY	Input variable - Patient
SUB-CATEGORY	Chronic health conditions
DATA SOURCES:	
TARN	Outcomes - Pre-existing disease Text descriptions included: Asthma COPD PE TB
ICNARC	PMH - Severe respiratory disease PMH - Home ventilation
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Categorical
UNITS	N/A
DEFINITION	Presence or absence of respiratory disease
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	No timing - fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Presence or absence of disease Only categorised if PMH = Yes 2 categories = Yes/No

8.2. INPUT VARIABLES - INJURY

8.2.1. INJURY SEVERITY

ABBREVIATED INJURY SCALE

VARIABLE:	**Abbreviated Injury Scale (AIS)**
CATEGORY	Input variable - Injury
SUB-CATEGORY	Injury severity
DATA SOURCES:	
TARN	AIS coding
ICNARC	Not present
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Ordinal scale
UNITS	N/A
DEFINITION	AIS for each of six body regions (= 6 fields) - Head/neck - Face - Chest - Abdo - Extremities - External
NORMAL RANGE	0-6
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values > 6
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Field as given by TARN for each AIS body region

INJURY SEVERITY SCORE

VARIABLE:	**Injury Severity Score (ISS)**
CATEGORY	Input variable - Injury
SUB-CATEGORY	Injury severity
DATA SOURCES:	
TARN	Outcome Measurements
ICNARC	Not present
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Ordinal scale
UNITS	N/A
DEFINITION	ISS
NORMAL RANGE	0-75
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values > 75
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Field calculated by TARN from AIS components

NEW INJURY SEVERITY SCORE

VARIABLE:	New Injury Severity Score (NISS)
CATEGORY	Input variable - Injury
SUB-CATEGORY	Injury severity
DATA SOURCES:	
TARN	Outcome Measurements
ICNARC	Not present
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Ordinal scale
UNITS	N/A
DEFINITION	NISS
NORMAL RANGE	0-75
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values > 75
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Field calculated by TARN from AIS components

GLASGOW COMA SCALE – FIRST RECORDED

VARIABLE:	GLASGOW COMA SCALE (GCS) - FIRST RECORD
CATEGORY	Input variable - Injury
SUB-CATEGORY	Injury severity
DATA SOURCES:	
TARN	At Scene Critical Care En route Emergency Department Operation Ward
ICNARC	Pre-sedation GCS Pre-sedation total GCS Not used
CIS	GCSObs TraumaGCSInt GCSInt
ISM	888 - Total GCS score
DATA DETAILS:	
DATA TYPE	Ordinal scale
UNITS	N/A
DEFINITION	First recorded value of Total GCS (i.e. not component parts)
NORMAL RANGE	3-15
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values < 3 or > 15 (= calculation error from component parts)
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	
DUPLICATE VALUES	N/A
VARIABLE RULES:	First record of GCS Time of record noted as time from injury

GLASGOW COMA SCALE – MINIMUM

VARIABLE:	GLASGOW COMA SCALE (GCS) - MINIMUM
CATEGORY	Input variable - Injury
SUB-CATEGORY	Injury severity
DATA SOURCES:	
TARN	At Scene Critical Care En route Emergency Department Operation Ward
ICNARC	Lowest total GCS Not used - no timings
CIS	GCSObs TraumaGCSInt GCSInt
ISM	888 - Total GCS score
DATA DETAILS:	
DATA TYPE	Ordinal scale
UNITS	N/A
DEFINITION	Lowest value of Total GCS (i.e. not component parts) for each time block
NORMAL RANGE	3-15
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values < 3 or > 15 (= calculation error from component parts)
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	
DUPLICATE VALUES	Removal of duplicates with same TraumaDBID, GCS and Chartdatetime If duplicates with different GCS, minimum value retained
VARIABLE RULES:	Minimum value for each time block

8.2.2. INJURY DETAILS

BLUNT/PENETRATING TRAUMA

VARIABLE:	**Blunt/penetrating**
CATEGORY	Input variable - Injury
SUB-CATEGORY	Injury details
DATA SOURCES:	
TARN	Incident
ICNARC	Not present
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Binary
UNITS	N/A
DEFINITION	Blunt/penetrating
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Field as given by TARN

MECHANISM OF INJURY

VARIABLE:	**Mechanism of injury**
CATEGORY	Input variable - Injury
SUB-CATEGORY	Injury details
DATA SOURCES:	
TARN	Incident
ICNARC	Not present
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Categorical
UNITS	N/A
DEFINITION	Following categories only: - Blast - Blow - Crush - Fall < 2m - Fall > 2m - Other - Shooting - Stabbing - Vehicle accident
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Field as given by TARN

PROTECTIVE EQUIPMENT

VARIABLE:	**Protective equipment**
CATEGORY	Input variable - Injury
SUB-CATEGORY	Injury details
DATA SOURCES:	
TARN	Incident
ICNARC	Not present
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Binary
UNITS	N/A
DEFINITION	Yes/No
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Field as given by TARN

TIME TO HOSPITAL

VARIABLE:	**Time to hospital**
CATEGORY	Input variable - Injury
SUB-CATEGORY	Injury details
DATA SOURCES:	**All sources used, plus ICU Admin database, hospital PAS, trauma administration and hospital notes**
TARN	
ICNARC	
CIS	
ISM	
DATA DETAILS:	
DATA TYPE	Integer
UNITS	Minutes
DEFINITION	Time from recorded time of injury to arrival at first hospital
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Fixed
DUPLICATE VALUES	N/A
VARIABLE RULES:	From timings data, collected separately from wide range of sources, both database and non-database

TRAPPED

VARIABLE:	**Trapped**
CATEGORY	Input variable - Injury
SUB-CATEGORY	Injury details
DATA SOURCES:	
TARN	Incident
ICNARC	Not present
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Binary
UNITS	N/A
DEFINITION	Yes/No
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Field as given by TARN

VEHICLE POSITION

VARIABLE:	**Vehicle position**
CATEGORY	Input variable - Injury
SUB-CATEGORY	Injury details
DATA SOURCES:	
TARN	Incident
ICNARC	Not present
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	Categorical
UNITS	N/A
DEFINITION	Following categories only: - Driver - Front seat passenger - Motorcyclist - Pedalcyclist - Pedestrian - Pillion passenger - Rear seat passenger
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Fixed at time of injury
DUPLICATE VALUES	N/A
VARIABLE RULES:	Field as given by TARN

8.3. INPUT VARIABLES - PHYSIOLOGY

BLOOD PRESSURE – SBP AND MAP

VARIABLE:	**Blood pressure - SBP and MAP**
CATEGORY	Input variable - Physiology
SUB-CATEGORY	N/A
DATA SOURCES:	
TARN	At Scene Critical Care Emergency Department En Route Operations Ward
ICNARC	All in Daily Assessments: Lowest systolic BP Paired diastolic BP for lowest systolic BP Highest systolic BP Paired diastolic BP for highest systolic BP Lowest diastolic BP Paired systolic BP for lowest diastolic BP Highest diastolic BP Paired systolic BP for highest diastolic BP Not used
CIS	bpObs arterialBPInt noninvasiveBPInt IABP_BPInt
ISM	40 - ABP 428 - IABP BP 430 - IABP MAP 515 - MAP 546 - NIBP 547 - NIBP Mean
DATA DETAILS:	
DATA TYPE	Integer Data for SBP, DBP, MAP and calculated MAP
UNITS	mmHg
DEFINITION	Lowest SBP for each time block Lowest MAP for each time block Hierarchy of data - ABP if available, if not NIBP, if not unspecified.
NORMAL RANGE	SBP - 90 to 130 DBP - 60 to 80 MAP - 70 to 110
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	SBP> MAP > DBP Both SBP and DBP present at same time point All MAP values calculated from simultaneous SBP and DBP
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID, and Chartdatetime identical - removal of duplicate entries with same value. If different values, lowest value retained.
VARIABLE RULES:	**SBP** - minimum value for each time block **MAP** - minimum value for each time block

CARDIAC INDEX

VARIABLE:	**Cardiac Index**
CATEGORY	Input variable - Physiology
SUB-CATEGORY	N/A
DATA SOURCES:	
TARN	Not present
ICNARC	Not present
CIS	CIObs CCIObs Doppler_Cardiac_IndexInt **Calculated values from CO and BSA:** CardiacOutputObs CCOObs CardiacOutputInt CCIObs Doppler_Cardiac_IndexInt BSAObs BSAInt
ISM	170 - CI 3915 - DCI **Calculated values from CO and BSA:** 174 - CO 3916 -D-CO 131 - BSA
DATA DETAILS:	
DATA TYPE	Number 2 decimal places
UNITS	
DEFINITION	Lowest value for each time block
NORMAL RANGE	2.5-4.0
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value. If different values, lowest value retained.
VARIABLE RULES:	Minimum value for each time block ***NB: Data present on small patient subset only - time blocks 4-6 only (i.e. > 24 hours after injury)***

FIO2

VARIABLE:	**FiO2**
CATEGORY	Input variable - Physiology
SUB-CATEGORY	N/A
DATA SOURCES:	
TARN	Critical Care Emergency Department Imaging Operation Ward
ICNARC	Daily Assessments - FIO2 Not used
CIS	FIO2Obs FIO2Int
ISM	347 - FIO2
DATA DETAILS:	
DATA TYPE	Number 2 decimal places
UNITS	% given as fraction
DEFINITION	Highest value for each time block
NORMAL RANGE	0.21 or 21%
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID, and Chartdatetime identical - removal of duplicate entries with same value. If different values, highest value retained.
VARIABLE RULES:	Maximum value for each time block recorded

HEART RATE

VARIABLE:	Heart Rate
CATEGORY	Input variable - Physiology
SUB-CATEGORY	N/A
DATA SOURCES:	
TARN	At Scene Critical Care Emergency Department En Route Operations Ward
ICNARC	Daily Assessments - Lowest heart rate Daily Assessments - Highest heart rate Not used
CIS	heartRateObs heartRateInt
ISM	411 - Heart Rate 3917 - D- Heart Rate
DATA DETAILS:	
DATA TYPE	Integer
UNITS	Beats per minute
DEFINITION	Highest value for each time block
NORMAL RANGE	60-80
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID, and Chartdatetime identical - removal of duplicate entries with same value. If different values, lowest value retained.
VARIABLE RULES:	Minimum value for each time block

PCO2

VARIABLE:	**PCO2**
CATEGORY	Input variable - Physiology
SUB-CATEGORY	N/A
DATA SOURCES:	
TARN	Critical Care Emergency Department Imaging Operation Ward
ICNARC	Daily Assessments - Associated PCO2 to highest FIO2 Daily Assessments - Associated PCO2 for highest pH Daily Assessments - Associated PCO2 for lowest pH Not used
CIS	PCO2Int
ISM	1058 - PaCO2
DATA DETAILS:	
DATA TYPE	Number 2 decimal places
UNITS	kPa
DEFINITION	Highest value for each time block
NORMAL RANGE	4.5 to 6.0
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values Arterial values only
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID, and Chartdatetime identical - removal of duplicate entries with same value. If different values, highest value retained.
VARIABLE RULES:	Maximum value for each time block recorded

PO2

VARIABLE:	PO2
CATEGORY	Input variable - Physiology
SUB-CATEGORY	N/A
DATA SOURCES:	
TARN	Critical Care Emergency Department Imaging Operation Ward
ICNARC	Daily Assessments - PaO2 Not used
CIS	PO2Obs PO2Int
ISM	616 - PaO2 1060 - PaO2
DATA DETAILS:	
DATA TYPE	Number 2 decimal places
UNITS	kPa
DEFINITION	Lowest value for each time block
NORMAL RANGE	11 to 13
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values Arterial values only
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID, and Chartdatetime identical - removal of duplicate entries with same value. If different values, lowest value retained.
VARIABLE RULES:	Minimum value for each time block recorded

RESPIRATORY RATE

VARIABLE:	**Respiratory Rate**
CATEGORY	Input variable - Physiology
SUB-CATEGORY	N/A
DATA SOURCES:	
TARN	At Scene Critical Care Emergency Department En Route Ward
ICNARC	Daily Assessments - Lowest non-ventilated respiratory rate Daily Assessments - Highest non-ventilated respiratory rate Daily Assessments - Lowest ventilated respiratory rate Daily Assessments - Highest ventilated respiratory rate Not used
CIS	RespirationRateObs VentObs Respiratory_RateInt VentRateInt
ISM	418 - High Resp Rate 891 - Total Resp Rate 931 - Ventilator Resp Rate
DATA DETAILS:	
DATA TYPE	Integer
UNITS	Breaths per minute
DEFINITION	Highest value for each time block
NORMAL RANGE	12 to 18
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	Ventilator values excluded if no ventilator mode available for interpretation
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID, and Chartdatetime identical - removal of duplicate entries with same value.
VARIABLE RULES:	Minimum and maximum values for each time block recorded i.e. most abnormal value

TEMPERATURE

VARIABLE:	**Temperature**
CATEGORY	Input variable - Physiology
SUB-CATEGORY	N/A
DATA SOURCES:	
TARN	Not present
ICNARC	Daily Assessment - Lowest central temperature Daily Assessment - Highest central temperature Daily Assessment - Lowest non-central temperature Daily Assessment - Highest non-central temperature None used
CIS	tempObs Temp2_PeripheralInt temperatureInt
ISM	872 - Temperature 877 - Temperature - Axilla 878 - Temperature - Blood 879 - Temperature - Oral 880 - Temperature - Tympanic 7665 - Temp tympanic - R
DATA DETAILS:	
DATA TYPE	Number 1 decimal place
UNITS	^{0}C
DEFINITION	Lowest value for each time block Hierarchy for temperature site as follows: 1. Blood 2. Oesophageal 3. Rectal 4. Oral 5. Nasopharyngeal 6. Tympanic 7. Axillary 8. Groin 9. Not specified
NORMAL RANGE	36.0-37.5
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	Values < 20 or > 50
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID, Chartdatetime and temperature site identical - removal of duplicate entries with same value. If different values, lowest value retained.
VARIABLE RULES:	Minimum value for each time block Hierarchy for site of temperature as listed if multiple entries for same time point.

URINE OUTPUT

VARIABLE:	**Urine output**
CATEGORY	Input variable - Physiology
SUB-CATEGORY	N/A
DATA SOURCES:	
TARN	Not present
ICNARC	Not present
CIS	UrineOutput24Int
ISM	IOItems 84 - Urine catheter
DATA DETAILS:	
DATA TYPE	Integer
UNITS	mls
DEFINITION	Sum of values for each time block
NORMAL RANGE	25-100mls
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value. If different values, lowest value retained.
VARIABLE RULES:	Sum value for each time block Noted that zero values used if catheter in situ. Bag may not be emptied hourly. Hourly totals not adjusted for this due to use of sum value.

8.4. INPUT VARIABLES - LABORATORY

8.4.1. HAEMATOLOGY

APTT

VARIABLE:	Activated Partial Thromboplastin Time (APTT)
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Haematology
DATA SOURCES:	
TARN	Not present
ICNARC	Partial thromboplastin time - Daily Assessments Not used
CIS	APTTObs APTTInt
ISM	960 - APTT Control 961 - APTT Patient
DATA DETAILS:	
DATA TYPE	Number 1 decimal place
UNITS	Seconds
DEFINITION	Highest value for given time block Laboratory results only
NORMAL RANGE	30-40
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	> 240 seconds categorised as 240 seconds
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value. If different values, highest value retained.
VARIABLE RULES:	Maximum value for each time block

FDP

VARIABLE:	**Fibrin degradation products (FDPs)**
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Haematology
DATA SOURCES:	
TARN	Not present
ICNARC	Not present
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	No data
UNITS	mg/L
DEFINITION	No data
NORMAL RANGE	< 100
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	No data
SOFT LIMITS FOR EXCLUSION	No data
TIMING VALIDATION	No data
DUPLICATE VALUES	No data
VARIABLE RULES:	N/A

FIBRINOGEN

VARIABLE:	**Fibrinogen**
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Haematology
DATA SOURCES:	
TARN	Critical Care Fibrinogen Not used
ICNARC	Not present
CIS	FibObs FibInt
ISM	1007 - Fibrinogen level 5462 - Fibrinogen level - NULL data only - EXCLUDED
DATA DETAILS:	
DATA TYPE	Number 1 decimal place
UNITS	g/L
DEFINITION	Lowest value for given time block Laboratory results only
NORMAL RANGE	1.8-5.4
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value. If different values, lowest value retained.
VARIABLE RULES:	Minimum value for each time block

HAEMATOCRIT

VARIABLE:	Haematocrit
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	N/A
DATA SOURCES:	
TARN	Not present
ICNARC	Lowest haematocrit - Daily Assessments Highest haematocrit - Daily Assessments Not used
CIS	HematocritObs Haematocrit_EstimatedObs Haematocrit_EstimatedInt
ISM	1021 - Haematocrit 1022 - Haematocrit Lab
DATA DETAILS:	
DATA TYPE	Number 1 decimal place
UNITS	%
DEFINITION	Lowest value for given time block Laboratory results and ABG (labelled as estimated) results present - laboratory results taken in preference, ABG results only if no lab result present
NORMAL RANGE	40-50
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values As %, value must be > 0 and < 100
SOFT LIMITS FOR EXCLUSION	ABG result not compatible with other lab results from same patient
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value. If different values, lowest value retained. Lab and ABG results with same time-stamp - only lab result retained
VARIABLE RULES:	Minimum value for each time block

HAEMOGLOBIN

VARIABLE:	**Haemoglobin (Hb)**
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Haematology
DATA SOURCES:	
TARN	Critical Care Haemoglobin Not used
ICNARC	Lowest haemoglobin - Daily Assessments Highest haemoglobin - Daily Assessments Not used
CIS	Hb_EstimatedObs HemoglobinObs RBCObs - NOT RELEVANT HgbInt RBCInt - NOT RELEVANT
ISM	1023 - Haemoglobin 1024 - Hb Estimated
DATA DETAILS:	
DATA TYPE	Number 1 decimal place
UNITS	gm/dl
DEFINITION	Lowest value for given time block Laboratory results and ABG (labelled as estimated) results present - laboratory results taken in preference, ABG results only if no lab result present
NORMAL RANGE	13.0-17.0
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	> 0 and < 20 ABG result not compatible with other lab results from same patient
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value. If different values, lowest value retained. Lab and ABG results with same time-stamp - only lab result retained
VARIABLE RULES:	Minimum value for each time block

PLATELET COUNT

VARIABLE:	**Platelet count**
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Haematology
DATA SOURCES:	
TARN	Critical Care Platelets Not used
ICNARC	Lowest platelet count - Daily Assessments Not used
CIS	PlateletsObs PlateletsInt
ISM	1069 - Platelets
DATA DETAILS:	
DATA TYPE	Integer
UNITS	10^9/L
DEFINITION	Lowest value for given time block Laboratory results only
NORMAL RANGE	150-400
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	Values > 1000
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value. If different values, lowest value retained.
VARIABLE RULES:	Minimum value for each time block

PT

VARIABLE:	**Prothrombin time (PT)**
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Haematology
DATA SOURCES:	
TARN	Critical Care Prothrombin Not used
ICNARC	Highest prothrombin time - Daily Assessments Not used
CIS	PTObs PTInt
ISM	1078 - Prothrombin Control 1081 - Prothrombin Time
DATA DETAILS:	
DATA TYPE	Number 1 decimal place
UNITS	Seconds
DEFINITION	Highest value for given time block Laboratory results only
NORMAL RANGE	11.5-15.5
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value. If different values, highest value retained.
VARIABLE RULES:	Maximum value for each time block

WCC

VARIABLE:	White Cell Count (WCC)
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Haematology
DATA SOURCES:	
TARN	Critical Care White Cell Count Not used
ICNARC	Lowest white blood cell count - Daily Assessments Highest white blood cell count - Daily Assessments Not used
CIS	WBCx1000Obs WBCx1000Int
ISM	1126 - White Cells 4-11
DATA DETAILS:	
DATA TYPE	Number 2 decimal places
UNITS	10^9/L
DEFINITION	Lowest and highest value for given time block
NORMAL RANGE	4.00-11.0
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	>50
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value.
VARIABLE RULES:	Maximum and minimum values for each time block

8.4.2. BIOCHEMISTRY

ALBUMIN

VARIABLE:	**Albumin**
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Biochemistry
DATA SOURCES:	
TARN	Not present
ICNARC	Lowest serum albumin - Daily Assessments Highest serum albumin - Daily Assessments Not used
CIS	AlbuminObs AlbuminInt
ISM	965 - Albumin 35-50
DATA DETAILS:	
DATA TYPE	Number 1 decimal place
UNITS	g/L
DEFINITION	Lowest value for given time block
NORMAL RANGE	35-50
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value.
VARIABLE RULES:	Minimum values for each time block

BD

VARIABLE:	**Base deficit (BD)**
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Biochemistry
DATA SOURCES:	
TARN	Critical Care Blood Gas Base Excess Not used
ICNARC	Not present
CIS	BaseExcessObs BaseExcessInt
ISM	972 - Base Excess
DATA DETAILS:	
DATA TYPE	Number 1 decimal place
UNITS	mmol/l
DEFINITION	Greatest deviation from 0
NORMAL RANGE	From -2 to +2
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	NULL values
SOFT LIMITS FOR EXCLUSION	> 0 and < 20 ABG result not compatible with other lab results from same patient
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value.
VARIABLE RULES:	Most abnormal result for each time block - defined as maximum deviation from 0

BILIRUBIN

VARIABLE:	**Bilirubin**
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Biochemistry
DATA SOURCES:	
TARN	Not present
ICNARC	Highest serum bilirubin - Daily Assessments Not used
CIS	bilirubinTotalMsmtObs Bilirubin_TotalInt
ISM	1110 - Tot.Bilirubin 3-17
DATA DETAILS:	
DATA TYPE	Number Integer
UNITS	µmol/l
DEFINITION	Highest value for given time block
NORMAL RANGE	3-17
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value.
VARIABLE RULES:	Maximum values for each time block

CK

VARIABLE:	**Creatine kinase (CK)**
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Biochemistry
DATA SOURCES:	
TARN	Not present
ICNARC	Not present
CIS	CreatineKinaseObs Creatine_KinaseInt
ISM	995 - Creat Kinase 75-200 4411 - CREATININE KINASE
DATA DETAILS:	
DATA TYPE	Number Integer
UNITS	IU/L
DEFINITION	Highest value for given time block
NORMAL RANGE	24-195
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value. If different values, highest value retained.
VARIABLE RULES:	Maximum value for each time block

CREATININE

VARIABLE:	**Creatinine (Cr)**
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Biochemistry
DATA SOURCES:	
TARN	Critical Care Creatinine Value Not used
ICNARC	Lowest serum creatinine - Daily Assessments Highest serum creatinine - Daily Assessments Not used
CIS	CreatinineserumObs CreatinineInt
ISM	996 - Creatinine 70-150
DATA DETAILS:	
DATA TYPE	Number Integer
UNITS	µmol/l
DEFINITION	Highest value for given time block
NORMAL RANGE	70-150
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value.
VARIABLE RULES:	Maximum values for each time block

ETHANOL

VARIABLE:	**Ethanol**
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Biochemistry
DATA SOURCES:	
TARN	Not present
ICNARC	Not present
CIS	None relevant
ISM	1006 - Ethanol - not relevant
DATA DETAILS:	
DATA TYPE	No data
UNITS	mmol/l
DEFINITION	No data
NORMAL RANGE	0
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	No data
SOFT LIMITS FOR EXCLUSION	No data
TIMING VALIDATION	No data
DUPLICATE VALUES	No data
VARIABLE RULES:	N/A

GLUCOSE

VARIABLE:	**Glucose**
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Biochemistry
DATA SOURCES:	
TARN	Critical Care Glucose Value Not used
ICNARC	Lowest serum glucose - Daily Assessments Highest serum glucose - Daily Assessments Not used
CIS	GlucoseObs Glucose_BGInt
ISM	976 - Blood Glucose 1013 - Glucose 3.5-5
DATA DETAILS:	
DATA TYPE	Number 1 decimal place
UNITS	mmol/l
DEFINITION	Highest and lowest values for given time block Laboratory and ABG results present, but few labelled. All data taken as equivalent due to labelling inconsistencies
NORMAL RANGE	3.5-5.0
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value.
VARIABLE RULES:	Maximum and minimum values for each time block

LACTATE

VARIABLE:	**Lactate**
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Biochemistry
DATA SOURCES:	
TARN	Critical Care Blood Gas Lactate Not used
ICNARC	Highest blood lactate - Daily Assessments Not used
CIS	LactateObs Lactate_BG
ISM	1032 - Lactate
DATA DETAILS:	
DATA TYPE	Number 1 decimal place
UNITS	mmol/l
DEFINITION	Highest value for given time block Laboratory results and ABG results present - laboratory results taken in preference, ABG results only if no lab result present
NORMAL RANGE	0.5-1.6
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	ABG result not compatible with other lab results from same patient
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value. If different values, highest value retained. Lab and ABG results with same time-stamp - only lab result retained
VARIABLE RULES:	Maximum value for each time block

PH

VARIABLE:	**pH**
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Biochemistry
DATA SOURCES:	
TARN	Critical Care Blood Gas pH Not used
ICNARC	Lowest pH/H+ - Daily Assessments Highest pH/H+ - Daily Assessments Not used
CIS	pH_BGObs PhInt
ISM	1129 - pH
DATA DETAILS:	
DATA TYPE	Number 2 decimal places
UNITS	pH units
DEFINITION	Lowest value (most acidotic) for given time block All values ABG results
NORMAL RANGE	7.35- 7.45
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	Values < 6.5 or > 8.0 Results incompatible with other results for same patient
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value. If different values, lowest value retained.
VARIABLE RULES:	Minimum value for each time block

POTASSIUM

VARIABLE:	**Potassium (K+)**
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Biochemistry
DATA SOURCES:	
TARN	Critical Care Potassium Value Not used
ICNARC	Lowest serum potassium - Daily Assessments Highest serum potassium - Daily Assessments Not used
CIS	Potassium_BGObs PotassiumObs Potassium_BGInt PotassiumInt
ISM	1027 - K 1070 - Potassium 3.5-5
DATA DETAILS:	
DATA TYPE	Number 1 decimal place
UNITS	mmol/l
DEFINITION	Highest and lowest values for given time block Laboratory results and ABG results present - laboratory results taken in preference, ABG results only if no lab result present
NORMAL RANGE	3.5-5.0
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	ABG result not compatible with other lab results from same patient
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value. Lab and ABG results with same time-stamp - only lab result retained
VARIABLE RULES:	Minimum and maximum values for each time block

SODIUM

VARIABLE:	**Sodium (Na+)**
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Biochemistry
DATA SOURCES:	
TARN	Critical Care Sodium Value Not used
ICNARC	Lowest serum sodium - Daily Assessments Highest serum sodium - Daily Assessments Not used
CIS	Sodium_BGObs SodiumObs Sodium_BGInt SodiumInt
ISM	1047 - Na 1100 - Sodium 135-145
DATA DETAILS:	
DATA TYPE	Number Integer
UNITS	mmol/l
DEFINITION	Highest and lowest values for given time block Laboratory results and ABG results present - laboratory results taken in preference, ABG results only if no lab result present
NORMAL RANGE	135-145
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	Value < 100 mmol/l or > 200 mmol/l ABG result not compatible with other lab results from same patient
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value. Lab and ABG results with same time-stamp - only lab result retained
VARIABLE RULES:	Minimum and maximum values for each time block

UREA

VARIABLE:	**Urea**
CATEGORY	Input variable - Laboratory
SUB-CATEGORY	Biochemistry
DATA SOURCES:	
TARN	Critical Care Urea Value Not used
ICNARC	Highest serum urea - Daily Assessments Not used
CIS	serumUreaObs SerumUreaInt
ISM	1116 - Urea 2.5-6.7
DATA DETAILS:	
DATA TYPE	Number 1 decimal place
UNITS	µmol/l
DEFINITION	Highest value for given time block
NORMAL RANGE	2.5-6.7
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	> 0 minutes and < 2880 mins from injury time (0-48 hours from injury) Division into time blocks for model development
DUPLICATE VALUES	TraumaDBID and Chartdatetime identical - removal of duplicate entries with same value.
VARIABLE RULES:	Maximum values for each time block

8.5. INPUT VARIABLES - MANAGEMENT

8.5.1. TRANSFUSION

AGE OF TRANSFUSED BLOOD

VARIABLE:	**Age of transfused blood**
CATEGORY	Input variable - Management
SUB-CATEGORY	Transfusion
DATA SOURCES:	
TARN	Not present
ICNARC	Not present
CIS	Not present
ISM	Not present
DATA DETAILS:	
DATA TYPE	No data
UNITS	Time
DEFINITION	No data
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	No data
SOFT LIMITS FOR EXCLUSION	No data
TIMING VALIDATION	No data
DUPLICATE VALUES	N/A
VARIABLE RULES:	N/A

ANY TRANSFUSION?

VARIABLE:	Any transfusion?
CATEGORY	Input variable - Management
SUB-CATEGORY	Transfusion
DATA SOURCES:	
TARN	Critical Care Emergency Department Imaging Operation Ward Data collected as totals for 0-24 hours
ICNARC	Not present
CIS	Not used - covers critical care period only, not overall transfusion volume
ISM	Not used - covers critical care period only, not overall transfusion volume
DATA DETAILS:	
DATA TYPE	Binary variable
UNITS	N/A
DEFINITION	Yes/No
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Total products from 0-24 hours (TARN data collected as sum 0-24 hours, and 25 hours-30 days)
DUPLICATE VALUES	N/A
VARIABLE RULES:	If any data present for transfusion = yes Data applicable for 0-24 and 0-48 hour models only If no entry in TARN, assumed no transfusion given

CRYOPRECIPITATE

VARIABLE:	Cryoprecipitate
CATEGORY	Input variable - Management
SUB-CATEGORY	Transfusion
DATA SOURCES:	
TARN	Critical Care Emergency Department Imaging Operation Ward Data collected as totals for 0-24 hours
ICNARC	Not present
CIS	Not used - covers critical care period only, not overall transfusion volume
ISM	Not used - covers critical care period only, not overall transfusion volume
DATA DETAILS:	
DATA TYPE	Integer
UNITS	Units of blood product
DEFINITION	Sum for each time block
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Total products from 0-24 hours (TARN data collected as sum 0-24 hours, and 25 hours-30 days)
DUPLICATE VALUES	N/A
VARIABLE RULES:	Sum of values Data applicable for 0-24 and 0-48 hour models only If no entry in TARN, assumed no transfusion given

FFPS

VARIABLE:	FFPs
CATEGORY	Input variable - Management
SUB-CATEGORY	Transfusion
DATA SOURCES:	
TARN	Critical Care Emergency Department Imaging Operation Ward Data collected as totals for 0-24 hours
ICNARC	Not present
CIS	Not used - covers critical care period only, not overall transfusion volume
ISM	Not used - covers critical care period only, not overall transfusion volume
DATA DETAILS:	
DATA TYPE	Integer
UNITS	Units of blood product
DEFINITION	Sum for each time block
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Total products from 0-24 hours (TARN data collected as sum 0-24 hours, and 25 hours-30 days)
DUPLICATE VALUES	N/A
VARIABLE RULES:	Sum of values Data applicable for 0-24 and 0-48 hour models only If no entry in TARN, assumed no transfusion given

PLATELETS

VARIABLE:	Platelets
CATEGORY	Input variable - Management
SUB-CATEGORY	Transfusion
DATA SOURCES:	
TARN	Critical Care Emergency Department Imaging Operation Ward Data collected as totals for 0-24 hours
ICNARC	Not present
CIS	Not used - covers critical care period only, not overall transfusion volume
ISM	Not used - covers critical care period only, not overall transfusion volume
DATA DETAILS:	
DATA TYPE	Integer
UNITS	Units of blood product
DEFINITION	Sum for each time block
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Total products from 0-24 hours (TARN data collected as sum 0-24 hours, and 25 hours-30 days)
DUPLICATE VALUES	N/A
VARIABLE RULES:	Sum of values Data applicable for 0-24 and 0-48 hour models only If no entry in TARN, assumed no transfusion given

PRBCS

VARIABLE:	PRBCs
CATEGORY	Input variable - Management
SUB-CATEGORY	Transfusion
DATA SOURCES:	
TARN	Critical Care Emergency Department Imaging Operation Ward Data collected as totals for 0-24 hours
ICNARC	Not present
CIS	Not used - covers critical care period only, not overall transfusion volume
ISM	Not used - covers critical care period only, not overall transfusion volume
DATA DETAILS:	
DATA TYPE	Integer
UNITS	Units of blood product
DEFINITION	Sum for each time block
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Total products from 0-24 hours (TARN data collected as sum 0-24 hours, and 25 hours-30 days)
DUPLICATE VALUES	N/A
VARIABLE RULES:	Sum of values Data applicable for 0-24 and 0-48 hour models only If no entry in TARN, assumed no transfusion given

TOTAL BLOOD PRODUCTS

VARIABLE:	**Total blood products**
CATEGORY	Input variable - Management
SUB-CATEGORY	Transfusion
DATA SOURCES:	
TARN	Critical Care Emergency Department Imaging Operation Ward Data collected as totals for 0-24 hours
ICNARC	Not present
CIS	Not used - covers critical care period only, not overall transfusion volume
ISM	Not used - covers critical care period only, not overall transfusion volume
DATA DETAILS:	
DATA TYPE	Integer
UNITS	Units of blood product
DEFINITION	Sum for each time block
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Total products from 0-24 hours (TARN data collected as sum 0-24 hours, and 25 hours-30 days)
DUPLICATE VALUES	N/A
VARIABLE RULES:	Sum of values Data applicable for 0-24 and 0-48 hour models only If no entry in TARN, assumed no transfusion given

8.5.2. EMERGENCY SURGERY

CHEST DRAIN INSERTION

VARIABLE:	**Chest drain insertion**
CATEGORY	Input variable - Management
SUB-CATEGORY	Emergency Surgery
DATA SOURCES:	
TARN	At Scene Critical Care Emergency Department Operation Ward
ICNARC	Not present
CIS	Chest_Drain_Int
ISM	215 to 222 - Chest Drain 1 - 4 (x 2) 224 - Chest Drains
DATA DETAILS:	
DATA TYPE	Binary variable
UNITS	N/A
DEFINITION	Yes/No for each time block
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	0-48 hours from injury Division into time blocks for model development
DUPLICATE VALUES	N/A
VARIABLE RULES:	First record of chest drain taken as insertion time If no record of chest drain, assumed no chest drain inserted

ICP BOLT INSERTION

VARIABLE:	**ICP bolt insertion**
CATEGORY	Input variable - Management
SUB-CATEGORY	Emergency Surgery
DATA SOURCES:	
TARN	Emergency Department Critical Care
ICNARC	Not present
CIS	ICPObs ICPInt
ISM	435 - ICP 436 - ICP Bolt 437 - ICP Monitoring
DATA DETAILS:	
DATA TYPE	Binary variable
UNITS	N/A
DEFINITION	Yes/No for each time block
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	0-48 hours from injury Division into time blocks for model development
DUPLICATE VALUES	N/A
VARIABLE RULES:	First record of ICP bolt taken as insertion time If no record of ICP bolt, assumed no ICP bolt inserted

INTRA-OPERATIVE TIME

VARIABLE:	**Intra-operative time**
CATEGORY	Input variable - Management
SUB-CATEGORY	Emergency Surgery
DATA SOURCES:	
TARN	Operation
ICNARC	Not present
CIS	Not used
ISM	Not used
DATA DETAILS:	
DATA TYPE	Integer
UNITS	Minutes
DEFINITION	Time inside theatre for first recorded operative intervention
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	N/A
DUPLICATE VALUES	N/A
VARIABLE RULES:	If no entry in TARN, assumed no operation performed

OPERATIVE INTERVENTION

VARIABLE:	**Operative intervention**
CATEGORY	Input variable - Management
SUB-CATEGORY	Emergency Surgery
DATA SOURCES:	
TARN	Operation
ICNARC	Not present
CIS	Not used
ISM	Not used
DATA DETAILS:	
DATA TYPE	Binary variable
UNITS	N/A
DEFINITION	Yes/No for each time block
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	None applied
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	0-48 hours from injury Division into time blocks for model development
DUPLICATE VALUES	N/A
VARIABLE RULES:	Presence or absence of data on operative intervention If no entry in TARN, assumed no operation performed

TIME TO FIRST OPERATION

VARIABLE:	**Time to first operation**
CATEGORY	Input variable - Management
SUB-CATEGORY	Emergency Surgery
DATA SOURCES:	
TARN	Operation
ICNARC	Not present
CIS	Not used
ISM	Not used
DATA DETAILS:	
DATA TYPE	Integer
UNITS	Minutes
DEFINITION	Time to first recorded operative intervention
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	N/A
DUPLICATE VALUES	N/A
VARIABLE RULES:	If no entry in TARN, assumed no operation performed

8.5.3. EMERGENCY INTERVENTION

CPR

VARIABLE:	CPR
CATEGORY	Input variable - Management
SUB-CATEGORY	Emergency Intervention
DATA SOURCES:	
TARN	At Scene Critical Care Emergency Department Operation Ward
ICNARC	Not used
CIS	Cardiac_ArrestInt
ISM	691 - Resuscitation
DATA DETAILS:	
DATA TYPE	Binary field
UNITS	N/A
DEFINITION	Yes/No for each time block
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	N/A
SOFT LIMITS FOR EXCLUSION	N/A
TIMING VALIDATION	0-48 hours from injury Division into time blocks for model development
DUPLICATE VALUES	N/A
VARIABLE RULES:	First record of CPR If no record of CPR, assumed patient did not require

INTUBATION

VARIABLE:	**Intubation**
CATEGORY	Input variable - Management
SUB-CATEGORY	Emergency Intervention
DATA SOURCES:	
TARN	At Scene Critical Care Emergency Department En Route Operation Ward
ICNARC	Not used
CIS	IntubatedInt
ISM	441 - ITU intubation
DATA DETAILS:	
DATA TYPE	Binary field
UNITS	N/A
DEFINITION	Yes/No for each time block
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	N/A
SOFT LIMITS FOR EXCLUSION	N/A
TIMING VALIDATION	0-48 hours from injury Division into time blocks for model development
DUPLICATE VALUES	N/A
VARIABLE RULES:	First record of intubation taken as intubation time If no record of intubation, assumed patient not intubated

IV FLUIDS

VARIABLE:	**IV fluids**
CATEGORY	Input variable - Management
SUB-CATEGORY	Emergency Intervention
DATA SOURCES:	
TARN	At Scene En Route Emergency Department Operation Ward
ICNARC	Not present
CIS	TotalIn24hrInt
ISM	16 - TOTAL IN (IO Items)
DATA DETAILS:	
DATA TYPE	Integer
UNITS	mls
DEFINITION	Sum total of IV fluid input Totals made for each time block
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Totals for each time block
DUPLICATE VALUES	Duplicate entries to CIS or ISM excluded
VARIABLE RULES:	TARN, CIS and ISM data used - entries from all combined to produce overall totals Critical Care data from TARN not used to avoid overlap with data from CIS and ISM, and prevent over-estimation of parameter

TIME TO INTUBATION

VARIABLE:	**Time to intubation**
CATEGORY	Input variable - Management
SUB-CATEGORY	Emergency Intervention
DATA SOURCES:	
TARN	At Scene Critical Care Emergency Department En Route Operation Ward
ICNARC	Not used
CIS	IntubatedInt
ISM	441 - ITU intubation
DATA DETAILS:	
DATA TYPE	Time
UNITS	Minutes
DEFINITION	First record of intubation
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Time to intubaiton
DUPLICATE VALUES	N/A
VARIABLE RULES:	First record of intubation taken as intubation time If no record of intubation, assumed patient not intubated

TIME TO VASOPRESSORS/INOTROPES

VARIABLE:	**Time to vasopressors/inotropes**
CATEGORY	Input variable - Management
SUB-CATEGORY	Emergency Intervention
DATA SOURCES:	
TARN	At Scene Critical Care Emergency Department Operation Ward
ICNARC	Not present
CIS	Wildcard searches of PtOrders to identify all instances of individual drugs
ISM	3 - 1 Inotrope 36 - > 1 Inotrope Multiple fields for individual drugs in ChartItems, as detailed in data extraction tables Plus wildcard searches of IOItems
DATA DETAILS:	
DATA TYPE	Time
UNITS	Minutes
DEFINITION	First record of use of vasopressor or inotrope infusion Drugs included: Adrenaline, Noradrenaline, Dopamine, Dopexamine, Dobutamine Drugs with no data or not routinely used in local practice as infusion for trauma patients excluded i.e ephedrine, metaraminol,phenylephrine, GTN
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Time to first administration
DUPLICATE VALUES	N/A
VARIABLE RULES:	First instance of data on vasopressor or inotrope infusion from any data source Time to first administration recorded If no record of infusion given, taken as no use of vasopressors/inotropes

VASOPRESSORS/INOTROPES

VARIABLE:	**Vasopressors/inotropes**
CATEGORY	Input variable - Management
SUB-CATEGORY	Emergency Intervention
DATA SOURCES:	
TARN	At Scene Critical Care Emergency Department Operation Ward
ICNARC	Not present
CIS	Wildcard searches of PtOrders to identify all instances of individual drugs
ISM	3 - 1 Inotrope 36 - > 1 Inotrope Multiple fields for individual drugs in ChartItems, as detailed in data extraction tables Plus wildcard searches of IOItems
DATA DETAILS:	
DATA TYPE	Binary variable
UNITS	N/A
DEFINITION	Presence or absence of use of vasopressor or inotrope infusion Drugs included: Adrenaline, Noradrenaline, Dopamine, Dopexamine, Dobutamine Drugs with no data or not routinely used in local practice as infusion for trauma patients excluded i.e ephedrine, metaraminol,phenylephrine, GTN
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Time to first administration and divided into time blocks for model development
DUPLICATE VALUES	N/A
VARIABLE RULES:	First instance of data on vasopressor or inotrope infusion from any data source Time to first administration recorded, and divided into time blocks If no record of infusion given, taken as no use of vasopressors/inotropes

VENTILATION

VARIABLE:	**Ventilation**
CATEGORY	Input variable - Management
SUB-CATEGORY	Emergency Intervention
DATA SOURCES:	
TARN	N/A
ICNARC	N/A
CIS	N/A
ISM	N/A
DATA DETAILS:	
DATA TYPE	N/A
UNITS	N/A
DEFINITION	N/A
NORMAL RANGE	N/A
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	N/A
SOFT LIMITS FOR EXCLUSION	N/A
TIMING VALIDATION	N/A
DUPLICATE VALUES	N/A
VARIABLE RULES:	Not inserted as separate variable, as data covered by Intubation (Management) and FiO2 (Physiology)

8.6. OUTCOME MEASURES – MOF VARIABLES

8.6.1. DENVER SCORE

RESPIRATORY – P/F RATIO

VARIABLE:	P/F RATIO
CATEGORY	Outcome variable
SUB-CATEGORY	Denver score - Respiratory
DATA SOURCES:	
TARN	Not present
ICNARC	Daily Assessments - Lowest pO2 Daily Assessments - FIO2 associated with lowest pO2 Daily assessments - Highest FiO2 Daily assessments - PO2 associated with highest FiO2
CIS	FIO2Obs FIO2Int PO2Obs PO2Int
ISM	347 - FIO2 616 - PaO2 1060 - PaO2
DATA DETAILS:	
DATA TYPE	Number 2 decimal places
UNITS	Ratio FiO2 - % PO2 - mmHg (given as kPa in CIS/ISM). Conversion 7.50mmHg = 1kPa
DEFINITION	Daily from Day 3 post-injury Calculated field Lowest calculated value For calculation, FiO2 and PO2 value must be within 59 mins PO2 must be from an arterial sample
NORMAL RANGE	> 400
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	>1000
TIMING VALIDATION	Daily from Day 3 post-injury
DUPLICATE VALUES	Removal of duplicates with same TraumaDBID, PF ratio value and Chartdatetime If duplicates with different PF ratio values, minimum value retained
VARIABLE RULES:	Categorised according to Denver score: 0 - > 250 1 - 250-175 2 - 175-100 3 - <100

RENAL – CREATININE

VARIABLE:	CREATININE
CATEGORY	Outcome variable
SUB-CATEGORY	Denver score - Renal
DATA SOURCES:	
TARN	Not present
ICNARC	Daily Assessments - Highest creatinine Daily Assessments - Lowest creatinine
CIS	CreatinineserumObs CreatinineInt
ISM	996 - Creatinine
DATA DETAILS:	
DATA TYPE	Integer
UNITS	µmol/l
DEFINITION	Daily from Day 3 post-injury Highest value
NORMAL RANGE	70-150
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Daily from Day 3 post-injury
DUPLICATE VALUES	Removal of duplicates with same TraumaDBID, creatinine value and Chartdatetime If duplicates with different creatinine values, maximum value retained
VARIABLE RULES:	Categorised according to Denver score: 0 - <159 1 - 160-210 2 - 211-420 3 - >420

HEPATIC – BILIRUBIN

VARIABLE:	**BILIRUBIN**
CATEGORY	Outcome variable
SUB-CATEGORY	Denver score - Hepatic
DATA SOURCES:	
TARN	Not present
ICNARC	Daily Assessments - Highest bilirubin
CIS	bilirubinTotalMsmtObs Bilirubin_TotalInt
ISM	1110 - Total Bilirubin
DATA DETAILS:	
DATA TYPE	Integer
UNITS	µmol/l
DEFINITION	Daily from Day 3 post-injury Highest value
NORMAL RANGE	3-17
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Daily from Day 3 post-injury
DUPLICATE VALUES	Removal of duplicates with same TraumaDBID, bilirubin value and Chartdatetime If duplicates with different creatinine values, maximum value retained
VARIABLE RULES:	Categorised according to Denver score: 0 - <34 1 - 34-68 2- 69-137 3 - >137

CARDIAC – INOTROPES

Inotrope definitions for Denver score
ug/kg/min

	Small dose	Moderate dose	Large dose
Milrinone	<0.3	0.4-0.7	>0.7
Vasopressin	<0.03	0.03-0.07	>0.07
Dopamine	<6	6-10	>10
Dobutamine	<6	6-10	>10
Adrenaline	<0.06	0.06-0.15	>0.15
Noradrenaline	<0.11	0.11-0.5	>0.5
Phenylephrine	<0.6	0.6-3	>3

VARIABLE:	INOTROPES
CATEGORY	Outcome variable
SUB-CATEGORY	Denver score - Cardiac
DATA SOURCES:	
TARN	Not present
ICNARC	Not present
CIS	Wildcard searches of PtOrders to identify all instances of individual drugs Linked to Intervention data to obtain information on infusion rate
ISM	51 - Vasopressin 43 - Dopamine 42 - Dobutamine 66 - Adrenaline 404 - Adrenaline 4mg 405 - Adrenaline 8mg 406 - Adrenaline 16mg 407 - Adrenaline 32mg 409 - Noradrenaline 4mg 410 - Noradrenaline 8mg 411 - Noradrenaline 16mg 412 - Noradrenaline 32mg Plus wildcard searches of IOItems
DATA DETAILS:	
DATA TYPE	Number
UNITS	mcg/kg/min
DEFINITION	Denver definitions use small, moderate and large dose definitions for milrinone, vasopressin, dopamine, dobutamine, adrenaline, noradrenaline and phenylephrine Milrinone and phenylephrine not used in local clinical practice Individual patient data linked to weight to determine mcg/kg/min For 168/517 patients, no weight available - average sex-dependent weight based on remainder of population imputed
NORMAL RANGE	Dependent on drug
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	Unsuitable infusion volume for drug
TIMING VALIDATION	Daily from Day 3 post-injury
DUPLICATE VALUES	Removal of duplicates with same TraumaDBID and Chartdatetime - maximum infusion rate retained
VARIABLE RULES:	Categorised according to Denver score:
	0 - No inotropes 1 - 1 inotrope at small dose 2 - 1 inotrope at moderate dose or > 1 inotrope at small dose 3 - 1 inotrope at large dose or > 2 inotropes at moderate dose Please see associated table for dose definitions

8.6.2. SOFA SCORE

RESPIRATORY – P/F RATIO

VARIABLE:	P/F RATIO
CATEGORY	Outcome variable
SUB-CATEGORY	SOFA score - Respiratory
DATA SOURCES:	
TARN	Not present
ICNARC	Daily Assessments - Lowest pO2 Daily Assessments - FIO2 associated with lowest pO2 Daily assessments - Highest FiO2 Daily assessments - PO2 associated with highest FiO2
CIS	FIO2Obs FIO2Int PO2Obs PO2Int
ISM	347 - FIO2 616 - PaO2 1060 - PaO2
DATA DETAILS:	
DATA TYPE	Number 2 decimal places
UNITS	Ratio FiO2 - % PO2 - mmHg (given as kPa in CIS/ISM). Conversion 7.50mmHg = 1kPa
DEFINITION	Daily from Day 3 post-injury Calculated field Lowest calculated value For calculation, FiO2 and PO2 value must be within 59 mins PO2 must be from an arterial sample
NORMAL RANGE	> 400
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	>1000
TIMING VALIDATION	Daily from Day 3 post-injury
DUPLICATE VALUES	Removal of duplicates with same TraumaDBID, PF ratio value and Chartdatetime If duplicates with different PF ratio values, minimum value retained
VARIABLE RULES:	Categorised according to SOFA score: 1 - < 400 2 - <300 3 - <200 4 - <100

RENAL – CREATININE

VARIABLE:	**CREATININE**
CATEGORY	Outcome variable
SUB-CATEGORY	SOFA score - Renal
DATA SOURCES:	
TARN	Not present
ICNARC	Daily Assessments - Highest creatinine Daily Assessments - Lowest creatinine
CIS	CreatinineserumObs CreatinineInt
ISM	996 - Creatinine
DATA DETAILS:	
DATA TYPE	Integer
UNITS	µmol/l
DEFINITION	Daily from Day 3 post-injury Highest value
NORMAL RANGE	70-150
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Daily from Day 3 post-injury
DUPLICATE VALUES	Removal of duplicates with same TraumaDBID, creatinine value and Chartdatetime If duplicates with different creatinine values, maximum value retained
VARIABLE RULES:	Categorised according to SOFA score: 1 - 110-170 1 - 171-299 3 - 300-440 4 - >440

HEPATIC – BILIRUBIN

VARIABLE:	**BILIRUBIN**
CATEGORY	Outcome variable
SUB-CATEGORY	SOFA score - Hepatic
DATA SOURCES:	
TARN	Not present
ICNARC	Daily Assessments - Highest bilirubin
CIS	bilirubinTotalMsmtObs Bilirubin_TotalInt
ISM	1110 - Total Bilirubin
DATA DETAILS:	
DATA TYPE	Integer
UNITS	µmol/l
DEFINITION	Daily from Day 3 post-injury Highest value
NORMAL RANGE	3-17
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Daily from Day 3 post-injury
DUPLICATE VALUES	Removal of duplicates with same TraumaDBID, bilirubin value and Chartdatetime If duplicates with different creatinine values, maximum value retained
VARIABLE RULES:	Categorised according to SOFA score: 1 - 20-32 2 - 33-101 3 - 102-204 4 - >204

CARDIAC – MAP

VARIABLE:	**MAP**
CATEGORY	Outcome variable
SUB-CATEGORY	SOFA score - Cardiac
DATA SOURCES:	
TARN	Not present
ICNARC	Daily Assessments - Lowest systolic bp Daily Assessments - Paired diastolic bp Daily Assessments - Highest systolic bp Daily Assessments - Paired diastolic for highest systolic bp Daily Assessments - Lowest diastolic bp Daily Assessments - Paired systolic for lowest diastolic bp Daily Assessments - Highest diastolic bp Daily Assessments - Paired systolic for highest diastolic bp
CIS	bpObs arterialBPInt noninvasiveBPInt
ISM	40 - ABP 515 - MAP 546 - NIBP 547 - NIBP Mean
DATA DETAILS:	
DATA TYPE	Integer
UNITS	N/A
DEFINITION	Daily from Day 3 post-injury Calculated field Lowest value For calculation, SBP and DBP with same time stamp
NORMAL RANGE	<10
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values SBP>MAP>DBP
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Daily from Day 3 post-injury
DUPLICATE VALUES	Removal of duplicates with same TraumaDBID, MAP value and Chartdatetime If duplicates with different MAP values, minimum value retained
VARIABLE RULES:	Categorised according to SOFA score: 1 - < 70mmHg

CARDIAC – INOTROPES

VARIABLE:	INOTROPES
CATEGORY	Outcome variable
SUB-CATEGORY	SOFA score - Cardiac
DATA SOURCES:	
TARN	Not present
ICNARC	Not present
CIS	Wildcard searches of PtOrders to identify all instances of individual drugs Linked to Intervention data to obtain information on infusion rate
ISM	43 - Dopamine 42 - Dobutamine 66 - Adrenaline 404 - Adrenaline 4mg 405 - Adrenaline 8mg 406 - Adrenaline 16mg 407 - Adrenaline 32mg 409 - Noradrenaline 4mg 410 - Noradrenaline 8mg 411 - Noradrenaline 16mg 412 - Noradrenaline 32mg Plus wildcard searches of IOItems
DATA DETAILS:	
DATA TYPE	Number
UNITS	mcg/kg/min
DEFINITION	SOFA definitions use administration of dopamine, dobutamine, noradrenaline and adrenaline Dosage data required for dopamine, noradrenaline and adrenaline Presence or absence of dobutamine administration only Individual patient data linked to weight to determine mcg/kg/min For 168/517 patients, no weight available - average sex-dependent weight based on remainder of population imputed
NORMAL RANGE	Dependent on drug
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	Unsuitable infusion volume for drug
TIMING VALIDATION	Daily from Day 3 post-injury
DUPLICATE VALUES	Removal of duplicates with same TraumaDBID and Chartdatetime - maximum infusion rate retained
VARIABLE RULES:	Categorised according to SOFA score: 2 - Dopamine <= 5 mcg/kg/min or Dobutamine any dose 3 - Dopamine > 5 mcg/kg/min or Adrenaline <=0.1 mcg/kg/min or Noradrenaline <= 0.1 mcg/kg/min 4 - Dopamine > 15 mcg/kg/min or Adrenaline > 0.1 mcg/kg/min or Noradrenaline > 0.1 mcg/kg/min

COAGULATION – PLATELET COUNT

VARIABLE:	PLATELET COUNT
CATEGORY	Outcome variable
SUB-CATEGORY	SOFA score - Coagulation
DATA SOURCES:	
TARN	Not present
ICNARC	Daily Assessments - Lowest platelet count
CIS	PlateletsObs PlateletsInt
ISM	1069 - Platelets
DATA DETAILS:	
DATA TYPE	Integer
UNITS	10^9/L
DEFINITION	Daily from Day 3 post-injury Lowest value
NORMAL RANGE	150-400
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Daily from Day 3 post-injury
DUPLICATE VALUES	Removal of duplicates with same TraumaDBID, platelet count and Chartdatetime If duplicates with different platelet counts, minimum value retained
VARIABLE RULES:	Categorised according to SOFA score: 1 - <150 2 - <100 3 - <50 4 - <20

NEUROLOGICAL – GCS

VARIABLE:	GLASGOW COMA SCALE (GCS)
CATEGORY	Outcome variable
SUB-CATEGORY	SOFA score - Neurological
DATA SOURCES:	
TARN	Not present
ICNARC	Daily Assessments - Lowest total GCS
CIS	GCSObs TraumaGCSInt GCSInt
ISM	888 - Total GCS score
DATA DETAILS:	
DATA TYPE	Ordinal scale
UNITS	N/A
DEFINITION	Daily from Day 3 post-injury Lowest value
NORMAL RANGE	3-15
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values < 3 or > 15 (= calculation error from component parts)
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Daily from Day 3 post-injury
DUPLICATE VALUES	Removal of duplicates with same TraumaDBID, GCS and Chartdatetime If duplicates with different GCS, minimum value retained
VARIABLE RULES:	Categorised according to SOFA score: 1 - 13-14 2 - 10-12 3 - 6-9 4 - <6

8.6.3. MARSHALL SCORE

RESPIRATORY – P/F RATIO

VARIABLE:	P/F RATIO
CATEGORY	Outcome variable
SUB-CATEGORY	Marshall score - Respiratory
DATA SOURCES:	
TARN	Not present
ICNARC	Daily Assessments - Lowest pO2 Daily Assessments - FIO2 associated with lowest pO2 Daily assessments - Highest FiO2 Daily assessments - PO2 associated with highest FiO2
CIS	FIO2Obs FIO2Int PO2Obs PO2Int
ISM	347 - FIO2 616 - PaO2 1060 - PaO2
DATA DETAILS:	
DATA TYPE	Number 2 decimal places
UNITS	Ratio FiO2 - % PO2 - mmHg (given as kPa in CIS/ISM). Conversion 7.50mmHg = 1kPa
DEFINITION	Daily from Day 3 post-injury Calculated field Value closest in time to 0800 hours For calculation, FiO2 and PO2 value must be within 59 mins PO2 must be from arterial sample
NORMAL RANGE	>1000
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	>700
TIMING VALIDATION	Daily from Day 3 post-injury
DUPLICATE VALUES	Data sorted in order by difference in days from date of injury, and difference in hours from 0800 Duplicates for same TraumaDBID removed to leave value closest to 0800 for each day
VARIABLE RULES:	Categorised according to Marshall score: 0 - > 300 1 - 226-300 2 - 151-225 3 - 76-150 4 - <=75

RENAL – CREATININE

VARIABLE:	**CREATININE**
CATEGORY	Outcome variable
SUB-CATEGORY	Marshall score - Renal
DATA SOURCES:	
TARN	Not present
ICNARC	Daily Assessments - Highest creatinine Daily Assessments - Lowest creatinine
CIS	CreatinineserumObs CreatinineInt
ISM	996 - Creatinine
DATA DETAILS:	
DATA TYPE	Integer
UNITS	µmol/l
DEFINITION	Daily from Day 3 post-injury Marshall definition - closest to 0800 Morning blood round from JR AICU taken at 0400 Value taken as closest in time to 0400
NORMAL RANGE	70-150
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Daily from Day 3 post-injury
DUPLICATE VALUES	Data sorted in order by difference in days from date of injury, and difference in hours from 0400 Duplicates for same TraumaDBID removed to leave value closest to 0400 for each day
VARIABLE RULES:	Categorised according to Marshall score: 0 - <=100 1 - 101-200 2 - 201-350 3 - 351-500 4 - > 500

HEPATIC – BILIRUBIN

VARIABLE:	BILIRUBIN
CATEGORY	Outcome variable
SUB-CATEGORY	Marshall score - Hepatic
DATA SOURCES:	
TARN	Not present
ICNARC	Daily Assessments - Highest bilirubin
CIS	bilirubinTotalMsmtObs Bilirubin_TotalInt
ISM	1110 - Total Bilirubin
DATA DETAILS:	
DATA TYPE	Integer
UNITS	µmol/l
DEFINITION	Daily from Day 3 post-injury Marshall definition - closest to 0800 Morning blood round from JR AICU taken at 0400 Value taken as closest in time to 0400
NORMAL RANGE	3-17
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Daily from Day 3 post-injury
DUPLICATE VALUES	Data sorted in order by difference in days from date of injury, and difference in hours from 0400 Duplicates for same TraumaDBID removed to leave value closest to 0400 for each day
VARIABLE RULES:	Categorised according to Marshall score: 0 - <=20 1 - 21-60 2 - 61-120 3 - 121-240 4 - >240

CARDIAC – PAR

VARIABLE:	**PAR = (HR/MAP) x CVP**
CATEGORY	Outcome variable
SUB-CATEGORY	Marshall score - Cardiac
DATA SOURCES:	
TARN	Not present
ICNARC	Not used, as no CVP measurements, and unable to determine if other measures taken at same time
CIS	HR - heartRateObs, heartRateInt MAP - bpObs, arterialBPInt,nonInvasiveBPInt CVP - CVPObs, CVPInt
ISM	HR - 411 - Heart Rate, 3917 - D-HeartRate MAP - 40 - ABP, 515 - MAP, 546 - NIBP, 547 - NIBP Mean CVP - 192 - CVP, 194 - CVP
DATA DETAILS:	
DATA TYPE	Number 1 decimal place
UNITS	N/A
DEFINITION	Daily from Day 3 post-injury Calculated field Value closest in time to 0800 hours For calculation, HR, MAP and CVP values within 59 mins MAP calculated field from SBP and DBP MAP calculated from ABP. If no ABP data present, NIBP used.
NORMAL RANGE	<10
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Daily from Day 3 post-injury
DUPLICATE VALUES	Data sorted in order by difference in days from date of injury, and difference in hours from 0800 Duplicates for same TraumaDBID removed to leave value closest to 0800 for each day
VARIABLE RULES:	Categorised according to Marshall score: 0 - <=10.0 1 - 10.1-15.0 2 - 15.1-20.0 3 - 20.1-30.0 4 - >30.0

COAGULATION – PLATELET COUNT

VARIABLE:	PLATELET COUNT
CATEGORY	Outcome variable
SUB-CATEGORY	Marshall score - Coagulation
DATA SOURCES:	
TARN	Not present
ICNARC	Daily Assessments - Lowest platelet count
CIS	PlateletsObs PlateletsInt
ISM	1069 - Platelets
DATA DETAILS:	
DATA TYPE	Integer
UNITS	10^9/L
DEFINITION	Daily from Day 3 post-injury Marshall definition - closest to 0800 Morning blood round from JR AICU taken at 0400 Value taken as closest in time to 0400
NORMAL RANGE	150-400
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Daily from Day 3 post-injury
DUPLICATE VALUES	Data sorted in order by difference in days from date of injury, and difference in hours from 0400 Duplicates for same TraumaDBID removed to leave value closest to 0400 for each day
VARIABLE RULES:	Categorised according to Marshall score: 0 - >120 1 - 81-120 2 - 51-80 3 - 21-50 4 - <=20

NEUROLOGICAL – GCS

VARIABLE:	GLASGOW COMA SCALE (GCS)
CATEGORY	Outcome variable
SUB-CATEGORY	Marshall score - Neurological
DATA SOURCES:	
TARN	Not present
ICNARC	Daily Assessments - Lowest total GCS
CIS	GCSObs TraumaGCSInt GCSInt
ISM	888 - Total GCS score
DATA DETAILS:	
DATA TYPE	Ordinal scale
UNITS	N/A
DEFINITION	Daily from Day 3 post-injury Value closest in time to 0800 hours
NORMAL RANGE	3-15
DATA CLEANING:	
HARD LIMITS FOR EXCLUSION	Negative values NULL values < 3 or > 15 (= calculation error from component parts)
SOFT LIMITS FOR EXCLUSION	None applied
TIMING VALIDATION	Daily from Day 3 post-injury
DUPLICATE VALUES	Removal of duplicates with same TraumaDBID, GCS and Chartdatetime If duplicates with different GCS, minimum value retained
VARIABLE RULES:	Categorised according to Marshall score: 0 - 15 1 - 13-14 2 - 10-12 3 - 7-9 4 - <=6

APPENDIX 9 SQL EXAMPLE QUERIES

9.1. EXAMPLE SQL QUERIES FOR DATA EXTRACTION FROM CIS

TO CONFIRM LIST OF TRAUMA PATIENTS

```
/* Choose database */
USE CISChartingDB1;
USE CISChartingDB2;
USE CISChartingDB3;
USE CISChartingDB4;
USE CISChartingDB5;
USE CISChartingDB6;
USE CISChartingDB7;

/*List trauma patients */
SELECT lifetimeNumber, firstName, lastName, dateOfBirth,
gender, age, startDate, endDate, TraumaDb
FROM Patient, PtEpisode, PtEncounter, PtLocationStay,
PtPatientInfo
WHERE Patient.patientId = PtEpisode.patientId
AND PtEpisode.ptEpisodeId = PtEncounter.ptEpisodeId
AND PtEncounter.ptEncounterId =
PtLocationStay.ptEncounterId
AND PtEncounter.ptEncounterId = PtPatientInfo.ptEncounterId
AND TraumaDb = 'Yes'
ORDER By lastName ASC;
```

OBSERVATIONS

```
/* Choose database */
USE CISChartingDB1;
USE CISChartingDB2;
USE CISChartingDB3;
USE CISChartingDB4;
USE CISChartingDB5;
```

```
USE CISChartingDB6;
USE CISChartingDB7;

/* Look at Observations */
SELECT *
FROM Observation;
ORDER BY propName ASC;

/*Remove coding columns to look at nature of observations
held only */
SELECT propName, displayLabel
FROM Observation
ORDER BY propName ASC;

/*To search to see if any data present for a particular
observation row*/
SELECT valueNumber, terseForm, verboseForm, propName
FROM PtObservationData, Observation
WHERE PtObservationData.observationId =
Observation.observationId
AND Observation.propName = 'VentModeObs'
GROUP BY valueNumber, terseForm, verboseForm, propName
ORDER BY valueNumber ASC;

/*Observations for input variables - non time-specific
data*/
SELECT lifetimeNumber, firstName, lastName, startDate,
displayLabel, valueNumber, terseForm, verboseForm,
chartTime
FROM Patient, PtEncounter, PtLocationStay, PtEpisode,
PtPatientInfo, PtObservationData, Observation
WHERE PtEpisode.patientId = Patient.patientId
AND PtEpisode.ptEpisodeId = PtEncounter.ptEpisodeId
AND PtEncounter.ptEncounterId =
PtLocationStay.ptEncounterId
AND PtEncounter.ptEncounterId = PtPatientInfo.ptEncounterId
AND PtEncounter.ptEncounterId =
PtObservationData.ptEncounterId
AND PtObservationData.observationId =
Observation.observationId
AND TraumaDb = 'Yes'
AND Observation.propName = 'heightObs'
AND PtObservationData.valueNumber IS NOT NULL
ORDER By lastName ASC;
```

```
/*Observations data extraction for input variables - all
data within 48 hours of ICU admission*/
SELECT DISTINCT lifetimeNumber, firstName, lastName,
startDate, displayLabel, valueNumber, terseForm,
verboseForm, chartTime
FROM Patient, PtEpisode, PtEncounter, PtLocationStay,
PtPatientInfo, PtObservationData, Observation
WHERE Patient.patientId = PtEpisode.patientId
AND PtEpisode.ptEpisodeId = PtEncounter.ptEpisodeId
AND PtEncounter.ptEncounterId =
PtLocationStay.ptEncounterId
AND PtEncounter.ptEncounterId = PtPatientInfo.ptEncounterId
AND PtEncounter.ptEncounterId =
PtObservationData.ptEncounterId
AND PtObservationData.observationId =
Observation.observationId
AND TraumaDb = 'Yes'
AND Observation.propName = 'EtCO2Obs'
AND DATEDIFF (hh, startDate, chartTime) < 48
AND valueNumber IS NOT NULL
GROUP BY lifetimeNumber, firstName, lastName, startDate,
displayLabel, valueNumber, valueString, terseForm,
verboseForm, chartTime
ORDER BY lastname ASC, chartTime ASC;

/*For observations that are text-based, need to remove
valueNumber IS NOT NULL, else no results received*/
SELECT DISTINCT lifetimeNumber, firstName, lastName,
startDate, displayLabel, valueNumber, terseForm,
verboseForm, chartTime
FROM Patient, PtEpisode, PtEncounter, PtLocationStay,
PtPatientInfo, PtObservationData, Observation
WHERE Patient.patientId = PtEpisode.patientId
AND PtEpisode.ptEpisodeId = PtEncounter.ptEpisodeId
AND PtEncounter.ptEncounterId =
PtLocationStay.ptEncounterId
AND PtEncounter.ptEncounterId = PtPatientInfo.ptEncounterId
AND PtEncounter.ptEncounterId =
PtObservationData.ptEncounterId
AND PtObservationData.observationId =
Observation.observationId
AND TraumaDb = 'Yes'
AND Observation.propName = 'Procedure Obs'
```

```
AND DATEDIFF (hh, startDate, chartTime) < 48
GROUP BY lifetimeNumber, firstName, lastName, startDate,
displayLabel, valueNumber, valueString, terseForm,
verboseForm, chartTime
ORDER BY lastname ASC, chartTime ASC;

/*Observations data extraction for outcome variables - all
data during ICU admission*/
SELECT DISTINCT lifetimeNumber, firstName, lastName,
startDate, displayLabel, valueNumber, terseForm,
verboseForm, chartTime
FROM Patient, PtEpisode, PtEncounter, PtLocationStay,
PtPatientInfo, PtObservationData, Observation
WHERE Patient.patientId = PtEpisode.patientId
AND PtEpisode.ptEpisodeId = PtEncounter.ptEpisodeId
AND PtEncounter.ptEncounterId =
PtLocationStay.ptEncounterId
AND PtEncounter.ptEncounterId = PtPatientInfo.ptEncounterId
AND PtEncounter.ptEncounterId =
PtObservationData.ptEncounterId
AND PtObservationData.observationId =
Observation.observationId
AND TraumaDb = 'Yes'
AND Observation.propName = 'EtCO2Obs'
AND valueNumber IS NOT NULL
GROUP BY lifetimeNumber, firstName, lastName, startDate,
displayLabel, valueNumber, valueString, terseForm,
verboseForm, chartTime
ORDER BY lastname ASC, chartTime ASC;
```

INTERVENTIONS

```
/* Choose database */
USE CISChartingDB1;
USE CISChartingDB2;
USE CISChartingDB3;
USE CISChartingDB4;
USE CISChartingDB5;
USE CISChartingDB6;
USE CISChartingDB7;

/* Look at Interventions */
SELECT *
```

```
FROM Intervention
ORDER BY propName ASC;

/*To look at all interventions*/
SELECT propName, displayLabel
FROM Intervention
ORDER BY propName ASC;

/*To search to see if any data present for a particular
intervention*/
SELECT PtInterventionData.valueNumber,
PtInterventionData.valueString, PtIntervention.terseForm,
PtIntervention.verboseForm, Intervention.propName,
Intervention.displayLabel
FROM PtInterventionData, PtIntervention, Intervention
WHERE PtInterventionData.ptinterventionId =
PtIntervention.ptinterventionId
AND PtIntervention.interventionId =
Intervention.interventionId
AND Intervention.propName =
'Days_of_Invasive_VentilationInt'
GROUP BY PtInterventionData.valueNumber,
PtInterventionData.valueString, PtIntervention.terseForm,
PtIntervention.verboseForm, Intervention.propName,
Intervention.displayLabel
ORDER BY Intervention.propName ASC;

/*Interventions data extraction for input variables - all
data within 48 hours of ICU admission*/
SELECT DISTINCT lifetimeNumber, firstName, lastName,
startDate, PtInterventionData.charttime,
PtInterventionData.terseForm,
PtInterventionData.verboseForm, PtIntervention.terseForm,
PtIntervention.verboseForm
FROM Patient, PtEpisode, PtEncounter, PtLocationStay,
PtPatientInfo, PtInterventionData, PtIntervention,
Intervention
WHERE Patient.patientId = PtEpisode.patientId
AND PtEpisode.ptEpisodeId = PtEncounter.ptEpisodeId
AND PtEncounter.ptEncounterId =
PtLocationStay.ptEncounterId
AND PtEncounter.ptEncounterId = PtPatientInfo.ptEncounterId
AND PtEncounter.ptEncounterId =
PtInterventionData.ptEncounterId
```

```
AND PtEncounter.ptEncounterId =
PtIntervention.ptEncounterId
AND PtInterventionData.ptInterventionId =
PtIntervention.ptInterventionId
AND PtIntervention.interventionId =
Intervention.interventionId
AND TraumaDb = 'Yes'
AND Intervention.propName = 'Temp2_PeripheralInt'
AND DATEDIFF (hh, startDate, PtInterventionData.charttime)
< 48
ORDER BY lastName ASC;

/*Remove terseform and verboseform from PtInterventionData
to reduce fields in output*/
SELECT DISTINCT lifetimeNumber, firstName, lastName,
startDate, PtInterventionData.charttime,
PtIntervention.terseForm, PtIntervention.verboseForm
FROM Patient, PtEpisode, PtEncounter, PtLocationStay,
PtPatientInfo, PtInterventionData, PtIntervention,
Intervention
WHERE Patient.patientId = PtEpisode.patientId
AND PtEpisode.ptEpisodeId = PtEncounter.ptEpisodeId
AND PtEncounter.ptEncounterId =
PtLocationStay.ptEncounterId
AND PtEncounter.ptEncounterId = PtPatientInfo.ptEncounterId
AND PtEncounter.ptEncounterId =
PtInterventionData.ptEncounterId
AND PtEncounter.ptEncounterId =
PtIntervention.ptEncounterId
AND PtInterventionData.ptInterventionId =
PtIntervention.ptInterventionId
AND PtIntervention.interventionId =
Intervention.interventionId
AND TraumaDb = 'Yes'
AND Intervention.propName = 'LiDCO_CCIInt'
AND DATEDIFF (hh, startDate, PtInterventionData.charttime)
< 48
ORDER BY lastName ASC, PtInterventionData.charttime ASC;

/*Interventions data extraction for outcome variables - all
data during ICU admission*/
SELECT DISTINCT lifetimeNumber, firstName, lastName,
startDate, PtInterventionData.charttime,
PtInterventionData.terseForm,
```

```
PtInterventionData.verboseForm, PtIntervention.terseForm,
PtIntervention.verboseForm
FROM Patient, PtEpisode, PtEncounter, PtLocationStay,
PtPatientInfo, PtInterventionData, PtIntervention,
Intervention
WHERE Patient.patientId = PtEpisode.patientId
AND PtEpisode.ptEpisodeId = PtEncounter.ptEpisodeId
AND PtEncounter.ptEncounterId =
PtLocationStay.ptEncounterId
AND PtEncounter.ptEncounterId = PtPatientInfo.ptEncounterId
AND PtEncounter.ptEncounterId =
PtInterventionData.ptEncounterId
AND PtEncounter.ptEncounterId =
PtIntervention.ptEncounterId
AND PtInterventionData.ptInterventionId =
PtIntervention.ptInterventionId
AND PtIntervention.interventionId =
Intervention.interventionId
AND TraumaDb = 'Yes'
AND Intervention.propName = 'Temp2_PeripheralInt'
AND DATEDIFF (hh, startDate, PtInterventionData.charttime)
< 48
ORDER BY lastName ASC;
```

ORDERS

```
/* Choose database */
USE CISChartingDB1;
USE CISChartingDB2;
USE CISChartingDB3;
USE CISChartingDB4;
USE CISChartingDB5;
USE CISChartingDB6;
USE CISChartingDB7;

/*Look at Orders*/
SELECT *
FROM Orders
ORDER BY propName ASC;

/*Appropriate text fields*/
SELECT terseLabel, verboseLabel, propName
FROM Orders
```

```
ORDER BY propName ASC;

/*To search to see if data present via WildCare term*/
SELECT DISTINCT terseForm, verboseForm, startTime, endTime,
lastSchedTime, terseLabel, verboseLabel, propName, orderId
FROM PtOrder, Orders
WHERE PtOrder.orderId = Orders.ordersId
AND terseForm LIKE 'Red Cells%'
GROUP BY terseForm, verboseForm, startTime, endTime,
lastSchedTime, terseLabel, verboseLabel, propName, orderId
ORDER BY terseForm ASC;

/*Orders data extraction for input variables - all data
within 48 hours of ICU admission - extraction using
WildCare terms*/
SELECT DISTINCT lifetimeNumber, firstName, lastName,
startDate, terseForm, verboseForm, startTime, endTime,
lastSchedTime, terseLabel, verboseLabel, propName
FROM Patient, PtEpisode, PtEncounter, PtLocationStay,
PtPatientInfo, PtOrder, Orders
WHERE Patient.patientId = PtEpisode.patientId
AND PtEpisode.ptEpisodeId = PtEncounter.ptEpisodeId
AND PtEncounter.ptEncounterId =
PtLocationStay.ptEncounterId
AND PtEncounter.ptEncounterId = PtPatientInfo.ptEncounterId
AND PtEncounter.ptEncounterId = PtOrder.ptEncounterId
AND PtOrder.orderId = Orders.ordersId
AND TraumaDb = 'Yes'
AND PtOrder.terseForm LIKE 'Norad%'
AND DATEDIFF (hh, startDate, startTime) < 48
GROUP BY lifetimeNumber, firstName, lastName, startDate,
terseForm, verboseForm, startTime, endTime, lastSchedTime,
terseLabel, verboseLabel, propName
ORDER BY lastname ASC, startTime ASC;


/*Orders data extraction for input variables - all data
within 48 hours of ICU admission - extraction using
terseLabel*/
SELECT DISTINCT lifetimeNumber, firstName, lastName,
startDate, terseForm, verboseForm, startTime, endTime,
lastSchedTime, terseLabel, verboseLabel, propName
FROM Patient, PtEpisode, PtEncounter, PtLocationStay,
PtPatientInfo, PtOrder, Orders
```

```
WHERE Patient.patientId = PtEpisode.patientId
AND PtEpisode.ptEpisodeId = PtEncounter.ptEpisodeId
AND PtEncounter.ptEncounterId =
PtLocationStay.ptEncounterId
AND PtEncounter.ptEncounterId = PtPatientInfo.ptEncounterId
AND PtEncounter.ptEncounterId = PtOrder.ptEncounterId
AND PtOrder.orderId = Orders.ordersId
AND TraumaDb = 'Yes'
AND terseLabel = '05 Bld Products'
AND DATEDIFF (hh, startDate, startTime) < 48
GROUP BY lifetimeNumber, firstName, lastName, startDate,
terseForm, verboseForm, startTime, endTime, lastSchedTime,
terseLabel, verboseLabel, propName
ORDER BY lastname ASC, startTime ASC;

/*Orders data extraction for input variables - all data
within 48 hours of ICU admission - extraction using
propName*/
/*Can use for Blood Transfusion as all labelled in single
Orders category - will not work for drugs*/
SELECT DISTINCT lifetimeNumber, firstName, lastName,
startDate, terseForm, verboseForm, propName, startTime,
endTime, lastSchedTime, terseLabel, verboseLabel, propName
FROM Patient, PtEpisode, PtEncounter, PtLocationStay,
PtPatientInfo, PtOrder, Orders
WHERE Patient.patientId = PtEpisode.patientId
AND PtEpisode.ptEpisodeId = PtEncounter.ptEpisodeId
AND PtEncounter.ptEncounterId =
PtLocationStay.ptEncounterId
AND PtEncounter.ptEncounterId = PtPatientInfo.ptEncounterId
AND PtEncounter.ptEncounterId = PtOrder.ptEncounterId
AND PtOrder.orderId = Orders.ordersId
AND TraumaDb = 'Yes'
AND propName = 'bloodInfusionOrd'
AND DATEDIFF (hh, startDate, startTime) < 48
GROUP BY lifetimeNumber, firstName, lastName, startDate,
terseForm, verboseForm, propName, startTime, endTime,
lastSchedTime, terseLabel, verboseLabel, propName
ORDER BY lastname ASC, startTime ASC;


/*Orders data extraction for input variables - Extraction
for vasoactive drugs*/
/*Adrenaline used as example*/
```

```
SELECT DISTINCT lifetimeNumber, firstName, lastName,
startDate, terseForm, verboseForm, startTime, endTime,
lastSchedTime, terseLabel, verboseLabel, propName
FROM Patient, PtEpisode, PtEncounter, PtLocationStay,
PtPatientInfo, PtOrder, Orders
WHERE Patient.patientId = PtEpisode.patientId
AND PtEpisode.ptEpisodeId = PtEncounter.ptEpisodeId
AND PtEncounter.ptEncounterId =
PtLocationStay.ptEncounterId
AND PtEncounter.ptEncounterId = PtPatientInfo.ptEncounterId
AND PtEncounter.ptEncounterId = PtOrder.ptEncounterId
AND PtOrder.orderId = Orders.ordersId
AND TraumaDb = 'Yes'
AND PtOrder.terseForm LIKE 'Adr%'
AND DATEDIFF (hh, startDate, startTime) < 48
GROUP BY lifetimeNumber, firstName, lastName, startDate,
terseForm, verboseForm, startTime, endTime, lastSchedTime,
terseLabel, verboseLabel, propName
ORDER BY lastname ASC, startTime ASC;

/* Orders data extraction for IV fluids - using propName*/
/*IV fluids*/
SELECT DISTINCT lifetimeNumber, firstName, lastName,
startDate, terseForm, verboseForm, startTime, endTime,
lastSchedTime, terseLabel, verboseLabel, propName
FROM Patient, PtEpisode, PtEncounter, PtLocationStay,
PtPatientInfo, PtOrder, Orders
WHERE Patient.patientId = PtEpisode.patientId
AND PtEpisode.ptEpisodeId = PtEncounter.ptEpisodeId
AND PtEncounter.ptEncounterId =
PtLocationStay.ptEncounterId
AND PtEncounter.ptEncounterId = PtPatientInfo.ptEncounterId
AND PtEncounter.ptEncounterId = PtOrder.ptEncounterId
AND PtOrder.orderId = Orders.ordersId
AND TraumaDb = 'Yes'
AND propName = 'IVInfusionOrd'
AND DATEDIFF (hh, startDate, startTime) < 48
GROUP BY lifetimeNumber, firstName, lastName, startDate,
terseForm, verboseForm, startTime, endTime, lastSchedTime,
terseLabel, verboseLabel, propName
ORDER BY lastname ASC, startTime ASC;

/* Orders data extraction for IV fluids - using WildCard
terms for terseForm*/
```

```
/*Hartmanns*/
SELECT DISTINCT lifetimeNumber, firstName, lastName,
startDate, terseForm, verboseForm, startTime, endTime,
lastSchedTime, terseLabel, verboseLabel, propName
FROM Patient, PtEpisode, PtEncounter, PtLocationStay,
PtPatientInfo, PtOrder, Orders
WHERE Patient.patientId = PtEpisode.patientId
AND PtEpisode.ptEpisodeId = PtEncounter.ptEpisodeId
AND PtEncounter.ptEncounterId =
PtLocationStay.ptEncounterId
AND PtEncounter.ptEncounterId = PtPatientInfo.ptEncounterId
AND PtEncounter.ptEncounterId = PtOrder.ptEncounterId
AND PtOrder.orderId = Orders.ordersId
AND TraumaDb = 'Yes'
AND PtOrder.terseForm LIKE '%Hart%'
AND DATEDIFF (hh, startDate, startTime) < 48
GROUP BY lifetimeNumber, firstName, lastName, startDate,
terseForm, verboseForm, startTime, endTime, lastSchedTime,
terseLabel, verboseLabel, propName
ORDER BY lastname ASC, startTime ASC;

/*Orders data extraction for outcome variables - Extraction
for vasoactive drugs. All data from ICU admission. Need to
link with Intervention group for data on infusion rates and
dose*/
/*Adrenaline used as example*/
SELECT DISTINCT lifetimeNumber, firstName, lastName,
startDate, PtOrder.startTime, Orders.terseLabel,
Orders.verboseLabel, Orders.propName,
PtIntervention.terseForm, PtIntervention.verboseForm,
PtIntervention.charttime, Intervention.propName,
Intervention.displayLabel
FROM Patient, PtEpisode, PtEncounter, PtLocationStay,
PtPatientInfo, PtOrder, Orders, PtOrderIntervention,
PtIntervention, Intervention
WHERE Patient.patientId = PtEpisode.patientId
AND PtEpisode.ptEpisodeId = PtEncounter.ptEpisodeId
AND PtEncounter.ptEncounterId =
PtLocationStay.ptEncounterId
AND PtEncounter.ptEncounterId = PtPatientInfo.ptEncounterId
AND PtEncounter.ptEncounterId = PtOrder.ptEncounterId
AND PtOrder.orderId = Orders.ordersId
AND PtOrderIntervention.ptInterventionId =
PtIntervention.ptinterventionId
```

```
AND PtIntervention.interventionId =
Intervention.interventionId
AND TraumaDb = 'Yes'
AND PtOrder.terseForm LIKE 'Adr%'
AND Intervention.propName = 'dripAdmIntervention'
GROUP BY lifetimeNumber, firstName, lastName, startDate,
PtOrder.startTime, Orders.terseLabel, Orders.verboseLabel,
Orders.propName, PtIntervention.terseForm,
PtIntervention.verboseForm, PtIntervention.charttime,
Intervention.propName, Intervention.displayLabel
ORDER BY lastname ASC, PtOrder.terseForm ASC,
PtIntervention.charttime ASC;
```

9.2. EXAMPLE SQL QUERIES FOR DATA EXTRACTION FROM ISM

TO CONFIRM LIST OF TRAUMA PATIENTS

```
/* Choose database */
USE ISM;

/*List trauma patients */
SELECT Pid, InTime, OutTime, Los, FirstName, LastName, MRN,
Sex, DoB, IsmAdmissionId, PostCode, TraumaDb,
TraumaDuplicate
FROM dbo.ISMAdmissions
WHERE TraumaDb = 'Yes';
```

CHART GROUP

```
/* Choose database */
USE ISM;

/*To test to see if data present for particular chart row
*/
SELECT MRN, firstName, lastName, TraumaDb, TraumaDuplicate,
dbo.chartevents.ItemId, label, value1, value1num
FROM dbo.ISMAdmissions, dbo.chartevents, dbo.D_chartitems
WHERE dbo.ISMAdmissions.pid = dbo.chartevents.pid
AND dbo.chartevents.itemId = dbo.D_chartitems.itemId
AND dbo.chartevents.itemId = 1069
GROUP BY MRN, firstName, lastName, TraumaDb,
TraumaDuplicate, dbo.chartevents.ItemId, label, value1,
value1num
ORDER BY lastName ASC;

/* Chart Group data extraction for input variables - all
data within 48 hours of ICU admission*/
SELECT DISTINCT MRN, FirstName, lastName, InTime, Label,
dbo.Chartevents.ItemId, Category1, Value1, Value1Num,
Value1Uom, Value2, Value2Num, Value2Uom, Charttime
FROM dbo.ISMAdmissions, dbo.D_chartitems, dbo.Chartevents
WHERE dbo.ISMAdmissions.Pid = dbo.ChartEvents.Pid
AND dbo.Chartevents.ItemId = dbo.D_chartitems.ItemId
```

```
AND TraumaDb = 'Yes'
AND dbo.D_chartitems.ItemId = 348
AND DATEDIFF (hh, InTime, Charttime)<48
GROUP BY MRN, FirstName, lastName, InTime, Label,
dbo.Chartevents.ItemId, Category1, Value1, Value1Num,
Value1Uom, Value2, Value2Num, Value2Uom, Charttime
ORDER BY lastName ASC, chartTime ASC;

/*Chart Group data extraction for outcome variables - all
data during ICU admission */
SELECT DISTINCT MRN, FirstName, lastName, InTime, Label,
dbo.Chartevents.ItemId, Category1, Value1, Value1Num,
Value1Uom, Value2, Value2Num, Value2Uom, Charttime
FROM dbo.ISMAdmissions, dbo.D_chartitems, dbo.Chartevents
WHERE dbo.ISMAdmissions.Pid = dbo.ChartEvents.Pid
AND dbo.Chartevents.ItemId = dbo.D_chartitems.ItemId
AND TraumaDb = 'Yes'
AND dbo.D_chartitems.ItemId = 8276
GROUP BY MRN, FirstName, lastName, InTime, Label,
dbo.Chartevents.ItemId, Category1, Value1, Value1Num,
Value1Uom, Value2, Value2Num, Value2Uom, Charttime
ORDER BY lastName ASC, chartTime ASC;
```

IO GROUP

```
/* Choose database */
USE ISM;

/*To test if data present for particular IO rows */
SELECT MRN, firstName, lastName, TraumaDb, TraumaDuplicate,
dbo.IOevents.ItemId, label, volume
FROM dbo.ISMAdmissions, dbo.IOevents, dbo.D_IOitems
WHERE dbo.ISMAdmissions.pid = dbo.IOevents.pid
AND dbo.IOevents.itemId = dbo.D_IOitems.itemId
AND dbo.IOevents.itemId = 116
GROUP BY MRN, firstName, lastName, TraumaDb,
TraumaDuplicate, dbo.IOevents.ItemId, label, volume
ORDER BY lastName ASC;

/* IO Group data extraction for input variables - all data
within 48 hours of ICU admission*/
SELECT DISTINCT MRN, FirstName, lastName, InTime, Label,
dbo.IOevents.ItemId, Category1, Volume, Volumeuom,
Charttime
```

```
FROM dbo.ISMAdmissions, dbo.D_IOitems, dbo.IOevents
WHERE dbo.ISMAdmissions.Pid = dbo.IOEvents.Pid
AND dbo.IOevents.ItemId = dbo.D_IOitems.ItemId
AND TraumaDb = 'Yes'
AND dbo.D_IOitems.ItemId = 116
AND DATEDIFF (hh, InTime, Charttime)<48
GROUP BY MRN, FirstName, lastName, InTime, Label,
dbo.IOevents.ItemId, Category1, Volume, Volumeuom,
Charttime
ORDER BY lastName ASC, chartTime ASC;

/*IO Group data extraction for input variables using
WildCard terms - all data within 48 hours of ICU admission
*/
SELECT DISTINCT MRN, FirstName, lastName, InTime, Label,
dbo.IOevents.ItemId, Category1, Volume, Volumeuom,
Charttime
FROM dbo.ISMAdmissions, dbo.D_IOitems, dbo.IOevents
WHERE dbo.ISMAdmissions.Pid = dbo.IOEvents.Pid
AND dbo.IOevents.ItemId = dbo.D_IOitems.ItemId
AND TraumaDb = 'Yes'
AND dbo.D_IOitems.label LIKE '%cryo%'
AND DATEDIFF (hh, InTime, Charttime)<48
GROUP BY MRN, FirstName, lastName, InTime, Label,
dbo.IOevents.ItemId, Category1, Volume, Volumeuom,
Charttime
ORDER BY lastName ASC, chartTime ASC;

/*IO Group data extraction for outcome variables - all data
during ICU admission*/
SELECT DISTINCT MRN, FirstName, lastName, InTime, Label,
dbo.IOevents.ItemId, Category1, Volume, Volumeuom,
Charttime
FROM dbo.ISMAdmissions, dbo.D_IOitems, dbo.IOevents
WHERE dbo.ISMAdmissions.Pid = dbo.IOEvents.Pid
AND dbo.IOevents.ItemId = dbo.D_IOitems.ItemId
AND TraumaDb = 'Yes'
AND dbo.D_IOitems.ItemId = 116
GROUP BY MRN, FirstName, lastName, InTime, Label,
dbo.IOevents.ItemId, Category1, Volume, Volumeuom,
Charttime
ORDER BY lastName ASC, chartTime ASC;
```

```
/*IO group data extraction for outcome variables with
wildcards - all data during ICU admission*/
SELECT DISTINCT MRN, FirstName, lastName, InTime, Label,
dbo.IOevents.ItemId, Category1, Volume, Volumeuom,
Charttime
FROM dbo.ISMAdmissions, dbo.D_IOitems, dbo.IOevents
WHERE dbo.ISMAdmissions.Pid = dbo.IOEvents.Pid
AND dbo.IOevents.ItemId = dbo.D_IOitems.ItemId
AND TraumaDb = 'Yes'
AND dbo.D_IOitems.label LIKE '%dopex%'
GROUP BY MRN, FirstName, lastName, InTime, Label,
dbo.IOevents.ItemId, Category1, Volume, Volumeuom,
Charttime
ORDER BY lastName ASC, chartTime ASC;
```

MED GROUP

```
/* Choose database */
USE ISM;

/*To test if data present for particular Med Group rows */
SELECT MRN, firstName, lastName, TraumaDb, TraumaDuplicate,
dbo.medevents.ItemId
FROM dbo.ISMAdmissions, dbo.D_meditems, dbo.medevents
WHERE dbo.ISMAdmissions.Pid = dbo.medevents.Pid
AND dbo.medevents.ItemId = dbo.D_meditems.ItemId
AND dbo.d_meditems.ItemId = 170
GROUP BY MRN, firstName, lastName, TraumaDb,
TraumaDuplicate, dbo.medevents.ItemId
ORDER BY lastName ASC;

/* Med Group data extraction for input variables - all data
within 48 hours of ICU admission*/
SELECT DISTINCT MRN, FirstName, lastName, InTime, Label,
dbo.medevents.ItemId, Category1, volume, dose, doseuom,
Charttime
FROM dbo.ISMAdmissions, dbo.D_meditems, dbo.medevents
WHERE dbo.ISMAdmissions.Pid = dbo.medEvents.Pid
AND dbo.medevents.ItemId = dbo.D_meditems.ItemId
AND TraumaDb = 'Yes'
AND dbo.D_meditems.ItemId = 4341
AND DATEDIFF (hh, InTime, Charttime)<48
```

```
GROUP BY MRN, FirstName, lastName, InTime, Label,
dbo.medevents.ItemId, Category1, Volume, dose, doseuom,
Charttime
ORDER BY lastName ASC, chartTime ASC;

/* Med Group data extraction for input variables using
WildCard terms - all data within 48 hours of ICU
admission*/
SELECT DISTINCT MRN, FirstName, lastName, InTime, Label,
dbo.medevents.ItemId, Category1, volume, dose, doseuom,
Charttime
FROM dbo.ISMAdmissions, dbo.D_meditems, dbo.medevents
WHERE dbo.ISMAdmissions.Pid = dbo.medEvents.Pid
AND dbo.medevents.ItemId = dbo.D_meditems.ItemId
AND TraumaDb = 'Yes'
AND dbo.D_meditems.label LIKE '%Dobutamine%'
AND DATEDIFF (hh, InTime, Charttime)<48
GROUP BY MRN, FirstName, lastName, InTime, Label,
dbo.medevents.ItemId, Category1, Volume, dose, doseuom,
Charttime
ORDER BY lastName ASC, chartTime ASC;

/*Med Group data extraction for outcome variables - all
data during ICU admission */
SELECT DISTINCT MRN, FirstName, lastName, InTime, Label,
dbo.medevents.ItemId, Category1, volume, dose, doseuom,
Charttime
FROM dbo.ISMAdmissions, dbo.D_meditems, dbo.medevents
WHERE dbo.ISMAdmissions.Pid = dbo.medEvents.Pid
AND dbo.medevents.ItemId = dbo.D_meditems.ItemId
AND TraumaDb = 'Yes'
AND dbo.D_meditems.ItemId = 348
GROUP BY MRN, FirstName, lastName, InTime, Label,
dbo.medevents.ItemId, Category1, Volume, dose, doseuom,
Charttime
ORDER BY lastName ASC, chartTime ASC;

/*Med Group data extraction for outcome variables using
WildCard terms - all data during ICU admission*/
SELECT DISTINCT MRN, FirstName, lastName, InTime, Label,
dbo.medevents.ItemId, Category1, volume, dose, doseuom,
Charttime
FROM dbo.ISMAdmissions, dbo.D_meditems, dbo.medevents
WHERE dbo.ISMAdmissions.Pid = dbo.medEvents.Pid
```

```
AND dbo.medevents.ItemId = dbo.D_meditems.ItemId
AND TraumaDb = 'Yes'
AND dbo.D_meditems.label LIKE '%Dobutamine%'
GROUP BY MRN, FirstName, lastName, InTime, Label,
dbo.medevents.ItemId, Category1, Volume, dose, doseuom,
Charttime
ORDER BY lastName ASC, chartTime ASC;
```

APPENDIX 10 STATISTICAL ANALYSIS PLAN

Statistical analysis plan - 14th February 2013

1. Sample size and population selection
    a. Sample size calculation (performed during project development)
    b. Patient eligibility and population size (performed during data matching)
    c. Flow diagram of patient selection (performed during data matching)
2. Population description
    a. Description of whole trauma population (including deaths < 48 hours, n = 517)
    b. Population characteristics
    c. Injury characteristics
    d. Survival curve (Kaplan-Meier), and distribution of deaths
    e. Timing data
    f. Interventions – surgical/other
3. MOF-risk population
    a. Description for population survived > 48 hours, n = 491
    b. Binary variable of MOF/ no MOF to 100 days post-injury
        i. Incidence for each scale – Denver/SOFA/Marshall
    c. Survival curves for two groups
        i. Denver MOF vs no MOF
        ii. SOFA MOF vs no MOF
        iii. Marshall MOF vs no MOF
    d. Total number of MOF days
        i. To 100 days post-injury
        ii. ?adjustment for death/no adjustment
        iii. Denver/SOFA/Marshall scales separately
        iv. MOF onset and duration
    e. Organ system breakdown
        i. % total of SOF for each system in all patients, and in MOF groups
        ii. Denver/SOFA/Marshall scales separately
    f. Population comparisons of MOF and no MOF groups
        i. Population characteristics and comparisons
        ii. Any MOF vs No MOF

iii. Population differences across all 3 scales

4. Univariate analysis of potential MOF predictors
    a. Analysis of normality of data
    b. Data categorisation
    c. Individual variables and association with MOF
        i. Denver
        ii. SOFA
        iii. Marshall
        iv. Each scoring system for each specified time period (0-2, 0-4, 0-6, 0-12, 0-24, 0-48 hours)
        v. Summary table for each scoring system for each time period (= 3 x 6 = 18)
    d. OR for univariate analysis (unadjusted odds)
        i. Denver
        ii. SOFA
        iii. Marshall
        iv. Each scoring system for each specified time period (as above)
        v. Summary table of OR for each MOF scoring system for each time period (=18)
    e. Variable selection for multivariate analysis
        i. Cut-off of probability ($p< 0.25$)
        ii. Exclusion if – missing data > 50%, rare outcomes, clinically inter-related, treatment variable related to injury, composite score, clinically implausible data
        iii. Collapse categories if rare events
        iv. Include only one version of same variable (i.e. minimum/maximum)
        v. Table of revised variable list for multivariate analysis
5. Multivariate analysis of MOF predictors
    a. Logistic regression using revised variable list
        i. Denver
        ii. SOFA
        iii. Marshall
        iv. Each scoring system for each specified time period (as above)
    b. Contribution of individual variables – OR with CI (adjusted odds)
        i. Denver
        ii. SOFA
        iii. Marshall
        iv. Each scoring system for each specified time period (as above)
        v. Summary table for each (=18)
    c. Model development and refinement

   i. Removal of non-predictive terms
   ii. Consideration of interactions
   iii. Linearity assumptions
   iv. Re-run of logistic regression as required and following plan above
   v. Select models most likely to have clinical utility based on number of patients for development, number of variables, goodness-of-fit, calibration and discrimination measures
   vi. Select best fit model based on above for each time period for each of Denver/SOFA/Marshall

d. ?selection of unifying model from selected best-fit models
   i. Single variable list to be used at all time periods
   ii. Separate models for Denver/SOFA/Marshall
   iii. Reassess goodness-of-fit, calibration and discrimination

e. Model validation
   i. Internal validation using bootstrapping

APPENDIX 11 UNIVARIATE ANALYSIS RESULTS – BY VARIABLE

11.1. PATIENT VARIABLES

Patient variable		All MOF risk	Denver				SOFA				Marshall				
	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	40.1 (36.7, 43.8)	37.3 (35.6, 39.1)	0.137	1.01 (1.00, 1.02)	39.6 (37.6, 41.7)	34.7 (32.4, 37.2)	0.002	1.02 (1.01, 1.03)	40.1 (37.6, 42.8)	36.6 (34.7, 38.6)	0.034	1.01 (1.00, 1.02)	GM (95% CI)
BMI	83	25.6 (4.7)	25.5 (3.6)	25.6 (5.2)	0.874	0.99 (0.90, 1.09)	26.0 (5.1)	24.5 (3.3)	0.200	1.08 (0.96, 1.23)	26.1 (5.2)	24.9 (3.9)	0.270	1.06 (0.96, 1.17)	Mean (SD)
Sex	491	371 (75.5%)	88 (78.6%)	283 (74.7%)	0.399	1.24 (0.75, 2.07)	254 (76.3%)	117 (74.1%)	0.592	1.13 (0.73, 1.74)	157 (78.9%)	214 (73.3%)	0.157	1.36 (0.89, 2.09)	No (% male)
CV disease	470	29 (6.2%)	11 (10.2%)	18 (5.0%)	0.053	2.17 (0.99, 4.74)	23 (7.3%)	6 (3.9%)	0.153	1.96 (0.78, 4.91)	16 (8.5%)	13 (4.6%)	0.094	1.91 (0.90, 4.06)	No (% yes)
Diabetes	470	21 (4.5%)	5 (4.6%)	16 (4.4%)	0.926	1.05 (0.38, 2.94)	14 (4.4%)	7 (4.5%)	0.972	0.98 (0.39, 2.49)	5 (2.6%)	16 (5.7%)	0.126	0.45 (0.16, 1.25)	No (% yes)
Drugs/alcohol	470	39 (8.3%)	11 (10.2%)	28 (7.7%)	0.419	1.35 (0.65, 2.82)	26 (8.3%)	13 (8.4%)	0.961	0.98 (0.49, 1.97)	20 (10.6%)	19 (6.8%)	0.144	1.63 (0.85, 3.15)	No (% yes)
Hepatic disease	470	5 (1.1%)	2 (1.9%)	3 (0.8%)	0.376	2.26 (0.37, 13.69)	5 (1.6%)	0 (0.0%)	0.999	N/A	5 (2.6%)	0 (0.0%)	0.999	N/A	No (% yes)
Immunocompromise	470	6 (1.3%)	1 (0.9%)	5 (1.4%)	0.713	0.67 (0.08, 5.77)	6 (1.9%)	0 (0.0%)	0.999	N/A	2 (1.1%)	4 (1.4%)	0.730	0.74 (0.13, 4.09)	No (% yes)
Malignancy	470	9 (1.9%)	3 (2.8%)	6 (1.7%)	0.461	1.70 (0.42, 6.89)	8 (2.5%)	1 (0.6%)	0.192	4.01 (0.50, 32.38)	5 (2.6%)	4 (1.4%)	0.351	1.88 (0.50, 7.10)	No (% yes)
Other PMH	470	157 (33.4%)	36 (33.3%)	121 (33.4%)	0.986	1.00 (0.63, 1.57)	108 (34.3%)	49 (31.6%)	0.564	1.13 (0.75, 1.70)	64 (33.9%)	93 (33.1%)	0.863	1.04 (0.70, 1.53)	No (% yes)
PMH	470	219 (46.6%)	50 (46.3%)	167 (46.7%)	0.943	0.98 (0.64, 1.52)	148 (47.0%)	71 (45.8%)	0.810	1.05 (0.71, 1.54)	89 (47.1%)	130 (46.3%)	0.860	1.03 (0.71, 1.50)	No (% yes)
Psychiatric	470	38 (8.1%)	6 (5.6%)	32 (8.8%)	0.276	0.61 (0.25, 1.49)	19 (6.0%)	19 (12.3%)	0.022	0.46 (0.24, 0.90)	14 (7.4%)	24 (8.5%)	0.659	0.86 (0.43, 1.70)	No (% yes)
Renal disease	470	8 (1.7%)	2 (1.9%)	6 (1.7%)	0.891	1.12 (0.22, 5.63)	6 (1.9%)	2 (1.3%)	0.630	1.49 (0.30, 7.45)	4 (2.1%)	4 (1.4%)	0.572	1.50 (0.37, 6.06)	No (% yes)
Respiratory disease	470	56 (11.9%)	12 (11.1%)	44 (12.2%)	0.769	0.90 (0.46, 1.78)	44 (14.0%)	12 (7.7%)	0.053	1.94 (1.00, 3.78)	26 (13.8%)	30 (10.7%)	0.313	1.34 (0.76, 2.34)	No (% yes)

11.2. INJURY VARIABLES

Injury variable		All MOF risk	Denver				SOFA				Marshall				
	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Head Injury	486	285 (58.6%)	78 (70.3%)	207 (55.2%)	0.005	1.92 (.122, 3.02)	207 (62.9%)	78 (49.7%)	0.006	1.72 (1.17, 2.52)	128 (65.3%)	157 (54.1%)	0.014	1.60 (1.10, 2.32)	No (% injured)
Face Injury	486	126 (25.9%)	28 (25.2%)	98 (26.1%)	0.848	0.95 (0.59, 1.55)	87 (26.4%)	39 (24.8%)	0.706	1.09 (0.70, 1.68)	53 (27.0%)	73 (25.2%)	0.645	1.10 (0.73, 1.66)	No (% injured)
Chest Injury	486	299 (61.5%)	76 (68.5%)	223 (59.5%)	0.088	1.48 (0.94, 2.32)	219 (66.6%)	80 (51.0%)	0.001	1.92 (1.30, 2.82)	134 (68.4%)	165 (56.9%)	0.011	1.64 (1.12, 2.40)	No (% injured)
Abdo Injury	486	170 (35.0%)	48 (43.2%)	122 (32.5%)	0.038	1.58 (1.03, 2.44)	124 (37.7%)	46 (29.3%)	0.070	1.46 (0.97, 2.20)	84 (42.9%)	86 (29.7%)	0.003	1.78 (1.22, 2.60)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	79 (71.2%)	243 (64.8%)	0.213	1.34 (0.85, 2.13)	230 (69.9%)	92 (58.6%)	0.014	1.64 (1.11, 2.44)	142 (72.4%)	180 (62.1%)	0.018	1.61 (1.09, 2.38)	No (% injured)
External Injury	486	176 (36.2%)	38 (34.2%)	138 (36.8%)	0.621	0.89 (0.57, 1.40)	120 (36.5%)	56 (35.7%)	0.863	1.04 (0.70, 1.54)	64 (32.7%)	112 (38.6%)	0.180	0.77 (0.53, 1.13)	No (% injured)
ISS	486	25.3 (12.5)	29.2 (14.2)	24.2 (11.7)	<0.001	1.04 (1.02, 1.06)	27.2 (12.9)	21.4 (10.5)	<0.001	1.04 (1.03, 1.06)	28.7 (13.7)	23.0 (11.1)	<0.001	1.04 (1.02, 1.06)	Mean (SD)
NISS	486	34.7 (15.2)	38.6 (16.7)	33.6 (14.7)	0.003	1.02 (1.01, 1.04)	36.7 (15.1)	30.7 (14.8)	<0.001	1.03 (1.01, 1.04)	38.4 (15.9)	32.3 (14.4)	<0.001	1.03 (1.02, 1.04)	Mean (SD)
Blunt	491	477 (97.1%)	112 (100.0%)	365 (96.3%)	0.999	N/A	327 (98.2%)	150 (94.9%)	0.052	2.91 (0.99, 8.53)	196 (98.5%)	281 (96.2%)	0.154	2.56 (0.70, 9.29)	No (% blunt)
Mechanism	491				0.853				0.097				0.458		
Protective gear	193	141 (73.1%)	29 (64.4%)	112 (75.7%)	0.140	1.72 (0.84, 3.52)	97 (70.8%)	44 (78.6%)	0.271	1.51 (0.72, 3.16)	54 (74.0%)	87 (72.5%)	0.823	0.93 (0.48, 1.79)	No (% with)
Trapped	479	153 (31.9%)	37 (34.3%	116 (31.3%)	0.557	1.15 (0.73, 1.80)	116 (36.0%)	37 (23.6%)	0.006	1.83 (11.18, 2.82)	68 (34.7%)	85 (30.0%)	0.283	1.24 (0.84, 1.83)	No (% trapped)
Vehicle position	342				0.899				0.254				0.896		

		All MOF risk	Denver				SOFA				Marshall				
Variable	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
1st GCS ALL	370				0.022				0.749				0.179		
1st GCS 3-5		62 (16.8%)	23 (27.1%)	39 (13.7%)	0.003	2.83 (1.44, 5.56)	45 (18.3%)	17 (13.7%)	0.201	1.53 (0.80, 2.96)	31 (21.5%)	31 (13.7%)	0.031	1.96 (1.06, 3.60)	No (% category)
1st GCS 6-8		53 (14.3%)	15 (17.6%)	38 (13.3%)	0.092	1.89 (0.90, 3.97)	34 (13.8%)	19 (15.3%)	0.914	1.04 (0.54, 2.00)	24 (16.7%)	29 (12.8%)	0.143	1.62(0.85, 3.09)	No (% category)
1st GCS 9-11		40 (10.8%)	6 (7.1%)	34 (11.9%)	0.735	0.85 (0.32, 2.24)	27 (11.0%)	13 (10.5%)	0.626	1.20 (0.57, 2.54)	16 (11.1%)	24 (10.6%)	0.471	1.31 (0.63, 2.69)	No (% category)
1st GCS 12-14		76 (20.5%)	17 (20.0%)	59 (20.7%)	0.364	1.38 (0.69, 2.77)	52 (21.1%)	24 (19.4%)	0.453	1.26 (0.70, 2.27)	26 (18.1%)	50 (22.1%)	0.953	1.02 (0.56, 1.84)	No (% category)
1st GCS 15		139 (37.6%)	24 (20.2%)	115 (40.4%)	N/A	N/A	88 (35.8%)	51 (41.1%)	N/A	N/A	47 (32.6%)	92 (40.7%)	N/A	N/A	No (% category)
Min GCS 0 - 2 hours	370				0.018				0.508				0.233		
GCS 3-5		71 (19.2%)	26 (30.6%)	45 (15.8%)	0.003	2.75 (1.40, 5.40)	52 (21.1%)	19 (15.3%)	0.173	1.56 (0.82, 2.97)	36 (25.0%)	35 (15.5%)	0.030	1.94 (1.07, 3.52)	No (% category)
GCS 6-8		52 (14.1%)	13 (15.3%)	39 (13.7%)	0.248	1.59 (0.72, 3.48)	31 (12.6%)	21 (16.9%)	0.617	0.84 (0.43, 1.64)	21 (14.6%)	31 (13.7%)	0.477	1.27 (0.65, 2.49)	No (% category)
GCS 9-11		41 (11.1%)	5 (5.9%)	36 (12.6%)	0.439	0.66 (0.23, 1.88)	27 (11.0%)	14 (11.3%)	0.798	1.10 (0.52, 2.32)	15 (10.4%)	26 (11.5%)	0.828	1.09 (0.52, 2.27)	No (% category)
GCS 12-14		85 (23.0%	20 (23.5%)	65 (22.8%)	0.276	1.47 (0.74, 2.91)	59 (24.0%)	26 (21.0%)	0.389	1.30 (0.72, 2.34)	30 (20.8%)	55 (24.3%)	0.931	1.03 (0.57, 1.84)	No (% category)
GCS 15		121 (32.7%)	21 (24.7%)	100 (35.1%)	N/A	N/A	77 (31.3%)	44 (36.4%)	N/A	N/A	42 (29.2%)	79 (35.0%)	N/A	N/A	No (% category)
Min GCS 0 - 4 hours	383				0.250				0.664				0.449		
GCS 3-5		101 (26.4%)	28 (32.2%)	73 (24.7%)	0.061	1.86 (0.97, 3.56)	70 (27.7%)	31 (32.8%)	0.347	1.31 (0.75, 2.31)	46 (30.7%)	55 (23.6%)	0.088	1.61 (0.93, 2.78)	No (% category)
GCS 6-8		49 (12.8%)	14 (16.1%)	35 (11.8%)	0.098	1.94 (0.89, 4.25)	29 (11.5%)	20 (15.4%)	0.623	0.84 (0.43, 1.67)	21 (14.0%)	28 (12.0%)	0.292	1.44 (0.73, 2.86)	No (% category)
GCS 9-11		37 (9.7%)	6 (6.9%)	31 (10.5%)	0.901	0.94 (0.35, 2.55)	25 (9.9%)	12 (9.2%)	0.633	1.21 (0.55, 2.65)	15 (10.0%)	22 (9.4%)	0.483	1.31 (0.61, 2.81)	No (% category)
GCS 12-14		79 (20.6%)	19 (21.8%)	60 (20.3%)	0.233	1.54 (0.76, 3.11)	55 (21.7%)	24 (18.5%)	0.357	1.33 (0.72, 2.50)	28 (18.7%)	51 (21.9%)	0.856	1.06 (0.58, 1.92)	No (% category)
GCS 15		117 (30.5%)	20 (23.0%)	97 (32.8%)	N/A	N/A	74 (29.2%)	43 (33.1%)	N/A	N/A	40 (26.7%)	77 (33.0%)	N/A	N/A	No (% category)
Min GCS 0 - 6 hours	395				0.360				0.898				0.571		
GCS 3-5		157 (39.6%)	38 (41.8%)	119 (39.0%)	0.174	1.54 (0.83, 2.88)	106 (40.5%)	51 (38.1%)	0.437	1.23 (0.73, 2.06)	66 (41.8%)	91 (38.2%)	0.208	1.39 (0.83, 2.32)	No (% category)
GCS 6-8		40 (10.1%)	13 (14.3%)	27 (8.9%)	0.047	2.33 (1.01, 5.36)	27 (10.3%)	13 (9.7%)	0.603	1.23 (0.57, 2.65)	18 (11.4%)	22 (9.2%)	0.235	1.57 (0.75, 3.29)	No (% category)
GCS 9-11		25 (6.3%)	5 (5.5%)	20 (6.6%)	0.737	1.21 (0.40, 3.64)	18 (6.9%)	7 (5.2%)	0.392	1.52 (0.58, 3.96)	12 (7.6%)	13 (5.5%)	0.205	1.78 (0.73, 4.27)	No (% category)
GCS 12-14		69 (17.4%)	17 (18.7%)	52 (17.0%)	0.230	1.58 (0.75, 3.33)	45 (17.2%)	24 (17.9%)	0.751	1.11 (0.59, 2.09)	26 (16.5%)	43 (18.1%)	0.647	1.16 (0.62, 2.18)	No (% category)
GCS 15		102 (26.5%)	18 (19.8%)	87 (28.5%)	N/A	N/A	66 (25.2%)	39 (29.1%)	N/A	N/A	36 (22.8%)	69 (29.0%)	N/A	N/A	No (% category)
Min GCS 0 - 12 hours	442				0.964				0.110				0.308		
GCS 3-5		266 (60.2%)	62 (61.4%)	204 (59.8%)	0.604	1.18 (0.63, 2.19)	190 (64.0%)	76 (52.4%)	0.419	1.25 (0.73, 2.15)	116 (64.8%)	150 (57.0%)	0.419	1.24 (0.74, 2.07)	No (% category)
GCS 6-8		31 (7.0%)	8 (7.9%)	23 (6.7%)	0.548	1.35 (0.51, 3.57)	17 (5.7%)	14 (9.7%)	0.250	0.61 (0.26, 1.42)	12 (6.7%)	19 (7.2%)	0.981	1.01 (0.43, 2.38)	No (% category)
GCS 9-11		16 (3.6%)	3 (3.0%)	13 (3.8%)	0.873	0.89 (0.23, 3.52)	9 (3.0%)	7 (4.8%)	0.429	0.64 (0.22, 1.92)	7 (3.9%)	9 (3.4%)	0.694	1.24 (0.42, 3.69)	No (% category)
GCS 12-14		51 (11.5%)	12 (11.9%)	39 (11.4%)	0.685	1.19 (0.51, 2.79)	29 (9.8%)	22 (15.2%)	0.261	0.66 (0.32, 1.36)	14 (7.8%)	37 (14.1%)	0.199	0.61 (0.28, 1.30)	No (% category)
GCS 15		78 (17.6%)	16 (15.8%)	62 (18.2%)	N/A	N/A	52 (17.5%)	26 (17.9%)	N/A	N/A	30 (16.8%)	48 (18.3%)	N/A	N/A	No (% category)
Min GCS 0 - 24 hours	463				0.787				0.001				0.127		
GCS 3-5		320 (69.1%)	76 (72.4%)	244 (68.2%)	0.587	1.22 (0.60, 2.48)	233 (74.9%)	87 (57.2%)	0.141	1.58 (0.86, 2.88)	141 (75.8%)	179 (64.6%)	0.224	1.45 (0.80, 2.65)	No (% category)
GCS 6-8		24 (5.2%	5 (4.8%)	19 (5.3%)	0.963	1.03 (0.31, 3.37)	10 (3.2%)	14 (9.2%)	0.083	0.42 (0.16, 1.12)	6 (3.2%)	18 (6.5%)	0.376	0.61 (0.21, 1.81)	No (% category)
GCS 9-11		18 (3.9%)	2 (1.9%)	16 (4.5%)	0.384	0.49 (0.10, 2.45)	8 (2.6%)	10 (6.6%)	0.172	0.47 (0.16, 1.39)	6 (3.2%)	12 (4.3%)	0.886	0.92 (0.30, 2.85)	No (% category)
GCS 12-14		47 (10.2%)	11 (10.5%)	36 (10.1%)	0.713	1.19 (0.46, 3.08)	26 (8.4%)	21 (13.8%)	0.436	0.73 (0.33, 1.62)	14 (7.5%)	33 (11.9%)	0.564	0.78 (0.34, 1.81)	No (% category)
GCS 15		54 (11.7%)	11 (10.5%)	43 (12.0%)	N/A	N/A	34 (10.9%)	20 (13.2%	N/A	N/A	19 (10.2%)	35 (12.6%)	N/A	N/A	No (% category)
Min GCS 0 - 48 hours	485				0.374				<0.001				0.019		
GCS 3-5		354 (73.0%)	89 (79.5%)	265 (71.0%)	0.714	1.16 (0.53, 2.52)	257 (78.4%)	97 (61.8%)	0.989	1.01 (0.48, 2.10)	159 (81.1%)	195 (67.5%)	0.234	1.51 (0.77, 3.00)	No (% category)
GCS 6-8		29 (6.0%)	5 (4.5%)	24 (6.4%)	0.593	0.72 (0.21, 2.42)	13 (4.0%)	16 (10.2%)	0.022	0.31 (0.11, 0.85)	7 (3.6%)	22 (7.6%)	0.335	0.59 (0.20, 1.72)	No (% category)
GCS 9-11		15 (3.1%)	1 (0.9%)	14 (3.8%)	0.203	0.25 (0.03, 2.05)	6 (1.8%)	9 (5.7%)	0.030	0.25 (0.07, 0.88)	4 (2.0%)	11 (3.8%)	0.559	0.68 (0.18, 2.52)	No (% category)
GCS 12-14		47 (9.7%)	8 (7.1%)	39 (10.5%)	0.522	0.71 (0.24, 2.05)	23 (7.0%)	24 (15.3%)	0.027	0.36 (0.15, 0.89)	12 (6.1%)	35 (12.1%)	0.338	0.64 (0.25, 1.60)	No (% category)
GCS 15		40 (8.2%)	9 (8.0%)	31 (8.3%)	N/A	N/A	29 (8.8%)	11 (7.0%)	N/A	N/A	14 (7.1%)	26 (9.0%)	N/A	N/A	No (% category)

Variable		All MOF risk	Denver				SOFA				Marshall				
	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
1st GCS	370	115 (31.1%)	38 (44.7%)	77 (27.0%)	0.002	2.18 (1.32, 2.61)	79 (32.1%)	36 (29.0%)	0.546	1.16 (0.72, 1.85)	55 (38.2%)	60 (26.5%)	0.019	1.71 (1.09, 2.67)	No (% GCS <=8)
Min GCS															
0 - 2 hours	370	123 (33.2%)	39 (45.9%)	84 (29.5%)	0.005	2.03 (1.23, 3.33)	88 (33.7%)	40 (32.3%)	0.775	1.07 (0.68, 1.69)	57 (39.6%)	66 (29.2%)	0.039	1.59 (1.02, 2.47)	No (% GCS <=8)
0 - 4 hours	383	150 (39.2%)	42 (48.3%)	108 (36.5%)	0.049	1.63 (1.00, 2.63)	99 (39.1%)	51 (39.2%)	0.985	1.00 (0.65, 1.54)	67 (44.7%)	83 (35.6%)	0.077	1.46 (0.96, 2.22)	No (% GCS <=8)
0 - 6 hours	395	197 (49.7%)	51 (56.0%)	146 (47.9%)	0.172	1.39 (0.87, 2.22)	133 (50.8%)	64 (47.8%)	0.572	1.13 (0.74, 1.71)	84 (53.2%)	113 (47.5%)	0.268	1.26 (0.84, 1.88)	No (% GCS <=8)
0 - 12 hours	442	297 (67.2%)	70 (69.3%)	227 (66.6%)	0.607	1.13 (0.70, 1.83)	207 (69.7%)	90 (62.1%)	0.109	1.41 (0.93, 2.13)	128 (71.5%)	169 (64.3%)	0.112	1.40 (0.93, 2.11)	No (% GCS <=8)
0 - 24 hours	463	344 (74.3%)	81 (77.1%)	263 (73.5%)	0.449	1.22 (0.73, 2.04)	243 (78.1%)	101 (66.4%)	0.007	1.80 (1.17, 2.78)	147 (79.0%)	197 (71.1%)	0.057	1.53 (0.99, 2.37)	No (% GCS <=8)
0 - 48 hours	485	383 (79.0%)	94 (83.9%)	289 (77.5%)	0.144	1.52 (0.87, 2.66)	270 (82.3%)	113 (72.0%)	0.009	1.81 (1.16, 2.84)	166 (84.7%)	217 (75.1%)	0.012	1.84 (1.15, 2.94)	No (% GCS <=8)

		All MOF risk	Denver				SOFA				Marshall				
Time to hospital	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
0 - 2 hours	430	67.7 (24.2)	67.5 (25.8)	67.8 (23.7)	0.896	1.00 (1.00, 1.00)	68.3 (24.7)	66.7 (23.1)	0.528	1.00 (1.00, 1.01)	68.7 (1.9)	67.1 (1.4)	0.502	1.00 (1.00, 1.01)	Mean (SD)
0 - 4 hours	469	67.7 (64.8, 70.6)	66.9 (60.2, 74.3)	67.9 (64.8, 71.2)	0.754	1.00 (1.00, 1.01)	68.9 (65.3, 72.8)	65.0 (60.7, 69.7)	0.071	1.01 (1.00, 1.01)	68.9 (63.9, 74.3)	66.8 (63.4, 70.3)	0.160	1.00 (1.00, 1.01)	GM (95% CI)
0 - 6 hours	473	68.5 (65.5, 71.7)	67.8 (60.9, 75.6)	68.8 (65.5, 72.2)	0.736	1.00 (1.00, 1.01)	70.2 (66.3, 74.4)	65.0 (60.7, 69.7)	0.025	1.01 (1.00, 1.01)	70.0 (64.8, 75.8)	67.5 (64.0, 71.2)	0.133	1.00 (1.00, 1.01)	GM (95% CI)
0 - 12 hours	480	70.5 (67.2, 74.1)	67.8 (60.9, 75.6)	71.4 (67.5, 75.4)	0.372	1.00 (1.00, 1.00)	71.5 (67.3, 75.9)	68.5 (63.0, 74.6)	0.782	1.00 (1.00, 1.00)	71.6 (65.9, 77.8)	69.8 (65.8, 74.2)	0.578	1.00 (1.00, 1.00)	GM (95% CI)
0 - 24 hours	482	71.4 (67.8, 75.1)	67.8 (60.9, 75.6)	72.4 (68.3, 76.8)	0.259	1.00 (1.00, 1.00)	72.2 (67.8, 76.8)	69.7 (63.7, 76.3)	0.935	1.00 (1.00, 1.00)	72.7 (66.6, 79.4)	70.5 (66.2, 75.0)	0.410	1.00 (1.00, 1.00)	GM (95% CI)
0 - 48 hours	491	75.6 (71.0, 80.5)	74.0 (64.1, 85.5)	76.1 (71.0, 81.6)	0.718	1.00 (1.00, 1.00)	76.5 (70.8, 82.5)	73.9 (66.1, 82.6)	0.866	1.00 (1.00, 1.00)	77.6 (69.7, 86.4)	74.3 (68.8, 80.3)	0.409	1.00 (1.00, 1.00)	GM (95% CI)

11.3. PHYSIOLOGY VARIABLES

		All MOF risk	Denver				SOFA				Marshall				
SBP	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
0 - 2 hours	367	118 (34.2)	114 (36.1)	120 (32.8)	0.769	1.00 (1.00, 1.01)	115 (35.1)	123 (31.9)	0.039	0.99 (0.99, 1.00)	114 (36.1)	120 (32.8)	0.103	1.00 (0.99, 1.00)	Mean (SD)
0 - 4 hours	382	114 (31.9)	112 (34.2)	116 (30.3)	0.924	1.00 (1.00, 1.01)	112 (32.4)	119 (30.6)	0.068	0.99 (0.99, 1.00)	112 (34.2)	116 (30.3)	0.181	1.00 (0.99, 1.00)	Mean (SD)
0 - 6 hours	396	109 (29.6)	107 (32.0)	111 (27.9)	0.271	1.00 (0.99, 1.00)	107 (30.7)	114 (26.9)	0.034	0.99 (0.99, 1.00)	107 (32.0)	111 (27.9)	0.182	1.00 (0.99, 1.00)	Mean (SD)
0 - 12 hours	444	101 (27.5)	99 (28.7)	103 (26.6)	0.282	1.00 (0.99, 1.00)	100 (27.4)	104 (27.5)	0.087	0.99 (0.99, 1.00)	98 (28.7)	103 (26.6)	0.124	1.00 (0.99, 1.00)	Mean (SD)
0 - 24 hours	465	97 (24.8)	94 (26.3)	98 (23.8)	0.741	1.00 (0.99, 1.01)	95 (25.6)	99 (2. 9)	0.101	0.99 (0.99, 1.00)	94 (26.3)	98 (23.6)	0.123	1.00 (0.99, 1.00)	Mean (SD)
0 - 48 hours	487	94 (25.3)	93 (27.4)	95 (23.7)	0.372	1.00 (0.99, 1.01)	93 (26.8)	97 (21.5)	0.171	1.00 (0.99, 1.00)	93 (27.4)	95 (23.7)	0.231	1.00 (0.99, 1.00)	Mean (SD)

		All MOF risk	Denver				SOFA				Marshall				
MAP	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
0 - 2 hours	255	91 (23.3)	90 (28.0)	91 (21.8)	0.739	1.00 (0.99, 1.01)	90 (25.2)	93 (19.5)	0.358	1.00 (0.98, 1.01)	88 (26.5)	92 (21.2)	0.119	0.99 (0.98, 1.00)	Mean (SD)
0 - 4 hours	297	88 (24.2)	87 (30.5)	88 (22.3)	0.697	1.00 (0.99, 1.01)	88 (24.6)	88 (23.5)	0.883	1.00 (0.99, 1.01)	88 (25.8)	88 (23.3)	0.772	1.00 (0.99, 1.01)	Mean (SD)
0 - 6 hours	323	81 (22.1)	78 (27.7)	82 (20.2)	0.146	0.99 (0.98, 1.00)	81 (23.1)	82 (20.2)	0.838	1.00 (0.99, 1.01)	80 (24.1)	82 (20.8)	0.429	1.00 (0.99, 1.01)	Mean (SD)
0 - 12 hours	407	71 (21.1)	69 (23.0)	72 (20.6)	0.217	0.99 (0.99, 1.00)	71 (20.8)	72 (22.0)	0.823	1.00 (0.99, 1.01)	70 (20.7)	72 (21.5)	0.450	1.00 (0.99, 1.01)	Mean (SD)
0 - 24 hours	442	67 (18.9)	66 (20.5)	67 (18.5)	0.712	1.00 (0.99, 1.01)	66 (18.5)	68 (19.8)	0.511	1.00 (0.99, 1.01)	66 (18.3)	67 (19.3)	0.587	1.00 (0.99, 1.01)	Mean (SD)
0 - 48 hours	472	65 (19.3)	64 (20.7)	65 (18.9)	0.643	1.00 (0.99, 1.01)	64 (19.3)	65 (19.5)	0.607	1.00 (0.99, 1.01)	65 (19.4)	65 (19.3)	0.837	0.99 (0.99, 1.01)	Mean (SD)

		All MOF risk	Denver				SOFA				Marshall				
Variable	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
FiO2 0 - 2 hours	12				0.895				0.916				0.895		
FiO2 21-40%		5 (41.7%)	2 (66.7%)	3 (33.3%)	N/A	N/A	4 (44.4%)	1 (33.3%)	N/A	N/A	2 (50.0%)	3 (37.5%)	N/A	N/A	No (% category)
FiO2 41-60%		4 (33.3%)	1 (33.3)	3 (33.3%)	0.638	0.50 (0.03, 8.96)	3 (33.3%)	1 (33.3%)	0.858	0.75 (0.03, 17.51)	1 (25.0%)	3 (37.5%)	0.638	0.50 (0.03, 8.95)	No (% category)
FiO2 61-80%		0 (0%)	0 (0%)	0 (0%)	N/A	N/A	0 (0%)	0 (0%)	N/A	N/A	0 (0%)	0 (0%)	N/A	N/A	No (% category)
FiO2 >80%		3 (25.0%)	0 (0%)	3 (33.3%)	0.999	N/A	2 (22.2%)	1 (33.3%)	0.676	0.50 (0.02, 12.90)	1 (25.0%)	2 (25.0%)	0.851	0.75 (0.04, 14.97)	No (% category)
FiO2 0 - 4 hours	67				0.959				0.573				0.156		
FiO2 21-40%		9 (13.4%)	1 (9.1%)	8 (14.3%)	N/A	N/A	4 (9.5%)	5 (20.0%)	N/A	N/A	1 (4.2%)	8 (18.6%)	N/A	N/A	No (% category)
FiO2 41-60%		28 (41.8%)	5 (45.5%)	23 (41.4%)	0.636	1.74 (0.18, 17.2)	18 (42.9%)	10 (40.0%)	0.297	2.25 (0.49, 10.34)	9 (37.5%)	19 (44.2%)	0.241	3.79 (0.41, 35.07)	No (% category)
FiO2 61-80%		4 (6.0%)	0 (0%)	4 (7.1%)	0.999	N/A	2 (4.8%)	2 (8.0%)	0.853	1.25 (0.12, 13.24)	0 (0%)	4 (9.3%)	0.999	N/A	No (% category)
FiO2 >80%		26 (38.8%)	5 (45.5%)	21 (37.5%)	0.582	1.91 (0.19, 18.93)	18 (42.9%)	8 (32.0%)	0.193	2.81 (0.59, 13.34)	14 (58.3%)	12 (27.9%)	0.048	9.33 (1.02, 85.70)	No (% category)
FiO2 0 - 6 hours	133				0.683				0.202				0.201		
FiO2 21-40%		18 (13.5%)	3 (9.4%)	15 (14.9%)	N/A	N/A	8 (9.5%)	10 (20.4%)	N/A	N/A	6 (10.9%)	12 (15.4%)	N/A	N/A	No (% category)
FiO2 41-60%		51 (38.3%)	11 (34.4%)	40 (39.6%)	0.658	1.38 (0.34, 5.62)	31 (36.9%)	20 (40.8%)	0.233	1.94 (0.65, 5.74)	17 (30.9%)	34 (43.6%)	1.000	1.00 (0.32, 3.13)	No (% category)
FiO2 61-80%		13 (9.8%)	3 (9.4%)	10 (9.9%)	0.657	1.50 (0.25, 8.98)	8 (9.5%)	5 (10.2%)	0.350	2.00 (0.47, 8.56)	5 (9.1%)	8 (10.3%)	0.769	1.25 (0.28, 5.53)	No (% category)
FiO2 >80%		51 (38.3%)	15 (46.9%)	36 (35.6%)	0.297	2.08 (0.53, 8.27)	37 (44.0%)	14 (28.6%)	0.036	3.30 (1.08, 10.07)	27 (49.1%)	24 (30.8%)	0.157	2.25 (0.73, 6.92)	No (% category)
FiO2 0 - 12 hours	249				0.774				0.409				0.007		
FiO2 21-40%		36 (14.5%)	8 (13.1%)	28 (14.9%)	N/A	N/A	21 (12.7%)	15 (18.1%)	N/A	N/A	17 (15.0%)	19 (14.0%)	N/A	N/A	No (% category)
FiO2 41-60%		101 (40.6%)	22 (36.1%)	79 (42.0%)	0.956	0.98 (0.39, 2.44)	65 (39.2%)	36 (43.4%)	0.521	1.29 (0.59, 2.81)	33 (29.2%)	68 (50.0%)	0.122	0.54 (0.25, 1.18)	No (% category)
FiO2 61-80%		22 (8.8%)	6 (9.8%)	16 (8.5%)	0.663	1.31 (0.39, 4.46)	17 (10.2%)	5 (6.0%)	0.146	2.43 (0.73, 8.04)	14 (12.4%)	8 (5.9%)	0.227	1.96 (0.66, 5.80)	No (% category)
FiO2 >80%		90 (36.1%)	25 (41.0%)	65 (34.6%)	0.523	1.35 (0.54, 3.35)	63 (38.0%)	27 (32.5%)	0.212	1.67 (0.75, 3.72)	49 (43.4%)	41 (30.1%)	0.464	1.34 (0.62, 2.90)	No (% category)
FiO2 0 - 24 hours	290				0.545				0.364				0.003		
FiO2 21-40%		42 (14.5%)	10 (13.9%)	32 (14.7)	N/A	N/A	25 (12.8%)	17 (17.9%)	N/A	N/A	21 (15.3%)	21 (13.7%)	N/A	N/A	No (% category)
FiO2 41-60%		99 (34.1%)	20 (27.8%)	79 (36.2%)	0.633	0.81 (0.34, 1.92)	63 (32.3%)	36 (37.9%)	0.645	1.19 (0.57, 2.50)	32 (23.4%)	67 (43.8%)	0.049	0.48 (0.23, 1.00)	No (% category)
FiO2 61-80%		27 (9.3%)	7 (9.7%)	20 (9.2%)	0.842	1.12 (0.37, 3.42)	20 (10.3%)	7 (7.4%)	0.219	1.94 (0.67, 5.60)	15 (10.9%)	12 (7.8%)	0.652	1.25 (0.47, 3.30)	No (% category)
FiO2 >80%		122 (42.1%)	35 (48.6%)	87 (39.9%)	0.542	1.29 (0.57, 2.90)	87 (44.6%)	35 (36.8%)	0.159	1.69 (0.81, 3.51)	69 (50.4%)	53 (34.6%)	0.462	1.30 (0.65, 2.63)	No (% category)
FiO2 0 - 48 hours	321				0.006				0.001				<0.001		
FiO2 21-40%		40 (12.5%)	7 (8.8%)	33 (13.7%)	N/A	N/A	22 (10.4%)	18 (16.5%)	N/A	N/A	18 (12.2%)	22 (12.6%)	N/A	N/A	No (% category)
FiO2 41-60%		86 (26.8%)	12 (15.0%)	74 (30.7%)	0.605	0.76 (0.28, 2.18)	45 (21.2%)	41 (37.6%)	0.779	0.90 (0.42, 1.91)	22 (15.0%)	64 (36.8%)	0.031	0.42 (0.19, 0.93)	No (% category)
FiO2 61-80%		22 (6.9%)	4 (5.0%)	18 (7.5%)	0.946	1.05 (0.27, 4.07)	15 (7.1%)	7 (6.4%)	0.314	1.75 (0.59, 5.23)	9 (6.1%)	13 (7.5%)	0.756	0.85 (0.30, 2.43)	No (% category)
FiO2 >80%		173 (53.9%)	57 (71.2%)	116 (48.1%)	0.060	2.32 (0.97, 5.56)	130 (61.3%)	43 (39.4%)	0.013	2.447 (1.21, 5.04)	98 (66.7%)	75 (43.1%)	0.185	1.60 (0.80, 3.19)	No (% category)

		All MOF risk	Denver				SOFA				Marshall				
HR	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
0 - 2 hours	375	106 (26.3)	111 (30.2)	104 (25.0)	0.045	1.01 (1.00, 1.02)	108 (26.8)	101 (24.6)	0.011	1.01 (1.00, 1.02)	110 (27.9)	103 (24.8)	0.007	1.01 (1.00, 1.02)	Mean (SD)
0 - 4 hours	389	107 (25.7)	112 (28.2)	105 (24.9)	0.025	1.01 (1.00, 1.02)	109 (26.0)	101 (24.3)	0.003	1.01 (1.01, 1.02)	111 (27.5)	104 (24.1)	0.006	1.01 (1.00, 1.02)	Mean (SD)
0 - 6 hours	401	108 (25.0)	112 (28.0)	106 (24.0)	0.065	1.01 (1.00, 1.02)	111 (25.2)	102 (23.7)	0.001	1.01 (1.01, 1.02)	111 (26.6)	105 (23.6)	0.015	1.01 (1.00, 1.02)	Mean (SD)
0 - 12 hours	446	110 (23.9)	113 (27.3)	109 (22.8)	0.101	1.01 (1.00, 1.02)	112 (24.6)	106 (21.9)	0.010	1.01 (1.00, 1.02)	112 (26.2)	108 (22.1)	0.061	1.01 (1.00, 1.02)	Mean (SD)
0 - 24 hours	465	113 (23.6)	118 (28.5)	112 (21.9)	0.048	1.01 (1.00, 1.02)	115 (24.5)	109 (21.1)	0.007	1.01 (1.00, 1.02)	116 (26.5)	111 (21.3)	0.031	1.01 (1.00, 1.02)	Mean (SD)
0 - 48 hours	488	116 (23.6)	118 (29.3)	116 (22.0)	0.287	1.01 (1.00, 1.01)	118 (24.8)	112 (20.4)	0.011	1.01 (1.00, 1.02)	119 (26.6)	111 (21.2)	0.052	1.01 (1.00, 1.02)	Mean (SD)

		All MOF risk	Denver				SOFA				Marshall				
PCO2	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
0 - 2 hours	14	6.2 (1.7)	6.4 (1.1)	6.1 (2.0)	0.749	1.12 (0.57, 2.19)	6.8 (1.5)	4.8 (1.0)	0.080	6.2 (0.80, 48.05)	6.3 (1.0)	6.1 (2.1)	0.811	1.08 (0.56, 2.09)	Mean (SD)
0 - 4 hours	69	5.9 (5.7, 6.2)	5.8 (5.2, 6.5)	5.9 (5.6, 6.3)	0.724	0.91 (0.55, 1.52)	6.1 (5.8, 6.5)	5.5 (5.2, 5.9)	0.028	1.81 (1.07, 3.09)	6.0 (5.6, 6.4)	5.9 (5.5, 6.2)	0.653	1.10 (0.73, 1.64)	GM (95% CI)
0 - 6 hours	152	5.7 (5.5, 5.9)	5.7 (5.3, 6.1)	5.7 (5.5, 5.9)	0.924	0.99 (0.72, 1.34)	5.8 (5.5, 6.0)	5.6 (5.3, 5.9)	0.388	1.13 (0.86, 1.50)	5.8 (5.5, 6.1)	5.7 (5.4, 5.9)	0.634	1.07 (0.82, 1.39)	GM (95% CI)
0 - 12 hours	314	6.0 (5.9, 6.2)	5.9 (5.7, 6.2)	6.1 (5.9, 6.2)	0.493	0.92 (0.72, 1.17)	6.0 (5.9, 6.2)	6.1 (5.9, 6.3)	0.961	1.00 (0.82, 1.21)	6.0 (5.8, 6.2)	6.1 (5.9, 6.2)	0.619	0.95 (0.79, 1.15)	GM (95% CI)
0 - 24 hours	372	6.3 (6.2, 6.4)	6.2 (6.0, 6.4)	6.3 (6.2, 6.5)	0.341	0.89 (0.70, 1.13)	6.3 (6.2, 6.4)	6.3 (6.2, 6.5)	0.941	1.00 (0.82, 1.21)	6.3 (6.1, 6.4)	6.4 (6.2, 6.5)	0.334	0.91 (0.75, 1.10)	GM (95% CI)
0 - 48 hours	411	6.6 (6.4, 6.7)	6.5 (6.2, 6.7)	6.6 (6.5, 6.7)	0.528	0.94 (0.76, 1.15)	6.6 (6.5, 6.7)	6.5 (6.3, 6.6)	0.215	1.12 (0.94, 1.34)	6.6 (6.4, 6.7)	6.5 (6.4, 6.7)	0.784	1.02 (0.86, 1.21)	GM (95% CI)

		All MOF risk	Denver				SOFA				Marshall				
PO2	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
0 - 2 hours	14	25.8 (22.5)	15.2 (15.7)	31.7 (24.4)	0.749	1.12 (0.57, 2.19)	22.3 (21.6)	34.5 (25.7)	0.080	6.22 (0.80, 48.05)	21.2 (20.2)	29.3 (24.9)	0.811	1.08 (0.56, 2.09)	Mean (SD)
0 - 4 hours	69	24.6 (20.9, 28.8)	23.0 (14.4, 26.9)	25.0 (21.1, 29.6)	0.724	0.91 (0.55, 1.52)	23.8 (19.6, 28.9)	26.2 (19.4, 35.4)	0.028	1.81 (1.07, 3.09)	23.2 (18.2, 29.7)	25.5 (20.5 (31.8)	0.653	1.10 (0.73, 1.64)	GM (95% CI)
0 - 6 hours	152	21.8 (19.8, 23.9)	22.5 (17.8, 28.4)	21.6 (19.5, 23.9)	0.924	0.99 (0.72, 1.34)	21.6 (19.0, 24.5)	22.1 (19.3, 25.5)	0.388	1.13 (0.86, 1.50)	19.8 (16.9, 23.1)	23.1 (20.5, 26.1)	0.634	1.07 (0.82, 1.40)	GM (95% CI)
0 - 12 hours	314	14.4 (13.7, 15.2)	13.9 (12.3, 15.7)	14.6 (13.7, 15.5)	0.493	0.92 (0.72, 1.17)	14.9 (14.0, 15.9)	13.6 (12.4, 14.8)	0.961	1.00 (0.82, 1.21)	14.7 (13.6, 15.9)	14.3 (13.3, 15.3)	0.619	0.95 (0.79, 1.15)	GM (95% CI)
0 - 24 hours	371	10.5 (10.1, 11.0)	10.6 (9.7, 11.7)	10.5 (10.1, 11.0)	0.341	0.89 (0.70, 1.13)	10.4 (10.0, 10.9)	10.8 (10.0, 11.6)	0.941	1.00 (0.82, 1.21)	10.4 (9.8, 11.0)	10.7 (10.1, 11.2)	0.334	0.91 (0.75, 1.10)	GM (95% CI)
0 - 48 hours	410	8.8 (8.5, 9.1)	8.3 (7.7, 8.9)	9.0 (8.6, 9.3)	0.528	0.94 (0.76, 1.15)	8.5 (8.1, 8.8)	95. (8.8, 10.2)	0.215	1.12 (0.94, 1.34)	8.3 (7.9, 8.7)	9.2 (8.8, 9.7)	0.784	1.02 (0.86, 1.21)	GM (95% CI)

		All MOF risk	Denver				SOFA				Marshall				
RR	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min															
0 - 2 hours	357	20 (7.0)	22 (6.8)	19 (6.9)	0.001	1.06 (1.03, 1.10)	20 (7.1)	19 (6.5)	0.068	1.03 (1.00, 1.07)	21 (7.2)	19 (6.7)	0.002	1.05 (1.02, 1.09)	Mean (SD)
0 - 4 hours	373	19 (6.9)	20 (7.0)	18 (6.9)	0.164	1.03 (1.00, 1.06)	19 (7.0)	18 (6.7)	0.195	1.02 (1.00, 1.06)	19 (7.1)	18 (6.8)	0.063	1.03 (1.00, 1.06)	Mean (SD)
0 - 6 hours	393	17 (6.4)	18 (6.7)	16 (6.2)	0.033	1.04 (1.00, 1.08)	17 (6.4)	17 (6.4)	0.788	1.01 (0.97, 1.04)	17 (6.4)	17 (6.4)	0.353	1.02 (0.99, 1.05)	Mean (SD)
0 - 12 hours	438	14 (5.2)	15 (5.6)	14 (5.0)	0.011	1.06 (1.01, 1.10)	14 (5.0)	14 (5.4)	0.385	1.02 (0.98, 1.06)	15 (5.4)	14 (5.0)	0.155	1.03 (0.99, 1.05)	Mean (SD)
0 - 24 hours	455	13 (4.5)	13 (4.5)	12 (4.5)	0.038	1.05 (1.00, 1.10)	13 (4.1)	13 (5.2)	0.855	1.00 (0.95, 1.06)	13 (4.4)	13 (4.6)	0.760	1.03 (1.00, 1.07)	Mean (SD)
0 - 48 hours	476	12 (4.2)	12 (3.9)	12 (4.3)	0.346	1.02 (0.98, 1.08)	12 (3.7)	12 (5.2)	0.836	1.00 (0.95, 1.04)	11 (3.8)	12 (4.5)	0.331	1.01 (0.97, 1.05)	Mean (SD)
Max															
0 - 2 hours	357	24 (8.3)	25 (7.9)	24 (8.4)	0.242	1.02 (0.99, 1.05)	25 (7.8)	24 (9.3)	0.640	1.01 (0.99, 1.03)	25 (8.1)	24 (8.4)	0.190	1.02 (0.99, 1.04)	Mean (SD)
0 - 4 hours	373	25 (8.3)	25 (8.1)	25 (8.4)	0.971	1.00 (0.97, 1.03)	25 (7.9)	25 (9.2)	0.929	1.00 (0.98, 1.03)	25 (8.2)	25 (8.4)	0.869	1.00 (0.98, 1.03)	Mean (SD)
0 - 6 hours	393	25 (8.5)	25 (8.3)	25 (8.6)	0.602	1.01 (0.98, 1.04)	25 (8.2)	25 (9.2)	0.777	1.00 (0.98, 1.03)	25 (8.5)	25 (8.5)	0.750	1.00 (0.98, 1.03)	Mean (SD)
0 - 12 hours	438	27 (8.7)	28 (8.9)	26 (8.7)	0.182	1.02 (1.00, 1.04)	27 (8.6)	25 (9.0)	0.091	1.02 (1.00, 1.05)	27 (9.1)	26 (8.5)	0.606	1.01 (0.99, 1.03)	Mean (SD)
0 - 24 hours	455	29 (9.2)	31 (9.5)	28 (9.0)	0.007	1.03 (1.01, 1.06)	30 (9.1)	28 (9.4)	0.024	1.03 (1.00, 1.05)	30 (9.6)	28 (8.9)	0.125	1.02 (1.00, 1.04)	Mean (SD)
0 - 48 hours	476	31 (8.9)	34 (8.9)	30 (8.7)	<0.001	1.06 (10.3, 1.09)	32 (8.8)	30 (9.0)	0.009	1.03 (1.01, 1.05)	32 (9.3)	30 (8.6)	0.009	1.03 (1.01, 1.05)	Mean (SD)

		All MOF risk	Denver				SOFA				Marshall				
Temperature	**n**		**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**Notes/measurement**
0 - 2 hours	3	37.3 (1.54)	N/A	37.3 (1.54)	N/A	N/A	37.7 (1.98)	37.1 (N/A)	0.548	2.68 (0.11, 67.03)	N/A	37.3 (1.54)	N/A	N/A	Mean (SD)
0 - 4 hours	51	36.2 (1.04)	36.3 (0.78)	36.2 (1.07)	0.874	1.06 (0.52, 2.17)	36.2 (1.13)	36.2 (0.83)	0.827	1.07 (0.61, 1.87)	36.0 (1.14)	36.4 (0.93)	0.229	0.70 (0.39, 1.26)	Mean (SD)
0 - 6 hours	139	36.1 (1.04)	35.8 (1.01)	36.2 (1.04)	0.044	0.66 (0.44, 0.99)	36.1 (1.11)	36.3 (0.92)	0.226	0.81 (0.58, 1.14)	35.8 (1.11)	36.3 (0.97)	0.014	0.64 (0.45, 0.92)	Mean (SD)
0 - 12 hours	308	36.0 (1.26)	35.7 (1.21)	36.1 (1.26)	0.027	0.79 (0.62, 0.97)	35.9 (1.38)	36.3 (0.98)	0.008	0.76 (0.61, 0.93)	35.8 (1.19)	36.2 (1.28)	0.006	0.76 (0.63, 0.92)	Mean (SD)
0 - 24 hours	362	35.8 (1.16)	35.4 (1.08)	35.9 (1.16)	0.001	0.70 (0.56, 0.87)	35.7 (1.25)	36.2 (0.90)	<0.001	0.64 (0.52, 0.80)	35.6 (1.10)	36.0 (1.17)	<0.001	0.69 (0.57, 0.85)	Mean (SD)
0 - 48 hours	410	35.7 (1.11)	35.2 (0.98)	35.8 (1.11)	<0.001	0.62 (0.50, 0.78)	35.5 (1.17)	36.1 (0.86)	<0.001	0.54 (0.43, 0.68)	35.4 (1.04)	35.9 (1.11)	<0.001	0.65 (0.53, 0.80)	Mean (SD)

		All MOF risk	Denver				SOFA				Marshall				
Urine output	**n**		**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**Notes/measurement**
0 - 2 hours	182	180 (98.9%)	32 (100%)	148 (98.7%)	1.000	N/A	59 (98.3%)	121 (99.2%)	0.614	2.05 (0.13, 33.36)	67 (98.5%)	113 (99.1%)	0.713	0.59 (0.04, 9.64)	Categorical binary
0 - 4 hours	206	159 (77.2%)	29 (74.4%)	130 (77.8%)	0.641	0.83 (0.37, 1.85)	111 (81.0%)	48 (69.6%)	0.067	1.87 (0.96, 3.64)	70 (76.9%)	99 (77.3%)	0.944	0.98 (0.50, 1.91)	Categorical binary
0 - 6 hours	268	131 (48.9%)	20 (38.5%)	111 (51.4%)	0.096	0.59 (0.32, 1.10)	90 (51.4%)	41 (44.1%)	0.253	1.34 (0.81, 2.23)	51 (51.0%)	80 (47.6%)	0.592	1.15 (0.70, 1.88)	Categorical binary
0 - 12 hours	358	285 (225, 360)	216 (120, 392)	306 (237, 393)	0.793	1.00 (1.00, 1.00)	249 (183, 339)	306 (237, 393)	0.793	1.00 (1.00, 1.00)	248 (166, 371)	311 (234, 413)	0.581	1.00 (1.00, 1.00)	GM (95% CI)
0 - 24 hours	389	1144 (991, 1323)	1321 (1040, 1678)	1103 (929, 1310)	0.491	1.00 (1.00, 1.00)	1237 (1045, 1465)	1103 (929, 1310)	0.491	1.00 (1.00, 1.00)	1311 (1077, 1596)	1048 (856, 1284)	0.051	1.00 (1.00, 1.00)	GM (95% CI)
0 - 48 hours	419	2444 (2201, 2714)	2920 (2543, 3353)	2338 (2061, 2652)	0.100	1.00 (1.00, 1.00)	2746 (2399, 3145)	2338 (2061, 2652)	0.100	1.00 (1.00, 1.00)	2817 (2383, 3330)	2235 (1955, 2555)	<0.001	1.00 (1.00, 1.00)	GM (95% CI)

Exclude due to data inaccuracy

11.4. LABORATORY VARIABLES

		All MOF risk	Denver				SOFA				Marshall				
APTT	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
0 - 2 hours	8	26.7 (4.53)	26.0 (N/A)	27.2 (1.72)	0.356	0.74 (0.38, 1.41)	28.3 (3.66)	21.7 (3.18)	0.201	1.98 (0.70, 5.63)	26.0 (4.88)	26.9 (4.87)	0.788	0.95 (0.65, 1.39)	Mean (SD)
0 - 4 hours	53	30.9 (14.56)	32.2 (13.31)	30.7 (14.93)	0.766	1.01 (0.96, 1.05)	32.9 (16.79)	27.9 (9.91)	0.274	1.04 (0.97, 1.12)	35.5 (20.89)	28.1 (8.02)	0.146	1.05 (0.98, 1.12)	Mean (SD)
0 - 6 hours	132	29.9 (28.1, 31.8)	30.2 (17.5, 33.2)	29.8 (27.6, 32.2)	0.667	1.00 (0.97, 1.02)	31.5 (28.9, 34.3)	27.3 (25.3, 29.4)	0.120	1.03 (1.00, 1.08)	33.3 (29.4, 37.6)	27.6 (26.2, 29.1)	0.033	1.04 (1.00, 1.08)	GM (95% CI)
0 - 12 hours	273	32.3 (30.6, 34.0)	34.7 (30.6, 39.3)	31.7 (29.9, 33.6)	0.486	1.00 (1.00, 1.01)	33.6 (31.4, 35.9)	29.7 (27.4, 32.3)	0.188	1.01 (1.00, 1.02)	36.3 (32.9, 40.1)	29.6 (28.1, 31.3)	0.010	1.01 (1.00, 1.02)	GM (95% CI)
0 - 24 hours	351	34.6 (33.1, 36.3)	37.3 (33.6, 41.4)	34.0 (32.3, 35.8)	0.406	1.00 (1.00, 1.01)	36.3 (34.2, 38.4)	31.6 (29.4, 33.9)	0.092	1.01 (1.00, 1.02)	39.6 (36.2, 43.3)	31.8 (30.4, 33.2)	0.001	1.02 (1.01, 1.02)	GM (95% CI)
0 - 48 hours	404	36.4 (35.0, 38.0)	40.2 (36.4, 44.3)	35.5 (34.0, 37.2)	0.130	1.01 (1.00, 1.01)	38.6 (36.6, 40.7)	32.7 (30.8, 34.8)	0.026	1.01 (1.00, 1.02)	41.6 (38.5, 45.1)	33.5 (32.1, 34.9)	<0.001	1.02 (1.01, 1.03)	GM (95% CI)

		All MOF risk	Denver				SOFA				Marshall				
Haematocrit	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
0 - 2 hours	58	38.7 (8.12)	37.9 (9.22)	38.9 (7.91)	0.678	0.98 (0.91, 1.06)	38.6 (8.08)	38.6 (8.38)	0.846	0.99 (0.93, 1.06)	36.5 (9.06)	39.9 (7.44)	0.140	0.95 (0.88, 1.02)	Mean (SD)
0 - 4 hours	133	37.1 (8.05)	36.3 (7.47)	37.3 (8.21)	0.572	0.99 (0.94, 1.04)	36.3 (8.57)	38.6 (6.80)	0.126	0.96 (0.92, 1.01)	34.5 (9.20)	38.8 (6.75)	0.004	0.93 (0.89, 0.98)	Mean (SD)
0 - 6 hours	207	34.5 (8.26)	33.1 (7.35)	34.9 (8.48)	0.186	0.97 (0.94, 1.01)	33.4 (8.75)	36.4 (6.93)	0.013	0.95 (0.92, 0.99)	31.8 (8.96)	36.1 (7.38)	<0.001	0.94 (0.90, 0.97)	Mean (SD)
0 - 12 hours	338	31.6 (8.21)	30.4 (7.96)	31.9 (8.26)	0.196	0.98 (0.95, 1.01)	30.6 (7.91)	33.3 (8.51)	0.005	0.96 (0.93, 0.99)	30.2 (8.04)	32.5 (8.21)	0.012	0.97 (0.94, 0.99)	Mean (SD)
0 - 24 hours	380	28.7 (7.53)	27.4 (6.45)	29.0 (7.76)	0.082	0.97 (0.94, 1.00)	27.6 (6.93)	30.8 (8.21)	<0.001	0.94 (0.92, 0.97)	27.3 (7.04)	29.6 (7.70)	0.003	0.96 (0.93, 0.99)	Mean (SD)
0 - 48 hours	416	26.8 (7.09)	24.9 (5.26)	27.3 (7.42)	0.004	0.95 (0.91, 0.98)	25.3 (5.94)	29.7 (8.10)	<0.001	0.91 (0.88, 0.94)	24.9 (5.94)	28.1 (7.48)	<0.001	0.93 (0.90, 0.96)	Mean (SD)

		All MOF risk	Denver				SOFA				Marshall				
Haemoglobin (Hb)	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
0 - 2 hours	69	13.1 (2.80)	12.8 (3.16)	13.2 (2.72)	0.650	0.96 (0.78, 1.17)	13.0 (2.80)	13.3 (2.84)	0.652	0.96 (0.80, 1.15)	12.2 (3.17)	13.6 (2.48)	0.057	0.83 (0.69, 1.01)	Mean (SD)
0 - 4 hours	156	12.6 (2.69)	12.4 (2.70)	12.6 (2.70)	0.640	0.97 (0.84, 1.12)	12.3 (2.80)	13.1 (2.43)	0.085	0.89 (0.79, 1.02)	11.7 (2.99)	13.1 (2.35)	0.003	0.82 (0.72, 0.93)	Mean (SD)
0 - 6 hours	223	11.7 (2.80)	11.3 (2.50)	11.8 (2.87)	0.221	0.93 (0.83, 1.04)	11.4 (2.91)	12.4 (2.47)	0.009	0.87 (0.78, 0.97)	10.8 (2.94)	12.3 (2.57)	<0.001	0.90 (0.82, 0.98)	Mean (SD)
0 - 12 hours	345	10.9 (2.59)	10.6 (2.30)	10.9 (2.66)	0.347	0.95 (0.86, 1.06)	10.6 (2.51)	11.4 (2.67)	0.004	0.88 (0.80, 0.96)	10.4 (2.41)	11.2 (2.67)	0.012	0.90 (0.82, 0.98)	Mean (SD)
0 - 24 hours	385	10.0 (2.43)	9.6 (2.12)	10.1 (2.50)	0.087	0.91 (0.82, 1.01)	9.6 (2.29)	10.6 (2.57)	<0.001	0.84 (0.77, 0.92)	9.6 (2.30)	10.2 (2.48)	0.015	0.90 (0.82, 0.98)	Mean (SD)
0 - 48 hours	420	9.3 (2.26)	8.7 (1.73)	9.4 (2.35)	0.007	0.86 (0.76, 0.96)	8.8 (1.88)	10.2 (2.56)	<0.001	0.73 (0.66, 0.81)	8.7 (1.91)	9.6 (2.39)	<0.001	0.82 (0.75, 0.91)	Mean (SD)

		All MOF risk	Denver				SOFA				Marshall				
Platelet count	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
0 - 2 hours	65	258 (72.3)	271 (76.2)	255 (71.6)	0.465	1.00 (1.00, 1.01)	264 (71.7)	247 (73.7)	0.354	1.00 (1.00, 1.01)	256 (68.8)	259 (74.7)	0.887	1.00 (1.00, 1.01)	Mean (SD)
0 - 4 hours	133	233 (90.1)	246 (83.1)	230 (91.7)	0.408	1.00 (1.00, 1.01)	237 (93.9)	224 (83.1)	0.427	1.00 (1.00, 1.01)	231 (81.5)	233 (94.9)	0.896	1.00 (1.00, 1.00)	Mean (SD)
0 - 6 hours	188	204 (86.6)	198 (74.3)	205 (90.0)	0.651	1.00 (1.00, 1.00)	202 (88.0)	207 (84.4)	0.725	1.00 (1.00, 1.00)	195 (79.8)	209 (90.4)	0.286	1.00 (1.00, 1.00)	Mean (SD)
0 - 12 hours	295	172 (79.8)	159 (68.6)	175 (82.2)	0.170	1.00 (1.00, 1.00)	169 (81.3)	179 (76.5)	0.305	1.00 (1.00, 1.00)	158 (73.5)	181 (82.6)	0.018	1.00 (1.00, 1.00)	Mean (SD)
0 - 24 hours	355	150 (73.2)	141 (65.7)	152 (75.0)	0.252	1.00 (1.00, 1.00)	145 (74.0)	160 (70.9)	0.077	1.00 (1.00, 1.00)	137 (67.1)	158 (75.6)	0.009	1.00 (1.00, 1.00)	Mean (SD)
0 - 48 hours	404	130 (64.1)	120 (58.6)	133 (65.4)	0.105	1.00 (1.00, 1.00)	122 (59.2)	146 (70.3)	0.001	1.00 (1.00, 1.00)	115 (56.8)	140 (66.6)	<0.001	0.99 (0.99, 1.00)	Mean (SD)

		All MOF risk	Denver				SOFA				Marshall				
PT	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
0 - 2 hours	7	13.6 (1.84)	N/A	13.6 (1.84)	N/A	N/A	14.4 (1.50)	11.6 (0.35)	1.000	N/A	N/A	13.1 (1.52)	N/A	N/A	Mean (SD)
0 - 4 hours	52	14.5 (2.61)	15.6 (2.47)	14.3 (2.61)	0.193	1.18 (0.92, 1.52)	15.0 (2.76)	13.6 (2.17)	0.064	1.34 (0.98, 1.82)	15.6 (3.31)	13.8 (1.88)	0.035	1.35 (1.02, 1.77)	Mean (SD)
0 - 6 hours	126	14.5 (14.1, 15.0)	15.2 (14.5, 16.0)	14.3 (13.8, 14.8)	0.200	1.09 (0.96, 1.24)	15.1 (14.5, 15.7)	13.6 (13.1, 14.1)	0.003	1.38 (1.12, 1.71)	15.3 (14.5,16.0)	14.0 (13.5, 14.5)	0.016	1.21 (1.04, 1.41)	GM (95% CI)
0 - 12 hours	255	14.7 (14.4, 15.0)	15.4 (14.7, 16.1)	14.6 (14.2, 14.9)	0.126	1.07 (0.98, 1.18)	15.1 (14.7, 15.5)	14.0 (13.6, 14.5)	0.005	1.19 (1.05, 1.35)	15.5 (15.0, 16.1)	14.2 (13.8, 14.6)	0.001	1.19 (1.07, 1.32)	GM (95% CI)
0 - 24 hours	339	15.0 (14.8, 15.3)	15.8 (15.2, 16.5)	14.8 (14.5, 15.1)	0.017	1.10 (1.02, 1.19)	15.4 (15.0, 15.7)	14.4 (14.0, 14.7)	0.001	1.18 (1.07, 1.31)	15.9 (15.4, 16.4)	14.5 (14.2, 14.8)	<0.001	1.21 (1.11, 1.32)	GM (95% CI)
0 - 48 hours	398	15.3 (15.1, 15.6)	16.5 (15.8, 17.2)	15.0 (14.8, 15.3)	<0.001	1.15 (1.07, 1.24)	15.8 (15.4, 16.1)	14.5 (14.2, 14.9)	<0.001	1.23 (1.12, 1.36)	16.3 (15.8, 16.8)	14.7 (14.5, 15.0)	<0.001	1.22 (1.12, 1.32)	GM (95% CI)

		All MOF risk	Denver				SOFA				Marshall				
WCC Max	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
0 - 2 hours	65	20.3 (8.25)	22.3 (8.65)	19.8 (8.14)	0.307	1.04 (0.97, 1.12)	21.6 (8.88)	18.0 (6.51)	0.098	1.06 (0.99, 1.13)	20.1 (9.03)	20.4 (7.90)	0.853	0.99 (0.93, 1.06)	Mean (SD)
0 - 4 hours	132	19.7 (8.28)	23.1 (9.39)	18.8 (7.81)	0.022	1.06 (1.01, 1.12)	20.7 (8.80)	17.6 (6.73)	0.041	1.05 (1.00, 1.10)	20.7 (9.64)	19.0 (7.29)	0.270	1.02 (0.98, 1.07)	Mean (SD)
0 - 6 hours	187	18.6 (7.98)	20.4 (8.98)	18.1 (7.61)	0.093	1.04 (1.00, 1.08)	19.5 (8.54)	16.8 (6.44)	0.030	1.05 (1.00, 1.09)	19.5 (9.17)	18.0 (7.06)	0.200	1.02 (0.99, 1.06)	Mean (SD)
0 - 12 hours	294	16.3 (7.88)	18.4 (9.28)	15.8 (7.43)	0.029	1.04 (1.00, 1.08)	16.7 (8.66)	15.5 (5.95)	0.217	1.02 (0.99, 1.05)	16.9 (9.01)	16.0 (6.97)	0.321	1.02 (0.99, 1.05)	Mean (SD)
0 - 24 hours	355	15.5 (7.62)	17.3 (9.12)	15.1 (7.16)	0.037	1.04 (1.00, 1.07)	15.8 (8.37)	14.9 (5.82)	0.319	1.02 (0.99, 1.05)	16.0 (8.83)	15.2 (6.73)	0.323	1.01 (0.99, 1.04)	Mean (SD)
0 - 48 hours	404	15.3 (7.25)	16.3 (8.66)	15.0 (6.81)	0.135	1.03 (1.00, 1.06)	15.7 (7.92)	14.5 (5.67)	0.101	1.03 (1.00, 1.06)	15.7 (8.31)	15.0 (6.48)	0.319	1.01 (0.99, 1.04)	Mean (SD)

		All MOF risk	Denver				SOFA			Marshall			
Albumin	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
0 - 2 hours	8	42.0 (4.87)	N/A	41.9 (5.24)	0.816	1.05 (0.68, 1.65)	39.2 (2.59)	46.7 (4.16)	0.238	0.45 (0.12, 1.70)	41.0 (2.83)	42.3 (5.57)	0.722	0.93 (0.64, 1.36)	Mean (SD)
0 - 4 hours	47	35.4 (7.75)	34.0 (6.11)	36.9 (7.99)	0.371	0.96 (0.87, 1.05)	34.6 (7.23)	38.8 (7.93)	0.076	0.92 (0.84, 1.01)	34.5 (8.34)	37.5 (7.30)	0.199	0.95 (0.88, 1.03)	Mean (SD)
0 - 6 hours	125	33.1 (8.38)	29.8 (7.98)	34.2 (8.27)	0.016	0.94 (0.90, 0.99)	31.4 (8.16)	36.2 (7.98)	0.003	0.92 (0.88, 0.97)	29.5 (8.96)	35.5 (7.08)	<0.001	0.91 (0.87, 0.96)	Mean (SD)
0 - 12 hours	269	29.7 (9.41)	27.2 (9.07)	30.3 (9.41)	0.030	0.97 (0.94, 1.00)	28.2 (9.00)	32.5 (9.52)	<0.001	0.95 (0.90, 0.95)	26.7 (9.69)	31.7 (8.68)	<0.001	0.94 (0.92, 0.97)	Mean (SD)
0 - 24 hours	354	27.0 (8.91)	24.9 (8.76)	27.6 (8.88)	0.025	0.97 (0.94, 1.00)	25.2 (8.32)	30.7 (8.93)	<0.001	0.93 (0.90, 0.95)	24.1 (9.02)	28.9 (8.33)	<0.001	0.94 (0.91, 0.96)	Mean (SD)
0 - 48 hours	403	25.4 (8.13)	22.6 (7.54)	26.2 (8.12)	<0.001	0.94 (0.92, 0.97)	23.4 (7.33)	29.4 (8.14)	<0.001	0.90 (0.88, 0.93)	22.4 (7.88)	27.4 (7.71)	<0.001	0.92 (0.90, 0.95)	Mean (SD)

		All MOF risk	Denver				SOFA			Marshall					
BD	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
0 - 2 hours	7	-5.0 (6.76)	-9.3 (7.51)	-1.8 (4.57)	0.188	0.76 (0.51, 1.14)	-5.2 (7.89)	-4.5 (4.95)	0.894	0.98 (0.75, 1.28)	-7.3 (7.41)	-2.0 (5.57)	0.315	0.85 (0.61, 1.17)	Mean (SD)
0 - 4 hours	61	-3.3 (4.01)	-5.6 (4.86)	-2.7 (3.56)	0.034	0.84 (0.72, 0.99)	-3.6 (4.65)	-2.9 (2.37)	0.491	0.95 (0.83, 1.10)	-4.9 (4.58)	-2.2 (3.10)	0.015	0.81 (0.69, 0.96)	Mean (SD)
0 - 6 hours	147	-3.3 (3.69)	-4.4 (3.77)	-3.0 (3.62)	0.058	0.91 (0.82, 1.00)	-3.5 (4.16)	-3.1 (2.70)	0.535	0.97 (0.88, 1.07)	-4.5 (4.12)	-2.6 (3.19)	0.004	0.86 (0.78, 0.95)	Mean (SD)
0 - 12 hours	314	-3.9 (3.83)	-5.8 (4.35)	-3.4 (3.53)	<0.001	0.85 (0.79, 0.92)	-4.2 (4.03)	-3.3 (3.36)	0.056	0.94 (0.88, 1.00)	-5.2 (4.07)	-3.0 (3.40)	<0.001	0.85 (0.79, 0.91)	Mean (SD)
0 - 24 hours	369	-3.8 (4.42)	-6.1 (4.84)	-3.2 (4.10)	<0.001	0.86 (0.80, 0.91)	-4.2 (4.59)	-2.9 (3.93)	0.007	0.93 (0.88, 0.98)	-5.3 (4.74)	-2.8 (3.87)	<0.001	0.86 (0.82, 0.91)	Mean (SD)
0 - 48 hours	409	-3.4 (5.12)	-6.6 (5.22)	-2.5 (4.75)	<0.001	0.84 (0.79, 0.89)	-4.1 (5.26)	-2.0 (5.26)	<0.001	0.92 (0.88, 0.96)	-5.2 (5.53)	-2.2 (4.45)	<0.001	0.88 (0.84, 0.92)	Mean (SD)

		All MOF risk	Denver				SOFA				Marshall				
Bilirubin	**n**		**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**Notes/measurement**
0 - 2 hours	8	9.9 (4.55)	N/A	8.7 (3.40)	N/A	N/A	12.4 (3.51)	5.7 (2.31)	0.997	N/A	14.0 (5.66)	8.5 (3.67)	0.196	1.49 (0.81, 2.73)	Mean (SD)
0 - 4 hours	47	9.6 (8.1, 11.3)	9.8 (6.5, 14.5)	9.5 (7.9, 11.5)	0.792	0.98 (0.87, 1.11)	10.2 (8.1, 12.8)	8.7 (6.8, 11.1)	0.257	1.06 (0.96, 1.16)	10.2 (7.3, 14.3)	9.2 (7.6, 11.0)	0.277	1.05 (0.96, 1.14)	GM (95% CI)
0 - 6 hours	121	9.2 (8.4, 10.1)	9.9 (8.2, 11.9)	9.0 (8.0, 10.1)	0.679	1.01 (0.95, 1.08)	9.2 (8.1, 10.4)	9.3. (7.9, 10.9)	0.897	1.00 (0.94, 1.07)	9.3 (7.8, 11.0)	9.2 (8.2, 10.3)	0.521	1.02 (0.96, 1.08)	GM (95% CI)
0 - 12 hours	262	11.4 (10.7, 12.3)	12.1 (10.3, 14.2)	11.3 (10.4, 12.2)	0.539	1.01 (0.98, 1.05)	11.7 (10.7, 12.8)	10.9 (9.7, 12.3)	0.225	1.02 (0.99, 1.05)	12.5 (11.1, 14.0)	10.8 (9.9, 11.8)	0.020	1.04 (1.01, 1.07)	GM (95% CI)
0 - 24 hours	348	13.9 (13.1, 14.7)	14.5 (12.8, 16.4)	13.7 (12.9, 14.7)	0.691	1.01 (0.98, 1.03)	14.4 (13.4, 15.4)	12.9 (11.7, 14.3)	0.125	1.02 (1.00, 1.05)	15.0 (13.6, 16.5)	13.2 (12.3, 14.2)	0.026	1.03 (1.00, 1.05)	GM (95% CI)
0 - 48 hours	397	15.6 (14.9, 16.5)	16.2 (14.5, 18.2)	15.5 (14.6 (16.4)	0.411	1.01 (0.99, 1.03)	16.4 (15.5, 17.5)	14.2 (12.9, 15.5)	0.024	1.03 (1.00, 1.05)	17.0 (15.6, 18.5)	14.8 (13.9, 15.8)	0.006	1.03 (1.01, 1.05)	GM (95% CI)

		All MOF risk	Denver				SOFA				Marshall				
CK	**n**		**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**Notes/measurement**
0 - 2 hours	2	844 (257)	N/A	844 (257)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	LR not done due to small amount of data available per group. >80% missing data for each time period
0 - 4 hours	6	789 (334)	N/A	789 (334)	N/A	N/A	512 (212)	927 (307)	N/A	N/A	512 (212)	927 (307)	N/A	N/A	
0 - 6 hours	16	842 (566)	732 (625)	867 (575)	N/A	N/A	882 (662)	775 (404)	N/A	N/A	712 (426)	920 (644)	N/A	N/A	
0 - 12 hours	33	2002 (2387)	1892 (1825)	2031 (2548)	N/A	N/A	2327 (2744)	1252 (983)	N/A	N/A	2653 (3400)	1630 (1538)	N/A	N/A	
0 - 24 hours	68	3603 (4583)	1952 (1392)	4070 (5053)	N/A	N/A	4121 (4934)	1363 (1004)	N/A	N/A	4464 (5880)	2837 (2880)	N/A	N/A	
0 - 48 hours	99	4643 (6652)	3376 (5512)	5071 (6978)	0.284	1.00 (1.00, 1.00)	4797 (6848)	3995 (7461)	0.638	1.00 (1.00, 1.00)	5709 (7967)	3679 (5079)	0.146	1.00 (1.00, 1.00)	Mean (SD)

		All MOF risk	Denver				SOFA				Marshall				
Glucose	**n**		**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**Notes/measurement**
Min															
0 - 2 hours	8	9.3 (4.46)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Mean (SD)
0 - 4 hours	64	7.7 (7.1, 8.3)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	GM (95 %CI)
0 - 6 hours	150	7.4 (7.1, 7.8)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Minimum values not
0 - 12 hours	321	6.8 (6.6, 6.9)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	reflecting
0 - 24 hours	375	5.9 (5.8, 6.0)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	hypoglycaemia, excluded
0 - 48 hours	414	5.5 (5.4, 5.6)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	from multivariate
Max															
0 - 2 hours	8	9.2 (4.50)	9.3 (N/A)	9.1 (4.85)	0.837	1.05 (0.66, 1.66)	11.5 (6.87)	7.8 (2.32)	0.298	1.27 (0.81, 1.97)	9.3 (N/A)	9.1 (4.85)	0.837	1.05 (0.66, 1.66)	Mean (SD)
0 - 4 hours	64	7.8 (7.2, 8.4)	7.5 (6.6, 8.4)	7.9 (7.1, 8.7)	0.404	0.92 (0.75, 1.12)	7.6 (7.0, 8.4)	8.0 (6.9, 9.3)	0.508	0.94 (0.80, 1.12)	7.7 (6.9, 8.5)	7.8 (7.0, 8.8)	0.579	0.95 (0.80, 1.14)	GM (95% CI)
0 - 6 hours	150	8.1 (7.7, 8.4)	7.9 (7.2, 8.7)	8.1 (7.7, 8.6)	0.559	0.96 (0.82, 1.11)	8.0 (7.5, 8.4)	8.3 (7.6, 9.0)	0.476	0.95 (0.84, 1.09)	7.9 (7.4, 8.4)	8.2 (7.7, 8.7)	0.407	0.95 (0.84, 1.08)	GM (95% CI)
0 - 12 hours	321	8.3 (8.1, 8.5)	8.1 (7.7, 8.5)	8.4 (8.1, 8.6)	0.281	0.94 (0.83, 1.06)	8.3 (8.0, 8.6)	8.3 (8.0, 8.7)	0.984	1.00 (0.91, 1.10)	8.2 (7.9, 8.5)	8.4 (8.1, 8.7)	0.188	0.94 (0.85, 1.03)	GM (95% CI)
0 - 24 hours	375	8.6 (8.4, 8.8)	8.4 (8.0, 8.8)	8.7 (8.5, 9.0)	0.179	0.93 (0.83, 1.04)	8.6 (8.4, 8.9)	8.7 (8.3, 9.1)	0.821	0.99 (0.91, 1.08)	8.5 (8.2, 8.8)	8.7 (8.4, 9.0)	0.188	0.85, 1.03)	GM (95% CI)
0 - 48 hours	414	9.0 (8.8, 9.2)	8.8 (8.4, 9.2)	9.1 (8.9, 9.3)	0.217	0.94 (0.85, 1.04)	9.0 (8.7, 9.2)	9.1 (8.8, 9.5)	0.503	0.97 (1.89, 1.06)	8.9 (8.6, 9.1)	9.1 (8.8, 9.4)	0.153	0.94 (0.87, 1.02)	GM (95% CI)

		All MOF risk	Denver				SOFA				Marshall				
Creatinine	**n**		**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**Notes/measurement**
0 - 2 hours	9	101 (16.1)	131 (N/A)	97 (11.8)	0.997	N/A	101 (20.1)	102 (4.0)	0.926	1.00 (0.91, 1.09)	125 (9.9)	94 (9.0)	0.998	N/A	Mean (SD)
0 - 4 hours	53	87 (20.0)	92 (26.3)	86 (18.9)	0.395	1.02 (0.98, 1.05)	88 (22.0)	84 (17.0)	0.494	1.01 (0.98, 1.04)	89 (26.0)	85 (15.6)	0.492	1.01 (0.98, 1.04)	Mean (SD)
0 - 6 hours	129	86 (82, 89)	90 (81, 100)	84 (81, 88)	0.087	1.02 (1.00, 1.04)	88 (84, 93)	81 (76, 86)	0.049	1.02 (1.00, 1.04)	90 (83, 97)	83 (79, 87)	0.024	1.02 (1.00, 1.04)	GM (95% CI)
0 - 12 hours	275	86 (84, 89)	92 (85, 99)	85 (82, 88)	0.020	1.02 (1.00, 1.03)	89 (85, 92)	82 (79, 86)	0.016	1.02 (1.00, 1.03)	91 (86, 96)	83 (81, 86)	0.002	1.02 (1.01, 1.03)	GM (95% CI)
0 - 24 hours	356	89 (86, 91)	95 (88, 102)	87 (85, 90)	0.003	1.01 (1.01, 1.02)	92 (89, 95)	82 (79, 86)	<0.001	1.02 (1.01, 1.03)	95 (90, 99)	85 (82, 88)	<0.001	1.02 (1.01, 1.03)	GM (95% CI)
0 - 48 hours	403	90 (88, 93)	101 (92, 112)	88 (85, 90)	<0.001	1.01 (1.01, 1.02)	95 (91, 99)	82 (79, 86)	<0.001	1.02 (1.01, 1.03)	99 (93, 105)	85 (83, 88)	<0.001	1.02 (1.01, 1.02)	GM (95% CI)

		All MOF risk	Denver				SOFA				Marshall				
Lactate	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
0 - 2 hours	7	4.3 (4.15)	6.0 (5.20)	3.0 (3.37)	0.342	1.25 (0.79, 1.96)	4.0 (4.58)	5.0 (4.24)	0.728	0.94 (0.62, 1.41)	4.8 (4.92)	3.7 (2.79)	0.715	1.08 (0.72, 1.63)	Mean (SD)
0 - 4 hours	60	2.1 (1.8, 2.5)	2.5 (1.5, 4.1)	2.0 (1.7, 2.4)	0.185	1.20 (0.92, 1.56)	2.1 (1.7, 2.6)	2.1 (1.5, 2.8)	0.725	1.05 (0.80, 1.38)	2.5 (1.9, 3.4)	1.8 (1.5, 2.3)	0.073	1.32 (0.98, 1.77)	GM (95% CI)
0 - 6 hours	145	2.1 (1.9, 2.3)	2.5 (2.0, 3.2)	2.0 (1.7, 2.2)	0.042	1.23 (1.01, 1.50)	2.3 (2.0, 2.6)	1.8 (1.5, 2.1)	0.060	1.25 (0.99, 1.57)	2.6 (2.2, 3.1)	1.8 (1.6, 2.0)	0.002	1.42 (1.14, 1.77)	GM (95% CI)
0 - 12 hours	313	2.5 (2.3, 2.7)	3.0 (2.5, 3.6)	2.4 (2.2, 2.6)	0.006	1.17 (1.05, 1.30)	2.8 (2.6, 3.0)	2.1 (1.9, 2.3)	<0.001	1.36 (1.16, 1.60)	3.1 (2.7, 3.4)	2.2 (2.0, 2.4)	<0.001	1.30 (1.14, 1.47)	GM (95% CI)
0 - 24 hours	368	2.6 (2.5, 2.8)	3.2 (2.8, 3.8)	2.5 (2.3, 2.6)	<0.001	1.21 (1.09, 1.34)	2.9 (2.7, 3.1)	2.1 (1.9, 2.3)	<0.001	1.41 (1.21, 1.66)	3.2 (2.9, 3.6)	2.3 (2.1, 2.4)	<0.001	1.35 (1.20, 1.53)	GM (95% CI)
0 - 48 hours	407	2.6 (2.4, 2.8)	3.5 (3.1, 4.1)	2.4 (2.2, 2.5)	<0.001	1.26 (1.14, 1.39)	3.0 (2.8, 3.2)	2.0 (1.8, 2.2)	<0.001	1.56 (1.33, 1.83)	3.4 (3.1, 3.7)	2.2 (2.0, 2.3)	<0.001	1.43 (1.27, 1.62)	GM (95% CI)

		All MOF risk	Denver				SOFA				Marshall				
pH	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
0 - 2 hours	7	7.29 (0.143)	N/A	7.29 (0.143)	N/A	N/A	7.25 (0.311)	7.31 (0.073)	0.612	0.04 (0.00, 9106.46)	N/A	7.29 (0.143)	N/A	N/A	Mean (SD)
0 - 4 hours	62	7.32 (0.090)	7.33 (0.084)	7.32 (0.093)	0.817	2.05 (0.01, 877.56)	7.32 (0.099)	7.33 (0.070)	0.797	0.46 (0.00, 181.91)	7.31 (0.094)	7.33 (0.086)	0.234	0.03 (0.00, 9.79)	Mean (SD)
0 - 6 hours	147	7.33 (0.086)	7.32 (0.091)	7.33 (0.085)	0.293	0.10 (0.00, 7.29)	7.33 (0.095)	7.34 (0.061)	0.520	0.25 (0.00, 17.62)	7.32 (0.094)	7.33 (0.080)	0.392	0.19 (0.00, 8.48)	Mean (SD)
0 - 12 hours	314	7.31 (0.082)	7.29 (0.091)	7.31 (0.080)	0.184	0.12 (0.01, 2.71)	7.31 (0.087)	7.30 (0.071)	0.263	5.14 (0.29, 90.10)	7.31 (0.083)	7.30 (0.083)	0.434	2.98 (0.19, 45.71)	Mean (SD)
0 - 24 hours	369	7.30 (0.079)	7.29 (0.086)	7.30 (0.077)	0.477	0.34 (0.02, 6.58)	7.30 (0.081)	7.29 (0.076)	0.239	5.15 (0.34, 79.10)	7.30 (0.078)	7.29 (0.080)	0.203	5.63 (0.39, 80.64)	Mean (SD)
0 - 48 hours	409	7.29 (0.080)	7.28 (0.088)	7.30 (0.077)	0.194	0.16 (0.01, 2.50)	7.29 (0.080)	7.28 (0.080)	0.251	4.50 (0.35, 58.5)	7.30 (0.078)	7.28 (0.081)	0.160	6.12 (0.49, 76.49)	Mean (SD)

		All MOF risk	Denver				SOFA				Marshall				
Potassium	**n**		**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**Notes/measurement**
Min															
0 - 2 hours	15	3.6 (0.51)	4.1 (0.99)	3.5 (0.41)	0.155	9.63 (0.43, 217.45)	3.8 (0.60)	3.4 (0.38)	0.197	5.43 (0.42, 70.90)	3.9 (0.63)	3.5 (0.44)	0.182	5.57 (0.45, 69.43)	Mean (SD)
0 - 4 hours	80	3.6 (0.56)	3.6 (0.58)	3.6 (0.56)	0.911	1.05 (0.44, 2.49)	3.7 (0.62)	3.6 (0.43)	0.429	1.42 (0.60, 3.40)	3.8 (0.65)	3.5 (0.47)	0.06	2.27 (0.97, 5.32)	Mean (SD)
0 - 6 hours	169	3.7 (0.56)	3.7 (0.57)	3.7 (0.56)	0.749	0.90 (0.47, 1.73)	3.8 (0.59)	3.6 (0.47)	0.216	1.49 (0.79, 2.82)	3.7 (0.56)	3.7 (0.56)	0.86	1.05 (0.01, 1.81)	Mean (SD)
0 - 12 hours	328	3.9 (0.62)	3.8 (0.53)	3.9 (0.64)	0.087	0.68 (0.43, 1.06)	3.9 (0.63)	3.9 (0.59)	0.390	1.19 (0.80, 1.76)	3.9 (0.56)	3.9 (0.66)	0.300	0.83 (0.58, 1.19)	Mean (SD)
0 - 24 hours	379	2.9 (0.54)	3.8 (0.46)	3.9 (0.56)	0.078	0.66 (0.42, 1.05)	3.9 (0.54)	3.9 (0.55)	0.880	1.03 (0.69, 1.55)	3.8 (0.50)	3.9 (0.57)	0.395	0.85 (0.58, 1.24)	Mean (SD)
0 - 48 hours	419	3.8 (0.50)	3.7 (0.51)	3.8 (0.50)	0.238	0.76 (0.48, 1.20)	3.8 (0.49)	3.8 (0.51)	0.467	0.86 (0.57, 1.30)	3.8 (0.47)	3.8 (0.52)	0.533	0.88 (0.60, 1.31)	Mean (SD)
Max															
0 - 2 hours	15	3.6 (0.51)	4.1 (0.99	3.5 (0.41)	0.155	9.63 (0.43, 217.45)	3.8 (0.60)	3.4 (0.38)	0.197	5.43 (0.42, 70.90)	3.9 (0.63)	3.5 (0.44)	0.182	5.57 (0.45, 69.43)	Mean (SD)
0 - 4 hours	80	3.7 (0.56)	3.7 (0.57)	3.7 (0.55)	0.886	1.07 (0.45, 2.55)	3.7 (0.61)	3.6 (0.42)	0.345	1.54 (0.63, 3.79)	3.8 (0.64)	3.6 (0.46)	0.046	2.45 (1.02, 5.91)	Mean (SD)
0 - 6 hours	169	3.8 (0.59)	3.8 (0.55)	3.8 (0.60)	0.766	1.10 (0.60, 2.00)	3.8 (0.58)	3.7 (0.61)	0.375	1.31 (0.72, 2.40)	3.8 (0.54)	3.8 (0.62)	0.947	1.02 (0.61, 1.71)	Mean (SD)
0 - 12 hours	328	4.1 (0.68)	4.0 (0.61)	4.1 (0.70)	0.227	0.78 (0.52, 1.17)	4.1 (0.67)	4.1 (0.70)	0.898	1.02 (0.72, 1.45)	4.0 (0.62)	4.1 (0.72)	0.318	0.85 (0.61, 1.18)	Mean (SD)
0 - 24 hours	379	4.3 (0.62)	4.2 (0.59)	4.3 (0.63)	0.063	0.67 (0.44, 1.02)	4.2 (0.58)	4.3 (0.70)	0.313	0.84 (0.59, 1.18)	4.2 (0.58)	4.3 (0.65)	0.097	0.75 (0.53, 1.05)	Mean (SD)
0 - 48 hours	419	4.3 (0.62)	4.3 (0.64)	4.3 (0.61)	0.492	0.88 (0.61, 1.27)	4.3 (0.59)	4.4 (0.68)	0.410	0.87 (0.63, 1.21)	4.3 (0.58)	4.4 (0.65)	0.160	0.80 (0.58, 1.10)	Mean (SD)

		All MOF risk	Denver				SOFA				Marshall				
Sodium	**n**		**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**MOF**	**Non-MOF**	**p**	**Unadjusted OR**	**Notes/measurement**
Min															
0 - 2 hours	15	139 (3.2)	139 (4.8)	139 (2.7)	0.959	1.01 (0.69, 1.47)	139 (3.7)	139 (2.2)	0.953	0.99 (0.70, 1.41)	138 (4.6)	139 (2.5)	0.518	0.89 (0.63, 1.27)	Mean (SD)
0 - 4 hours	79	138 (3.4)	137 (3.3)	138 (3.4)	0.143	0.88 (0.75, 1.04)	138 (3.4)	139 (3.5)	0.494	0.95 (0.83, 1.09)	138 (3.3)	139 (3.5)	0.212	0.92 (0.80, 1.05)	Mean (SD)
0 - 6 hours	169	138 (3.5)	138 (3.4)	138 (3.6)	0.449	0.96 (0.87, 1.07)	138 (3.8)	138 (3.1)	0.433	0.97 (0.88, 1.06)	138 (3.8)	138 (3.4)	0.663	0.98 (0.90, 1.07)	Mean (SD)
0 - 12 hours	328	138 (3.6)	139 (4.5)	138 (3.3)	0.415	1.03 (0.96, 1.11)	138 (3.8)	138 (3.1)	0.877	1.00 (0.93, 1.06)	138 (4.0)	138 (3.3)	0.388	1.03 (0.97, 1.09)	Mean (SD)
0 - 24 hours	379	138 (3.6)	138 (4.1)	138 (3.5)	0.608	1.02 (0.95, 1.09)	138 (3.7)	138 (3.3)	0.273	1.03 (0.97, 1.10)	138 (3.8)	138 (3.4)	0.187	1.04 (0.98, 1.10)	Mean (SD)
0 - 48 hours	419	137 (3.7)	138 (3.9)	137 (3.6)	0.407	1.03 (0.96, 1.10)	138 (3.7)	137 (3.6)	0.086	1.05 (1.00, 1.11)	138 (3.7)	137 (3.6)	0.031	1.06 (1.01, 1.12)	Mean (SD)
Max															
0 - 2 hours	15	139 (3.0)	139 (4.8)	139 (2.4)	0.958	0.99 (0.67, 1.46)	139 (3.5)	139 (2.2)	0.950	1.01 (0.70, 1.46)	139 (4.3)	139 (2.5)	0.665	0.92 (0.64, 1.33)	Mean (SD)
0 - 4 hours	79	139 (3.5)	138 (3.8)	139 (3.4)	0.276	0.92 (0.78, 1.07)	138 (3.5)	139 (3.5)	0.654	0.97 (0.85, 1.11)	138 (3.5)	139 (3.5)	0.258	0.93 (0.81, 1.06)	Mean (SD)
0 - 6 hours	169	139 (3.6)	138 (3.7)	139 (3.6)	0.750	0.98 (0.89, 1.09)	138 (3.8)	139 (3.3)	0.588	0.98 (0.90, 1.07)	139 (3.9)	139 (3.5)	0.856	1.01 (0.93, 1.10)	Mean (SD)
0 - 12 hours	328	139 (3.6)	140 (4.6)	139 (3.3)	0.097	1.07 (0.99, 1.15)	139 (3.9)	139 (3.2)	0.979	1.00 (0.94, 1.06)	140 (4.0)	139 (3.3)	0.070	1.06 (1.00, 1.13)	Mean (SD)
0 - 24 hours	379	141 (3.8)	141 (4.2)	140 (3.6)	0.040	1.07 (1.00, 1.14)	141 (3.9)	140 (3.6)	0.033	1.07 (1.01, 1.32)	142 (4.0)	140 (3.5)	<0.001	1.11 (1.05, 1.18)	Mean (SD)
0 - 48 hours	419	141 (4.3)	143 (4.6)	141 (4.1)	<0.001	1.11 (1.05, 1.17)	142 (4.4)	140 (3.7)	<0.001	1.14 (1.08, 1.21)	143 (4.5)	141 (4.0)	<0.001	1.13 (1.07, 1.19)	Mean (SD)

		All MOF risk	Denver				SOFA			Marshall			
Urea	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
0 - 2 hours	4	7.2 (0.97)	N/A	7.2 (0.97)	N/A	N/A	N/A	7.2 (0.97)	N/A	N/A	N/A	7.2 (0.97)	N/A	N/A	Mean (SD)
0 - 4 hours	26	5.1 (1.85)	4.7 (1.21)	5.2 (1.95)	0.559	0.83 (0.45, 1.54)	4.9 (1.56)	5.4 (2.10)	0.504	0.86 (0.56, 1.33)	5.1 (1.76)	5.2 (1.94)	0.937	0.98 (0.62, 1.55)	Mean (SD)
0 - 6 hours	71	5.1 (1.65)	4.3 (1.30)	5.2 (1.67)	0.082	0.66 (0.41, 1.06)	4.9 (1.38)	5.3 (1.98)	0.372	0.88 (0.65, 1.17)	4.8 (1.49)	5.2 (1.73)	0.306	0.85 (0.62, 1.16)	Mean (SD)
0 - 12 hours	142	5.4 (1.97)	4.5 (1.70)	5.5 (1.98)	0.020	0.71 (0.53, 0.95)	5.3 (1.99	5.5 (1.94)	0.496	0.94 (0.79, 1.12)	5.3 (2.18)	5.4 (1.84)	0.642	0.96 (0.81, 1.14)	Mean (SD)
0 - 24 hours	189	5.8 (3.28)	4.7 (1.85)	6.0 (3.45)	0.024	0.77 (0.62, 0.97)	5.9 (3.72)	5.7 (2.26)	0.706	1.02 (0.92, 1.12)	5.5 (2.40)	6.0 (3.69)	0.303	0.94 (0.84, 1.06)	Mean (SD)
0 - 48 hours	216	6.5 (3.73)	6.1 (3.17)	6.5 (3.83)	0.490	0.96 (0.86, 1.08)	6.6 (4.16)	6.3 (2.80)	0.558	1.02 (0.95, 1.11)	6.2 (3.06)	6.6 (4.07)	0.386	0.96 (0.89, 1.05)	Mean (SD)

11.5. MANAGEMENT VARIABLES

Transfusion variable	n	All MOF risk	Denver				SOFA				Marshall				Notes/measurement
			MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	
Any transfusion	491	145 (29.5%)	45 (40.2%)	100 (26.4%)	0.005	1.87 (1.21, 2.91)	40 (25.3%)	105 (31.5%)	0.159	1.39 (0.89, 2.08)	68 (34.2%)	77 (26.4%)	0.063	1.45 (0.98, 2.15)	No (% transfused)
Cryoprecipitate	491	10 (2.0%)	4 (3.6%)	6 (1.6%)	0.203	2.30 (0.64, 8.31)	9 (2.7%)	1 (0.6%)	0.164	4.36 (0.55, 34.73)	5 (2.5%)	5 (1.7%)	0.540	1.48 (0.42, 5.18)	No (% transfused)
FFP	492	52 (10.6%)	20 (17.9%)	32 (8.4%)	0.005	2.36 (1.29, 4.31)	38 (11.4%)	14 (8.9%)	0.392	1.33 (0.70, 2.52)	26 (13.1%)	26 (8.9%)	0.143	1.54 (0.86, 2.74)	No (% transfused)
Platelets	491	25 (5.1%)	10 (8.9%)	15 (4.0%)	0.041	2.38 (1.04, 5.46)	21 (6.3%)	4 (2.5%)	0.086	2.59 (0.87, 7.68)	17 (8.5%)	8 (2.7%)	0.006	3.32 (1.40, 7.84)	No (% transfused)
PRBCs	491	124 (25.3%)	38 (33.9%)	86 (22.7%)	0.017	1.75 (1.11, 2.77)	92 (27.6%)	32 (20.3%)	0.080	1.50 (0.95, 2.37)	58 (29.1%)	66 (22.6%)	0.102	1.41 (0.93, 2.12)	No (% transfused)
Transfusion level	491				0.003				0.039				0.019		No (% transfused)
- Transfusion		114 (23.2%)	48 (24.1%)	66 (22.6%)	0.078	1.56 (0.95, 2.54)	77 (23.1%)	37 (23.4%)	0.747	1.08 (0.69, 1.69)	48 (24.1%)	66 (22.6%)	0.420	1.19 (0.78, 1.84)	No (% transfused)
- Massive transfusion		31 (6.3%)	20 (10.1%)	11 (3.8%)	0.001	3.43 (1.61, 7.30)	28 (8.4%)	3 (1.9%)	0.011	4.83 (1.44, 16.22)	20 (10.1%)	11 (3.8%)	0.005	2.98 (1.39, 6.43)	No (% transfused)

Surgery variable	n	All MOF risk	Denver				SOFA				Marshall				Notes/measurement
			MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	
Chest drain															
0 - 2 hours	491	33 (6.7%)	7 (6.2%)	26 (6.9%)	0.821	0.91 (0.38, 2.44)	25 (7.5%)	8 (5.1%)	0.315	1.52 (0.67, 3.46)	18 (9.0%)	15 (5.1%)	0.094	1.84 (0.90, 3.74)	No (% with drain)
0 - 4 hours	491	57 (11.6%)	12 (10.7%)	45 (11.9%)	0.737	0.89 (0.45, 1.75)	41 (12.3%)	16 (10.1%)	0.481	1.25 (0.68, 2.30)	28 (14.1%)	29 (9.9%)	0.162	1.49 (0.85, 2.58)	No (% with drain)
0 - 6 hours	491	61 (12.4%)	13 (11.6%)	48 (12.7%)	0.766	0.91 (0.47, 1.74)	44 (13.2%)	17 (10.8%)	0.442	1.26 (0.70, 2.29)	29 (14.6%)	32 (11.0%)	0.235	1.39 (0.81, 2.38)	No (% with drain)
0 - 12 hours	491	70 (14.3%)	16 (14.3%)	54 (14.2%)	0.992	1.00 (0.55, 1.83)	49 (14.7%)	21 (13.3%)	0.674	1.13 (0.65, 1.95)	34 (17.1%)	36 (12.3%)	0.140	1.47 (0.88, 2.44)	No (% with drain)
0 - 24 hours	491	77 (15.7%)	18 (16.1%)	59 (15.6%)	0.897	1.04 (0.58, 1.85)	56 (16.8%)	21 (13.3%)	0.317	1.32 (0.77, 2.27)	39 (19.6%)	38 (13.0%)	0.050	1.63 (1.00, 2.66)	No (% with drain)
0 - 48 hours	491	93 (18.9%)	22 (19.6%)	71 (18.7%)	0.829	1.06 (0.62, 1.81)	70 (21.0%)	23 (14.6%)	0.089	1.56 (0.93, 2.61)	51 (25.6%)	42 (14.4%)	0.002	2.05 (1.30, 3.24)	No (% with drain)
ICP Bolt															
0 - 2 hours	491	0 (0%)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0 - 4 hours	491	2 (0.4%)	1 (0.9%)	1 (0.3%)	0.388	3.41 (0.21, 54.89)	2 (0.6%)	N/A	N/A	N/A	1 (0.5%)	1 (0.3%)	0.786	1.47 (0.09, 23.64)	No (% with ICP Bolt)
0 - 6 hours	491	29 (5.9%)	8 (7.1%)	21 (5.5%)	0.529	1.31 (0.56, 3.05)	20 (6.0%)	9 (5.7%)	0.892	1.06 (0.47, 2.38)	11 (5.5%)	18 (6.2%)	0.769	0.89 (0.41, 1.93)	No (% with ICP Bolt)
0 - 12 hours	491	96 (19.6%)	30 (26.8%)	66 (17.4%)	0.029	1.74 (1.06, 2.85)	72 (21.6%)	24 (15.2%)	0.095	1.54 (0.93, 2.56)	44 (22.1%)	52 (17.8%)	0.239	1.31 (0.84, 2.05)	No (% with ICP Bolt)
0 - 24 hours	491	125 (25.5%)	45 (40.2%)	80 (21.1%)	<0.001	2.51 (1.60, 3.94)	97 (29.1%)	28 (17.7%)	0.007	1.91 (1.19, 3.06)	63 (31.7%)	62 (21.2%)	0.010	1.72 (1.14, 2.59)	No (% with ICP Bolt)
0 - 48 hours	491	135 (27.5%)	49 (43.8%)	86 (22.7%)	<0.001	2.65 (1.70, 4.13)	104 (31.2%)	31 (19.6%)	0.008	1.86 (1.18, 2.94)	68 (34.2%)	67 (22.9%)	0.007	1.74 (1.17, 2.60)	No (% with ICP Bolt)
Intra-operative time	491	168 (156, 181)	144 (122, 169)	176 (162, 191)	0.067	1.00 (1.00, 1.00)	163 (148, 179)	182 (162, 205)	0.851	1.00 (1.00, 1.00)	157 (140, 176)	176 (160, 194)	0.127	1.00 (1.00, 1.00)	GM (95% CI)
0 - 48 hours															
Operation															
0 - 2 hours	491	8 (1.6%)	3 (2.7%)	5 (1.3%)	0.328	2.06 (0.48, 8.75)	5 (1.5%)	3 (1.9%)	0.746	0.79 (0.19, 3.34)	4 (2.0%)	4 (1.4%)	0.585	1.48 (0.37, 5.98)	No (% operation)
0 - 4 hours	491	57 (11.6%)	6 (5.4%)	51 (13.5%)	0.023	0.36 (0.15, 0.87)	36 (10.8%)	21 (13.3%)	0.424	0.79 (0.45, 1.41)	20 (10.1%)	37 (12.7%)	0.374	0.77 (0.43, 1.37)	No (% operation)
0 - 6 hours	491	110 (22.4%)	18 (16.1%)	92 (24.3%)	0.069	0.60 (0.34, 1.04)	73 (21.9%)	37 (23.4%)	0.710	0.92 (0.59, 1.44)	47 (23.6%)	63 (21.6%)	0.594	1.12 (0.73, 1.73)	No (% operation)
0 - 12 hours	491	167 (34.0%)	33 (29.5%)	134 (35.4%)	0.248	0.76 (0.48, 1.21)	114 (34.2%)	53 (33.5%)	0.880	1.03 (0.69, 1.54)	70 (35.2%)	97 (33.2%)	0.653	1.09 (0.75, 1.59)	No (% operation)
0 - 24 hours	491	227 (46.2%)	47 (42.0%)	180 (47.5%)	0.303	0.80 (0.52, 1.22)	152 (45.6%)	75 (47.5%)	0.705	0.93 (0.64, 1.36)	93 (46.7%)	134 (45.9%)	0.854	1.03 (0.72, 1.49)	No (% operation)
0 - 48 hours	491	268 (54.6%)	43 (48.2%)	214 (56.5%)	0.124	0.72 (0.47, 1.10)	179 (53.8%)	89 (56.3%)	0.592	0.90 (0.62, 1.32)	105 (52.8%)	163 (55.8%)	0.504	0.88 (0.62, 1.27)	No (% operation)

Intervention variable		All MOF risk	Denver				SOFA				Marshall				
	n		MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
CPR															
0 - 2 hours	491	6 (1.2%)	3 (2.7%)	3 (0.8%)	0.133	3.45 (0.69, 17.33)	6 (1.8%)	N/A	N/A	N/A	3 (1.5%)	3 (1.0%)	0.637	1.47 (0.30, 7.38)	No (% CPR)
0 - 4 hours	491	8 (1.6%)	3 (2.7%)	5 (1.3%)	0.328	2.06 (0.48, 8.75)	7 (2.1%)	1 (0.6%)	0.258	3.37 (0.41, 27.64)	4 (2.0%)	4 (1.4%)	0.585	1.48 (0.37, 5.98)	No (% CPR)
0 - 6 hours	491	8 (1.6%)	3 (2.7%)	5 (1.3%)	0.328	2.06 (0.48, 8.75)	7 (2.1%)	1 (0.6%)	0.258	3.37 (0.41, 27.64)	4 (2.0%)	4 (1.4%)	0.585	1.48 (0.37, 5.98)	No (% CPR)
0 - 12 hours	491	12 (2.4%)	7 (6.2%)	5 (1.3%)	0.007	4.99 (1.55, 16.03)	11 (3.3%)	1 (0.6%)	0.109	5.36 (0.69, 41.91)	8 (4.0%)	4 (1.4%)	0.075	3.02 (0.90, 10.16)	No (% CPR)
0 - 24 hours	491	17 (3.5%)	8 (7.1%)	9 (2.4%)	0.021	3.16 (1.19, 8.40)	13 (3.9%)	4 (2.5%)	0.441	1.56 (0.50, 4.88)	9 (4.5%)	8 (2.7%)	0.294	1.68 (0.64, 4.44)	No (% CPR)
0 - 48 hours	491	24 (4.9%)	10 (8.9%)	14 (3.7%)	0.029	2.56 (1.10, 5.93)	19 (5.7%)	5 (3.2%)	0.229	1.85 (0.68, 5.05)	14 (7.0%)	10 (3.4%)	0.074	2.13 (0.93, 4.91)	No (% CPR)
Intubation															
0 - 2 hours	491	64 (13.0%)	13 (11.6%)	51 (13.5%)	0.610	0.85 (0.44, 1.62)	43 (12.9%)	21 (13.3%)	0.907	0.97 (0.55, 1.69)	29 (14.6%)	35 (12.0%)	0.404	1.25 (0.74, 2.13)	N/A
0 - 4 hours	491	88 (17.9%)	18 (16.1%)	70 (18.5%)	0.561	0.85 (0.48, 1.49)	59 (17.7%)	29 (18.4%)	0.864	0.96 (0.59, 1.57)	34 (17.1%)	54 (18.5%)	0.690	0.91 (0.57, 1.46)	No (% intubated)
0 - 6 hours	491	132 (26.9%)	28 (25.0%)	104 (27.4%)	0.609	0.88 (0.54, 1.43)	83 (24.9%)	49 (31.0%)	0.156	0.74 (0.49, 1.12)	50 (25.1%)	82 (28.1%)	0.468	0.86 (0.57, 1.29)	No (% intubated)
0 - 12 hours	491	232 (47.3%)	49 (43.8%)	183 (48.3%)	0.399	0.83 (0.55, 1.27)	150 (45.0%)	82 (51.9%)	0.156	0.76 (0.52, 1.11)	91 (45.7%)	141 (48.3%)	0.577	0.90 (0.63, 1.30)	No (% intubated)
0 - 24 hours	491	270 (55.0%)	62 (55.4%)	208 (54.9%)	0.929	1.02 (0.67, 1.56)	183 (55.0%)	87 (55.1%)	0.982	1.00 (0.68, 1.46)	108 (54.3%)	162 (55.5%)	0.792	0.95 (0.66, 1.37)	No (% intubated)
0 - 48 hours	491	300 (61.1%)	71 (63.4%)	229 (60.4%)	0.571	1.13 (0.73, 1.75)	204 (61.3%)	96 (60.8%)	0.915	1.02 (0.70, 1.51)	124 (60.3%)	176 (62.3%)	0.649	1.09 (0.75, 1.58)	No (% intubated)
IV fluids															
0 - 2 hours	129	1424 (1124, 1805)	850 (398, 1816)	1593 (1256, 2022)	0.090	1.00 (1.00, 1.00)	1464 (1134, 1890)	1356 (829, 2219)	0.572	1.00 (1.00, 1.00)	1397 (900, 1267)	1439 (1082, 1913)	0.622	1.00 (1.00, 1.00)	GM (95% CI)
0 - 4 hours	179	1130 (889, 1437)	647 (307, 1362)	1264 (987, 1620)	0.048	1.00 (1.00, 1.00)	1145 (843, 1555)	1105 (743, 1644)	0.577	1.00 (1.00, 1.00)	901 (550, 1477)	1271 (976, 1654)	0.922	1.00 (1.00, 1.00)	GM (95% CI)
0 - 6 hours	235	1029 (837, 1264)	757 (452, 1267)	1107 (884, 1386)	0.148	1.00 (1.00, 1.00)	1128 (882, 1442)	868 (595, 1266)	0.286	1.00 (1.00, 1.00)	1092 (771, 1547)	997 (769, 1291)	0.546	1.00 (1.00, 1.00)	GM (95% CI)
0 - 12 hours	355	1676 (1479, 1899)	1605 (1126, 2289)	1694 (1488, 1929)	0.795	1.00 (1.00, 1.00)	1876 (1590, 2214)	1373 (1145, 1645)	0.002	1.00 (1.00, 1.00)	2018 (1611, 2529)	1500 (1295, 1736)	0.005	1.00 (1.00, 1.00)	GM (95% CI)
0 - 24 hours	404	3627 (3299, 3987)	3702 (2703, 5070)	3608 (3302, 3942)	0.057	1.00 (1.00, 1.00)	4150 (3661, 4703)	2829 (2481, 3226)	<0.001	1.00 (1.00, 1.00)	4144 (3417, 5019)	3337 (3032, 3672)	<0.001	1.00 (1.00, 1.00)	GM (95% CI)
0 - 48 hours	489	8092 (7506, 8724)	12091 (10328, 14153)	7182 (6615, 7797)	<0.001	1.00 (1.00, 1.00)	10549 (9784, 11375)	4594 (4011, 5261)	<0.001	1.00 (1.00, 1.00)	11555 (10399, 12838)	6337 (5763, 6967)	<0.001	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors															
0 - 2 hours	491	2 (0.4%)	2 (1.8%)	N/A	N/A	N/A	2 (0.6%)	N/A	N/A	N/A	2 (1.0%)	N/A	N/A	N/A	No (% vasopressors)
0 - 4 hours	491	10 (2.0%)	8 (7.1%)	2 (0.5%)	0.001	14.50 (3.03, 69.32)	9 (2.7%)	1 (0.6%)	0.164	4.36 (0.55, 34.73)	2 (1.0%)	8 (4.0%)	0.023	6.07 (1.28, 28.91)	No (% vasopressors)
0 - 6 hours	491	35 (7.1%)	19 (17.0%)	16 (4.2%)	<0.001	4.64 (2.30, 9.36)	30 (9.0%)	5 (3.2%)	0.025	3.03 (1.15, 7.96)	25 (12.6%)	10 (3.4%)	<0.001	4.05 (1.90, 8.64)	No (% vasopressors)
0 - 12 hours	491	103 (21.0%)	40 (35.7%)	63 (16.6%)	<0.001	2.79 (1.74, 4.47)	82 (24.6%)	21 (13.3%)	0.005	2.13 (1.26, 3.59)	60 (30.2%)	43 (14.7%)	<0.001	2.50 (1.61, 3.89)	No (% vasopressors)
0 - 24 hours	491	142 (28.9%)	55 (49.1%)	87 (23.0%)	<0.001	3.24 (2.08, 5.03)	118 (35.4%)	24 (15.2%)	<0.001	3.06 (1.88, 5.00)	81 (40.7%)	61 (20.9%)	<0.001	2.60 (1.74, 3.88)	No (% vasopressors)
0 - 48 hours	491	173 (35.2%)	66 (58.9%)	107 (28.2%)	<0.001	3.65 (2.35, 5.65)	147 (44.1%)	26 (16.5%)	<0.001	4.01 (2.50, 6.44)	97 (48.7%)	76 (26.0%)	<0.001	2.70 (1.85, 2.96)	No (% vasopressors)

APPENDIX 12 UNIVARIATE ANALYSIS RESULTS – BY TIME PERIOD

12.1. DENVER MOF UNIVARIATE ANALYSIS

12.1.1. FIXED TIME VARIABLES

Variable		All MOF risk	Denver				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	40.1 (36.7, 43.8)	37.3 (35.6, 39.1)	0.137	1.01 (1.00, 1.02)	GM (95% CI)
BMI	83	25.6 (4.7)	25.5 (3.6)	25.6 (5.2)	0.874	0.99 (0.90, 1.09)	Mean (SD)
Sex	491	371 (75.5%)	88 (78.6%)	283 (74.7%)	0.399	1.24 (0.75, 2.07)	No (% male)
CV disease	470	29 (6.2%)	11 (10.2%)	18 (5.0%)	0.053	2.17 (0.99, 4.74)	No (% yes)
Diabetes	470	21 (4.5%)	5 (4.6%)	16 (4.4%)	0.926	1.05 (0.38, 2.94)	No (% yes)
Drugs/alcohol	470	39 (8.3%)	11 (10.2%)	28 (7.7%)	0.419	1.35 (0.65, 2.82)	No (% yes)
Hepatic disease	470	5 (1.1%)	2 (1.9%)	3 (0.8%)	0.376	2.26 (0.37, 13.69)	No (% yes)
Immunocompromise	470	6 (1.3%)	1 (0.9%)	5 (1.4%)	0.713	0.67 (0.08, 5.77)	No (% yes)
Malignancy	470	9 (1.9%)	3 (2.8%)	6 (1.7%)	0.461	1.70 (0.42, 6.89)	No (% yes)
Other PMH	470	157 (33.4%)	36 (33.3%)	121 (33.4%)	0.986	1.00 (0.63, 1.57)	No (% yes)
PMH	470	219 (46.6%)	50 (46.3%)	167 (46.7%)	0.943	0.98 (0.64, 1.52)	No (% yes)
Psychiatric	470	38 (8.1%)	6 (5.6%)	32 (8.8%)	0.276	0.61 (0.25, 1.49)	No (% yes)
Renal disease	470	8 (1.7%)	2 (1.9%)	6 (1.7%)	0.891	1.12 (0.22, 5.63)	No (% yes)
Respiratory disease	470	56 (11.9%)	12 (11.1%)	44 (12.2%)	0.769	0.90 (0.46, 1.78)	No (% yes)
Head Injury	486	285 (58.6%)	78 (70.3%)	207 (55.2%)	0.005	1.92 (.122, 3.02)	No (% injured)
Face Injury	486	126 (25.9%)	28 (25.2%)	98 (26.1%)	0.848	0.95 (0.59, 1.55)	No (% injured)
Chest Injury	486	299 (61.5%)	76 (68.5%)	223 (59.5%)	0.088	1.48 (0.94, 2.32)	No (% injured)
Abdo Injury	486	170 (35.0%)	48 (43.2%)	122 (32.5%)	0.038	1.58 (1.03, 2.44)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	79 (71.2%)	243 (64.8%)	0.213	1.34 (0.85, 2.13)	No (% injured)
External Injury	486	176 (36.2%)	38 (34.2%)	138 (36.8%)	0.621	0.89 (0.57, 1.40)	No (% injured)
ISS	486	25.3 (12.5)	29.2 (14.2)	24.2 (11.7)	<0.001	1.04 (1.02, 1.06)	Mean (SD)
NISS	486	34.7 (15.2)	38.6 (16.7)	33.6 (14.7)	0.003	1.02 (1.01, 1.04)	Mean (SD)
Blunt	491	477 (97.1%)	112 (100.0%)	365 (96.3%)	0.999	N/A	No (% blunt)
Mechanism	491				0.853		
Protective gear	193	141 (73.1%)	29 (64.4%)	112 (75.7%)	0.140	1.72 (0.84, 3.52)	No (% with)
Trapped	479	153 (31.9%)	37 (34.3%)	116 (31.3%)	0.557	1.15 (0.73, 1.80)	No (% trapped)
Vehicle position	342				0.899		
1st GCS	370				0.022		
1st GCS 3-5		62 (16.8%)	23 (27.1%)	39 (13.7%)	0.003	2.83 (1.44, 5.56)	No (% category)
1st GCS 6-8		53 (14.3%)	15 (17.6%)	38 (13.3%)	0.092	1.89 (0.90, 3.97)	No (% category)
1st GCS 9-11		40 (10.8%)	6 (7.1%)	34 (11.9%)	0.735	0.85 (0.32, 2.24)	No (% category)
1st GCS 12-14		76 (20.5%)	17 (20.0%)	59 (20.7%)	0.364	1.38 (0.69, 2.77)	No (% category)
1st GCS 15		139 (37.6%)	24 (20.2%)	115 (40.4%)	N/A	N/A	No (% category)

12.1.2. 0 – 2 HOURS

Variable		All MOF risk	Denver				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min GCS	370				0.018		
GCS 3-5		71 (19.2%)	26 (30.6%)	45 (15.8%)	0.003	2.75 (1.40, 5.40)	No (% category)
GCS 6-8		52 (14.1%)	13 (15.3%)	39 (13.7%)	0.248	1.59 (0.72, 3.48)	No (% category)
GCS 9-11		41 (11.1%)	5 (5.9%)	36 (12.6%)	0.439	0.66 (0.23, 1.88)	No (% category)
GCS 12-14		85 (23.0%	20 (23.5%)	65 (22.8%)	0.276	1.47 (0.74, 2.91)	No (% category)
GCS 15		121 (32.7%)	21 (24.7%)	100 (35.1%)	N/A	N/A	No (% category)
Time to hospital	430	67.7 (24.2)	67.5 (25.8)	67.8 (23.7)	0.896	1.00 (1.00, 1.00)	Mean (SD)
SBP	367	118 (34.2)	114 (36.1)	120 (32.8)	0.769	1.00 (1.00, 1.01)	Mean (SD)
MAP	255	91 (23.3)	90 (28.0)	91 (21.8)	0.739	1.00 (0.99, 1.01)	Mean (SD)
FiO2	12				0.895		
FiO2 21-40%		5 (41.7%)	2 (66.7%)	3 (33.3%)	N/A	N/A	No (% category)
FIO2 41-60%		4 (33.3%)	1 (33.3)	3 (33.3%)	0.638	0.50 (0.03, 8.96)	No (% category)
FiO2 61-80%		0 (0%)	0 (0%)	0 (0%)	N/A	N/A	No (% category)
FiO2 >80%		3 (25.0%)	0 (0%)	3 (33.3%)	0.999	N/A	No (% category)
HR	375	106 (26.3)	111 (30.2)	104 (25.0)	0.045	1.01 (1.00, 1.02)	Mean (SD)
PCO2	14	6.2 (1.7)	6.4 (1.1)	6.1 (2.0)	0.749	1.12 (0.57, 2.19)	Mean (SD)
PO2	14	25.8 (22.5)	15.2 (15.7)	31.7 (24.4)	0.749	1.12 (0.57, 2.19)	Mean (SD)
RR Min	357	20 (7.0)	22 (6.8)	19 (6.9)	0.001	1.06 (1.03, 1.10)	Mean (SD)
RR Max	357	24 (8.3)	25 (7.9)	24 (8.4)	0.242	1.02 (0.99, 1.05)	Mean (SD)
Temperature	3	37.3 (1.54)	N/A	37.3 (1.54)	N/A	N/A	Mean (SD)
Urine output	182	180 (98.9%)	32 (100%)	148 (98.7%)	1.000		
APTT	8	26.7 (4.53)	26.0 (N/A)	27.2 (1.72)	0.356	0.74 (0.38, 1.41)	Mean (SD)
Haematocrit	58	38.7 (8.12)	37.9 (9.22)	38.9 (7.91)	0.678	0.98 (0.91, 1.06)	Mean (SD)
Haemoglobin (Hb)	69	13.1 (2.80)	12.8 (3.16)	13.2 (2.72)	0.650	0.96 (0.78, 1.17)	Mean (SD)
Platelet count	65	258 (72.3)	271 (76.2)	255 (71.6)	0.465	1.00 (1.00, 1.01)	Mean (SD)
PT	7	13.6 (1.84)	N/A	13.6 (1.84)	N/A	N/A	Mean (SD)
WCC	65	20.3 (8.25)	22.3 (8.65)	19.8 (8.14)	0.307	1.04 (0.97, 1.12)	Mean (SD)
Albumin	8	42.0 (4.87)	N/A	41.9 (5.24)	0.816	1.05 (0.68, 1.65)	Mean (SD)
BD	7	-5.0 (6.76)	-9.3 (7.51)	-1.8 (4.57)	0.188	0.76 (0.51, 1.14)	Mean (SD)
Bilirubin	8	9.9 (4.55)	N/A	8.7 (3.40)	N/A	N/A	Mean (SD)
CK	2	844 (257)	N/A	844 (257)	N/A	N/A	LR not done
Glucose	8	9.2 (4.50)	9.3 (N/A)	9.1 (4.85)	0.837	1.05 (0.66, 1.66)	Mean (SD)
Creatinine	9	101 (16.1)	131 (N/A)	97 (11.8)	0.997	N/A	Mean (SD)
Lactate	7	4.3 (4.15)	6.0 (5.20)	3.0 (3.37)	0.342	1.25 (0.79, 1.96)	Mean (SD)
pH	7	7.29 (0.143)	N/A	7.29 (0.143)	N/A	N/A	Mean (SD)
Potassium Min	15	3.6 (0.51)	4.1 (0.99)	3.5 (0.41)	0.155	9.63 (0.43, 217.45)	Mean (SD)
Potassium Max	15	3.6 (0.51)	4.1 (0.99	3.5 (0.41)	0.155	9.63 (0.43, 217.45)	Mean (SD)
Sodium Min	15	139 (3.2)	139 (4.8)	139 (2.7)	0.959	1.01 (0.69, 1.47)	Mean (SD)
Sodium Max	15	139 (3.0)	139 (4.8)	139 (2.4)	0.958	0.99 (0.67, 1.46)	Mean (SD)
Urea	4	7.2 (0.97)	N/A	7.2 (0.97)	N/A	N/A	Mean (SD)
Chest drain	491	33 (6.7%)	7 (6.2%)	26 (6.9%)	0.821	0.91 (0.38, 2.44)	No (% with drain)
ICP Bolt	491	0 (0%)	N/A	N/A	N/A	N/A	N/A
Operation	491	8 (1.6%)	3 (2.7%)	5 (1.3%)	0.328	2.06 (0.48, 8.75)	No (% operation)
CPR	491	6 (1.2%)	3 (2.7%)	3 (0.8%)	0.133	3.45 (0.69, 17.33)	No (% CPR)
Intubation	491	64 (13.0%)	13 (11.6%)	51 (13.5%)	0.610	0.85 (0.44, 1.62)	N/A
IV fluids	129	1424 (1124, 1805)	850 (398, 1816)	1593 (1256, 2022)	0.090	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	2 (0.4%)	2 (1.8%)	N/A	N/A	N/A	No (% vasopressors)

12.1.3. 0 – 4 HOURS

Variable		All MOF risk	Denver				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min GCS	383				0.250		
GCS 3-5		101 (26.4%)	28 (32.2%)	73 (24.7%)	0.061	1.86 (0.97, 3.56)	No (% category)
GCS 6-8		49 (12.8%)	14 (16.1%)	35 (11.8%)	0.098	1.94 (0.89, 4.25)	No (% category)
GCS 9-11		37 (9.7%)	6 (6.9%)	31 (10.5%)	0.901	0.94 (0.35, 2.55)	No (% category)
GCS 12-14		79 (20.6%)	19 (21.8%)	60 (20.3%)	0.233	1.54 (0.76, 3.11)	No (% category)
GCS 15		117 (30.5%)	20 (23.0%)	97 (32.8%)	N/A	N/A	No (% category)
Time to hospital	469	67.7 (64.8, 70.6)	66.9 (60.2, 74.3)	67.9 (64.8, 71.2)	0.754	1.00 (1.00, 1.01)	GM (95% CI)
SBP	382	114 (31.9)	112 (34.2)	116 (30.3)	0.924	1.00 (1.00, 1.01)	Mean (SD)
MAP	297	88 (24.2)	87 (30.5)	88 (22.3)	0.697	1.00 (0.99, 1.01)	Mean (SD)
FiO2	67				0.959		
FiO2 21-40%		9 (13.4%)	1 (9.1%)	8 (14.3%)	N/A	N/A	No (% category)
FIO2 41-60%		28 (41.8%)	5 (45.5%)	23 (41.4%)	0.636	1.74 (0.18, 17.2)	No (% category)
FiO2 61-80%		4 (6.0%)	0 (0%)	4 (7.1%)	0.999	N/A	No (% category)
FiO2 >80%		26 (38.8%)	5 (45.5%)	21 (37.5%)	0.582	1.91 (0.19, 18.93)	No (% category)
HR	389	107 (25.7)	112 (28.2)	105 (24.9)	0.025	1.01 (1.00, 1.02)	Mean (SD)
PCO2	69	5.9 (5.7, 6.2)	5.8 (5.2, 6.5)	5.9 (5.6, 6.3)	0.724	0.91 (0.55, 1.52)	GM (95% CI)
PO2	69	24.6 (20.9, 28.8)	23.0 (14.4, 26.9)	25.0 (21.1, 29.6)	0.724	0.91 (0.55, 1.52)	GM (95% CI)
RR Min	373	19 (6.9)	20 (7.0)	18 (6.9)	0.164	1.03 (1.00, 1.06)	Mean (SD)
RR Max	373	25 (8.3)	25 (8.1)	25 (8.4)	0.971	1.00 (0.97, 1.03)	Mean (SD)
Temperature	51	36.2 (1.04)	36.3 (0.78)	36.2 (1.07)	0.874	1.06 (0.52, 2.17)	Mean (SD)
Urine output	206	159 (77.2%)	29 (74.4%)	130 (77.8%)	0.641	0.83 (0.37, 1.85)	Categorical binary
APTT	53	30.9 (14.56)	32.2 (13.31)	30.7 (14.93)	0.766	1.01 (0.96, 1.05)	Mean (SD)
Haematocrit	133	37.1 (8.05)	36.3 (7.47)	37.3 (8.21)	0.572	0.99 (0.94, 1.04)	Mean (SD)
Haemoglobin (Hb)	156	12.6 (2.69)	12.4 (2.70)	12.6 (2.70)	0.640	0.97 (0.84, 1.12)	Mean (SD)
Platelet count	133	233 (90;.1)	246 (83.1)	230 (91.7)	0.408	1.00 (1.00, 1.01)	Mean (SD)
PT	52	14.5 (2.61)	15.6 (2.47)	14.3 (2.61)	0.193	1.18 (0.92, 1.52)	Mean (SD)
WCC	132	19.7 (8.28)	23.1 (9.39)	18.8 (7.81)	0.022	1.06 (1.01, 1.12)	Mean (SD)
Albumin	47	35.4 (7.75)	34.0 (6.11)	36.9 (7.99)	0.371	0.96 (0.87, 1.05)	Mean (SD)
BD	61	-3.3 (4.01)	-5.6 (4.86)	-2.7 (3.56)	0.034	0.84 (0.72, 0.99)	Mean (SD)
Bilirubin	47	9.6 (8.1, 11.3)	9.8 (6.5, 14.5)	9.5 (7.9, 11.5)	0.792	0.98 (0.87, 1.11)	GM (95% CI)
CK	6	789 (334)	N/A	789 (334)	N/A	N/A	LR not done
Glucose	64	7.8 (7.2, 8.4)	7.5 (6.6, 8.4)	7.9 (7.1, 8.7)	0.404	0.92 (0.75, 1.12)	GM (95% CI)
Creatinine	53	87 (20.0)	92 (26.3)	86 (18.9)	0.395	1.02 (0.98, 1.05)	Mean (SD)
Lactate	60	2.1 (1.8, 2.5)	2.5 (1.5, 4.1)	2.0 (1.7, 2.4)	0.185	1.20 (0.92, 1.56)	GM (95% CI)
pH	62	7.32 (0.090)	7.33 (0.084)	7.32 (0.093)	0.817	2.05 (0.01, 877.56)	Mean (SD)
Potassium Min	80	3.6 (0.56)	3.6 (0.58)	3.6 (0.56)	0.911	1.05 (0.44, 2.49)	Mean (SD)
Potassium Max	80	3.7 (0.56)	3.7 (0.57)	3.7 (0.55)	0.886	1.07 (0.45, 2.55)	Mean (SD)
Sodium Min	79	138 (3.4)	137 (3.3)	138 (3.4)	0.143	0.88 (0.75, 1.04)	Mean (SD)
Sodium Max	79	139 (3.5)	138 (3.8)	139 (3.4)	0.276	0.92 (0.78, 1.07)	Mean (SD)
Urea	26	5.1 (1.85)	4.7 (1.21)	5.2 (1.95)	0.559	0.83 (0.45, 1.54)	Mean (SD)
Chest drain	491	57 (11.6%)	12 (10.7%)	45 (11.9%)	0.737	0.89 (0.45, 1.75)	No (% with drain)
ICP Bolt	491	2 (0.4%)	1 (0.9%)	1 (0.3%)	0.388	3.41 (0.21, 54.89)	No (% with ICP Bolt)
Operation	491	57 (11.6%)	6 (5.4%)	51 (13.5%)	0.023	0.36 (0.15, 0.87)	No (% operation)
CPR	491	8 (1.6%)	3 (2.7%)	5 (1.3%)	0.328	2.06 (0.48, 8,75)	No (% CPR)
Intubation	491	88 (17.9%)	18 (16.1%)	70 (18.5%)	0.561	0.85 (0.48, 1.49)	No (% intubated)
IV fluids	179	1130 (889, 1437)	647 (307, 1362)	1264 (987, 1620)	0.048	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	10 (2.0%)	8 (7.1%)	2 (0.5%)	0.001	14.50 (3.03, 69.32)	No (% vasopressors)

12.1.4. 0 – 6 HOURS

Variable		All MOF risk	Denver				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min GCS	395				0.360		
GCS 3-5		157 (39.6%)	38 (41.8%)	119 (39.0%)	0.174	1.54 (0.83, 2.88)	No (% category)
GCS 6-8		40 (10.1%)	13 (14.3%)	27 (8.9%)	0.047	2.33 (1.01, 5.36)	No (% category)
GCS 9-11		25 (6.3%)	5 (5.5%)	20 (6.6%)	0.737	1.21 (0.40, 3.64)	No (% category)
GCS 12-14		69 (17.4%)	17 (18.7%)	52 (17.0%)	0.230	1.58 (0.75, 3.33)	No (% category)
GCS 15		102 (26.5%)	18 (19.8%)	87 (28.5%)	N/A	N/A	No (% category)
Time to hospital	473	68.5 (65.5, 71.7)	67.8 (60.9, 75.6)	68.8 (65.5, 72.2)	0.736	1.00 (1.00, 1.01)	GM (95% CI)
SBP	396	109 (29.6)	107 (32.0)	111 (27.9)	0.271	1.00 (0.99, 1.00)	Mean (SD)
MAP	323	81 (22.1)	78 (27.7)	82 (20.2)	0.146	0.99 (0.98, 1.00)	Mean (SD)
FiO2	133				0.683		
FiO2 21-40%		18 (13.5%)	3 (9.4%)	15 (14.9%)	N/A	N/A	No (% category)
FIO2 41-60%		51 (38.3%)	11 (34.4%)	40 (39.6%)	0.658	1.38 (0.34, 5.62)	No (% category)
FiO2 61-80%		13 (9.8%)	3 (9.4%)	10 (9.9%)	0.657	1.50 (0.25, 8.98)	No (% category)
FiO2 >80%		51 (38.3%)	15 (46.9%)	36 (35.6%)	0.297	2.08 (0.53, 8.27)	No (% category)
HR	401	108 (25.0)	112 (28.0)	106 (24.0)	0.065	1.01 (1.00, 1.02)	Mean (SD)
PCO2	152	5.7 (5.5, 5.9)	5.7 (5.3, 6.1)	5.7 (5.5, 5.9)	0.924	0.99 (0.72, 1.34)	GM (95% CI)
PO2	152	21.8 (19.8, 23.9)	22.5 (17.8, 28.4)	21.6 (19.5, 23.9)	0.924	0.99 (0.72, 1.34)	GM (95% CI)
RR Min	393	17 (6.4)	18 (6.7)	16 (6.2)	0.033	1.04 (1.00, 1.08)	Mean (SD)
RR Max	393	25 (8.5)	25 (8.3)	25 (8.6)	0.602	1.01 (0.98, 1.04)	Mean (SD)
Temperature	139	36.1 (1.04)	35.8 (1.01)	36.2 (1.04)	0.044	0.66 (0.44, 0.99)	Mean (SD)
Urine output	268	131 (48.9%)	20 (38.5%)	111 (51.4%)	0.096	0.59 (0.32, 1.10)	Categorical binary
APTT	132	29.9 (28.1, 31.8)	30.2 (17.5, 33.2)	29.8 (27.6, 32.2)	0.667	1.00 (0.97, 1.02)	GM (95% CI)
Haematocrit	207	34.5 (8.26)	33.1 (7.35)	34.9 (8.48)	0.186	0.97 (0.94, 1.01)	Mean (SD)
Haemoglobin (Hb)	223	11.7 (2.80)	11.3 (2.50)	11.8 (2.87)	0.221	0.93 (0.83, 1.04)	Mean (SD)
Platelet count	188	204 (86.6)	198 (74.3)	205 (90.0)	0.651	1.00 (1.00, 1.00)	Mean (SD)
PT	126	14.5 (14.1, 15.0)	15.2 (14.5, 16.0)	14.3 (13.8, 14.8)	0.200	1.09 (0.96, 1.24)	GM (95% CI)
WCC	187	18.6 (7.98)	20.4 (8.98)	18.1 (7.61)	0.093	1.04 (1.00, 1.08)	Mean (SD)
Albumin	125	33.1 (8.38)	29.8 (7.98)	34.2 (8.27)	0.016	0.94 (0.90, 0.99)	Mean (SD)
BD	147	-3.3 (3.69)	-4.4 (3.77)	-3.0 (3.62)	0.058	0.91 (0.82, 1.00)	Mean (SD)
Bilirubin	121	9.2 (8.4, 10.1)	9.9 (8.2, 11.9)	9.0 (8.0, 10.1)	0.679	1.01 (0.95, 1.08)	GM (95% CI)
CK	16	842 (566)	732 (625)	867 (575)	N/A	N/A	LR not done
Glucose	150	8.1 (7.7, 8.4)	7.9 (7.2, 8.7)	8.1 (7.7, 8.6)	0.559	0.96 (0.82, 1.11)	GM (95% CI)
Creatinine	129	86 (82, 89)	90 (81, 100)	84 (81, 88)	0.087	1.02 (1.00, 1.04)	GM (95% CI)
Lactate	145	2.1 (1.9, 2.3)	2.5 (2.0, 3.2)	2.0 (1.7, 2.2)	0.042	1.23 (1.01, 1.50)	GM (95% CI)
pH	147	7.33 (0.086)	7.32 (0.091)	7.33 (0.085)	0.293	0.10 (0.00, 7.29)	Mean (SD)
Potassium Min	169	3.7 (0.56)	3.7 (0.57)	3.7 (0.56)	0.749	0.90 (0.47, 1.73)	Mean (SD)
Potassium Max	169	3.8 (0.59)	3.8 (0.55)	3.8 (0.60)	0.766	1.10 (0.60, 2.00)	Mean (SD)
Sodium Min	169	138 (3.5)	138 (3.4)	138 (3.6)	0.449	0.96 (0.87, 1.07)	Mean (SD)
Sodium Max	169	139 (3.6)	138 (3.7)	139 (3.6)	0.750	0.98 (0.89, 1.09)	Mean (SD)
Urea	71	5.1 (1.65)	4.3 (1.30)	5.2 (1.67)	0.082	0.66 (0.41, 1.06)	Mean (SD)
Chest drain	491	61 (12.4%)	13 (11.6%)	48 (12.7%)	0.766	0.91 (0.47, 1.74)	No (% with drain)
ICP Bolt	491	29 (5.9%)	8 (7.1%)	21 (5.5%)	0.529	1.31 (0.56, 3.05)	No (% with ICP Bolt)
Operation	491	110 (22.4%)	18 (16.1%)	92 (24.3%)	0.069	0.60 (0.34, 1.04)	No (% operation)
CPR	491	8 (1.6%)	3 (2.7%)	5 (1.3%)	0.328	2.06 (0.48, 8.75)	No (% CPR)
Intubation	491	132 (26.9%)	28 (25.0%)	104 (27.4%)	0.609	0.88 (0.54, 1.43)	No (% intubated)
IV fluids	235	1029 (837, 1264)	757 (452, 1267)	1107 (884, 1386)	0.148	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	35 (7.1%)	19 (17.0%)	16 (4.2%)	<0.001	4.64 (2.30, 9.36)	No (% vasopressors)

12.1.5. 0 – 12 HOURS

Variable		All MOF risk	Denver				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min GCS	442				0.964		
GCS 3-5		266 (60.2%)	62 (61.4%)	204 (59.8%)	0.604	1.18 (0.63, 2.19)	No (% category)
GCS 6-8		31 (7.0%)	8 (7.9%)	23 (6.7%)	0.548	1.35 (0.51, 3.57)	No (% category)
GCS 9-11		16 (3.6%)	3 (3.0%)	13 (3.8%)	0.873	0.89 (0.23, 3.52)	No (% category)
GCS 12-14		51 (11.5%)	12 (11.9%)	39 (11.4%)	0.685	1.19 (0.51, 2.79)	No (% category)
GCS 15		78 (17.6%)	16 (15.8%)	62 (18.2%)	N/A	N/A	No (% category)
Time to hospital	480	70.5 (67.2, 74.1)	67.8 (60.9, 75.6)	71.4 (67.5, 75.4)	0.372	1.00 (1.00, 1.00)	GM (95% CI)
SBP	444	101 (27.5)	99 (28.7)	103 (26.6)	0.282	1.00 (0.99, 1.00)	Mean (SD)
MAP	407	71 (21.1)	69 (23.0)	72 (20.6)	0.217	0.99 (0.99, 1.00)	Mean (SD)
FiO2	249				0.774		
FiO2 21-40%		36 (14.5%)	8 (13.1%)	28 (14.9%)	N/A	N/A	No (% category)
FIO2 41-60%		101 (40.6%)	22 (36.1%)	79 (42.0%)	0.956	0.98 (0.39, 2.44)	No (% category)
FiO2 61-80%		22 (8.8%)	6 (9.8%)	16 (8.5%)	0.663	1.31 (0.39, 4.46)	No (% category)
FiO2 >80%		90 (36.1%)	25 (41.0%)	65 (34.6%)	0.523	1.35 (0.54, 3.35)	No (% category)
HR	446	110 (23.9)	113 (27.3)	109 (22.8)	0.101	1.01 (1.00, 1.02)	Mean (SD)
PCO2	314	6.0 (5.9, 6.2)	5.9 (5.7, 6.2)	6.1 (5.9, 6.2)	0.493	0.92 (0.72, 1.17)	GM (95% CI)
PO2	314	14.4 (13.7, 15.2)	13.9 (12.3, 15.7)	14.6 (13.7, 15.5)	0.493	0.92 (0.72, 1.17)	GM (95% CI)
RR Min	438	14 (5.2)	15 (5.6)	14 (5.0)	0.011	1.06 (1.01, 1.10)	Mean (SD)
RR Max	438	27 (8.7)	28 (8.9)	26 (8.7)	0.182	1.02 (1.00, 1.04)	Mean (SD)
Temperature	308	36.0 (1.26)	35.7 (1.21)	36.1 (1.26)	0.027	0.79 (0.62, 0.97)	Mean (SD)
Urine output	358	285 (225, 360)	216 (120, 392)	306 (237, 393)	0.793	1.00 (1.00, 1.00)	GM (95% CI)
APTT	273	32.3 (30.6, 34.0)	34.7 (30.6, 39.3)	31.7 (29.9, 33.6)	0.486	1.00 (1.00, 1.01)	GM (95% CI)
Haematocrit	338	31.6 (8.21)	30.4 (7.96)	31.9 (8.26)	0.196	0.98 (0.95, 1.01)	Mean (SD)
Haemoglobin (Hb)	345	10.9 (2.59)	10.6 (2.30)	10.9 (2.66)	0.347	0.95 (0.86, 1.06)	Mean (SD)
Platelet count	295	172 (79.8)	159 (68.6)	175 (82.2)	0.170	1.00 (1.00, 1.00)	Mean (SD)
PT	255	14.7 (14.4, 15.0)	15.4 (14.7, 16,1)	14.6 (14.2, 14.9)	0.126	1.07 (0.98, 1.18)	GM (95% CI)
WCC	294	16.3 (7.88)	18.4 (9.28)	15.8 (7.43)	0.029	1.04 (1.00, 1.08)	Mean (SD)
Albumin	269	29.7 (9.41)	27.2 (9.07)	30.3 (9.41)	0.030	0.97 (0.94, 1.00)	Mean (SD)
BD	314	-3.9 (3.83)	-5.8 (4.35)	-3.4 (3.53)	<0.001	0.85 (0.79, 0.92)	Mean (SD)
Bilirubin	262	11.4 (10.7, 12.3)	12.1 (10.3, 14.2)	11.3 (10.4, 12.2)	0.539	1.01 (0.98, 1.05)	GM (95% CI)
CK	33	2002 (2387)	1892 (1825)	2031 (2548)	N/A	N/A	LR not done
Glucose	321	8.3 (8.1, 8.5)	8.1 (7.7, 8.5)	8.4 (8.1, 8.6)	0.281	0.94 (0.83, 1.06)	GM (95% CI)
Creatinine	275	86 (84, 89)	92 (85, 99)	85 (82, 88)	0.020	1.02 (1.00, 1.03)	GM (95% CI)
Lactate	313	2.5 (2.3, 2.7)	3.0 (2.5, 3.6)	2.4 (2.2, 2.6)	0.006	1.17 (1.05, 1.30)	GM (95% CI)
pH	314	7.31 (0.082)	7.29 (0.091)	7.31 (0.080)	0.184	0.12 (0.01, 2.71)	Mean (SD)
Potassium Min	328	3.9 (0.62)	3.8 (0.53)	3.9 (0.64)	0.087	0.68 (0.43, 1.06)	Mean (SD)
Potassium Max	328	4.1 (0.68)	4.0 (0.61)	4.1 (0.70)	0.227	0.78 (0.52, 1.17)	Mean (SD)
Sodium Min	328	138 (3.6)	139 (4.5)	138 (3.3)	0.415	1.03 (0.96, 1.11)	Mean (SD)
Sodium Max	328	139 (3.6)	140 (4.6)	139 (3.3)	0.097	1.07 (0.99, 1.15)	Mean (SD)
Urea	142	5.4 (1.97)	4.5 (1.70)	5.5 (1.98)	0.020	0.71 (0.53, 0.95)	Mean (SD)
Chest drain	491	70 (14.3%)	16 (14.3%)	54 (14.2%)	0.992	1.00 (0.55, 1.83)	No (% with drain)
ICP Bolt	491	96 (19.6%)	30 (26.8%)	66 (17.4%)	0.029	1.74 (1.06, 2.85)	No (% with ICP Bolt)
Operation	491	167 (34.0%)	33 (29.5%)	134 (35.4%)	0.248	0.76 (0.48, 1.21)	No (% operation)
CPR	491	12 (2.4%)	7 (6.2%)	5 (1.3%)	0.007	4.99 (1.55, 16.03)	No (% CPR)
Intubation	491	232 (47.3%)	49 (43.8%)	183 (48.3%)	0.399	0.83 (10.55, 1.27)	No (% intubated)
IV fluids	355	1676 (1479, 1899)	1605 (1126, 2289)	1694 (1488, 1929)	0.795	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	103 (21.0%)	40 (35.7%)	63 (16.6%)	<0.001	2.79 (1.74, 4.47)	No (% vasopressors)

12.1.6. 0 – 24 HOURS

Variable		All MOF risk	Denver				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min GCS	463				0.787		
GCS 3-5		320 (69.1%)	76 (72.4%)	244 (68.2%)	0.587	1.22 (0.60, 2.48)	No (% category)
GCS 6-8		24 (5.2%	5 (4.8%)	19 (5.3%)	0.963	1.03 (0.31, 3.37)	No (% category)
GCS 9-11		18 (3.9%)	2 (1.9%)	16 (4.5%)	0.384	0.49 (0.10, 2.45)	No (% category)
GCS 12-14		47 (10.2%)	11 (10.5%)	36 (10.1%)	0.713	1.19 (0.46, 3.08)	No (% category)
GCS 15		54 (11.7%)	11 (10.5%)	43 (12.0%)	N/A	N/A	No (% category)
Time to hospital	482	71.4 (67.8, 75.1)	67.8 (60.9, 75.6)	72.4 (68.3, 76.8)	0.259	1.00 (1.00, 1.00)	GM (95% CI)
SBP	465	97 (24.8)	94 (26.3)	98 (23.8)	0.741	1.00 (0.99, 1.01)	Mean (SD)
MAP	442	67 (18.9)	66 (20.5)	67 (18.5)	0.712	1.00 (0.99, 1.01)	Mean (SD)
FiO2	290				0.545		
FiO2 21-40%		42 (14.5%)	10 (13.9%)	32 (14.7)	N/A	N/A	No (% category)
FIO2 41-60%		99 (34.1%)	20 (27.8%)	79 (36.2%)	0.633	0.81 (0.34, 1.92)	No (% category)
FiO2 61-80%		27 (9.3%)	7 (9.7%)	20 (9.2%)	0.842	1.12 (0.37, 3.42)	No (% category)
FiO2 >80%		122 (42.1%)	35 (48.6%)	87 (39.9%)	0.542	1.29 (0.57, 2.90)	No (% category)
HR	465	113 (23.6)	118 (28.5)	112 (21.9)	0.048	1.01 (1.00, 1.02)	Mean (SD)
PCO2	372	6.3 (6.2, 6.4)	6.2 (6.0, 6.4)	6.3 (6.2, 6.5)	0.341	0.89 (0.70, 1.13)	GM (95% CI)
PO2	371	10.5 (10.1, 11.0)	10.6 (9.7, 11.7)	10.5 (10.1, 11.0)	0.341	0.89 (0.70, 1.13)	GM (95% CI)
RR Min	455	13 (4.5)	13 (4.5)	12 (4.5)	0.038	1.05 (1.00, 1.10)	Mean (SD)
RR Max	455	29 (9.2)	31 (9.5)	28 (9.0)	0.007	1.03 (1.01, 1.06)	Mean (SD)
Temperature	362	35.8 (1.16)	35.4 (1.08)	35.9 (1.16)	0.001	0.70 (0.56, 0.87)	Mean (SD)
Urine output	389	1144 (991, 1323)	1321 (1040, 1678)	1103 (929, 1310)	0.491	1.00 (1.00, 1.00)	GM (95% CI)
APTT	351	34.6 (33.1, 36.3)	37.3 (33.6, 41.4)	34.0 (32.3, 35.8)	0.406	1.00 (1.00, 1.01)	GM (95% CI)
Haematocrit	380	28.7 (7.53)	27.4 (6.45)	29.0 (7.76)	0.082	0.97 (0.94, 1.00)	Mean (SD)
Haemoglobin (Hb)	385	10.0 (2.43)	9.6 (2.12)	10.1 (2.50)	0.087	0.91 (0.82, 1.01)	Mean (SD)
Platelet count	355	150 (73.2)	141 (65.7)	152 (75.0)	0.252	1.00 (1.00, 1.00)	Mean (SD)
PT	339	15.0 (14.8, 15.3)	15.8 (15.2, 16.5)	14.8 (14.5, 15.1)	0.017	1.10 (1.02, 1.19)	GM (95% CI)
WCC	355	15.5 (7.62)	17.3 (9.12)	15.1 (7.16)	0.037	1.04 (1.00, 1.07)	Mean (SD)
Albumin	354	27.0 (8.91)	24.9 (8.76)	27.6 (8.88)	0.025	0.97 (0.94, 1.00)	Mean (SD)
BD	369	-3.8 (4.42)	-6.1 (4.84)	-3.2 (4.10)	<0.001	0.86 (0.80, 0.91)	Mean (SD)
Bilirubin	348	13.9 (13.1, 14.7)	14.5 (12.8, 16.4)	13.7 (12.9, 14.7)	0.691	1.01 (0.98, 1.03)	GM (95% CI)
CK	68	3603 (4583)	1952 (1392)	4070 (5053)	N/A	N/A	LR not done
Glucose	375	8.6 (8.4, 8.8)	8.4 (8.0, 8.8)	8.7 (8.5, 9.0)	0.179	0.93 (0.83, 1.04)	GM (95% CI)
Creatinine	356	89 (86, 91)	95 (88, 102)	87 (85, 90)	0.003	1.01 (1.01, 1.02)	GM (95% CI)
Lactate	368	2.6 (2.5, 2.8)	3.2 (2.8, 3.8)	2.5 (2.3, 2.6)	<0.001	1.21 (1.09, 1.34)	GM (95% CI)
pH	369	7.30 (0.079)	7.29 (0.086)	7.30 (0.077)	0.477	0.34 (0.02, 6,58)	Mean (SD)
Potassium Min	379	2.9 (0.54)	3.8 (0.46)	3.9 (0.56)	0.078	0.66 (0.42, 1.05)	Mean (SD)
Potassium Max	379	4.3 (0.62)	4.2 (0.59)	4.3 (0.63)	0.063	0.67 (0.44, 1.02)	Mean (SD)
Sodium Min	379	138 (3.6)	138 (4.1)	138 (3.5)	0.608	1.02 (0.95, 1.09)	Mean (SD)
Sodium Max	379	141 (3.8)	141 (4.2)	140 (3.6)	0.040	1.07 (1.00, 1.14)	Mean (SD)
Urea	189	5.8 (3.28)	4.7 (1.85)	6.0 (3.45)	0.024	0.77 (0.62, 0.97)	Mean (SD)
Any transfusion	491	145 (29.5%)	45 (40.2%)	100 (26.4%)	0.005	1.87 (1.21, 2.91)	No (% transfused)
Cryoprecipitate	491	10 (2.0%)	4 (3.6%)	6 (1.6%)	0.203	2.30 (0.64, 8.31)	No (% transfused)
FFP	491	52 (10.6%)	20 (17.9%)	32 (8.4%)	0.005	2.36 (1.29, 4.31)	No (% transfused)
Platelets	491	25 (5.1%)	10 (8.9%)	15 (4.0%)	0.041	2.38 (1.04, 5.46)	No (% transfused)
PRBCs	491	124 (25.3%)	38 (33.9%)	86 (22.7%)	0.017	1.75 (1.11, 2.77)	No (% transfused)
Transfusion level	491				0.003		No (% transfused)
Transfusion		114 (23.2%)	48 (24.1%)	66 (22.6%)	0.078	1.56 (0.95, 2.54)	No (% transfused)
Massive transfusion		31 (6.3%)	20 (10.1%)	11 (3.8%)	0.001	3.43 (1.61, 7.30)	No (% transfused)
Chest drain	491	77 (15.7%)	18 (16.1%)	59 (15.6%)	0.897	1.04 (0.58, 1.85)	No (% with drain)
ICP Bolt	491	125 (25.5%)	45 (40.2%)	80 (21.1%)	<0.001	2.51 (1.60, 3.94)	No (% with ICP Bolt)
Operation	491	227 (46.2%)	47 (42.0%)	180 (47.5%)	0.303	0.80 (0.52, 1.22)	No (% operation)
CPR	491	17 (3.5%)	8 (7.1%)	9 (2.4%)	0.021	3.16 (1.19, 8.40)	No (% CPR)
Intubation	491	270 (55.0%)	62 (55.4%)	208 (54.9%)	0.929	1.02 (0.67, 1.56)	No (% intubated)
IV fluids	404	3627 (3299, 3987)	3702 (2703, 5070)	3608 (3302, 3942)	0.057	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	142 (28.9%)	55 (49.1%)	87 (23.0%)	<0.001	3.24 (2.08, 5.03)	No (% vasopressors)

12.1.7. 0 – 48 HOURS

Variable		All MOF risk	Denver				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min GCS	485				0.374		
GCS 3-5		354 (73.0%)	89 (79.5%)	265 (71.0%)	0.714	1.16 (0.53, 2.52)	No (% category)
GCS 6-8		29 (6.0%)	5 (4.5%)	24 (6.4%)	0.593	0.72 (0.21, 2.42)	No (% category)
GCS 9-11		15 (3.1%)	1 (0.9%)	14 (3.8%)	0.203	0.25 (0.03, 2.05)	No (% category)
GCS 12-14		47 (9.7%)	8 (7.1%)	39 (10.5%)	0.522	0.71 (0.24, 2.05)	No (% category)
GCS 15		40 (8.2%)	9 (8.0%)	31 (8.3%)	N/A	N/A	No (% category)
Time to hospital	491	75.6 (71.0, 80.5)	74.0 (64.1, 85.5)	76.1 (71.0, 81.6)	0.718	1.00 (1.00, 1.00)	GM (95% CI)
SBP	487	94 (25.3)	93 (27.4)	95 (23.7)	0.372	1.00 (0.99, 1.01)	Mean (SD)
MAP	472	65 (19.3)	64 (20.7)	65 (18.9)	0.643	1.00 (0.99, 1.01)	Mean (SD)
FiO2	321				0.006		
FiO2 21-40%		40 (12.5%)	7 (8.8%)	33 (13.7%)	N/A	N/A	No (% category)
FIO2 41-60%		86 (26.8%)	12 (15.0%)	74 (30.7%)	0.605	0.76 (0.28, 2.18)	No (% category)
FiO2 61-80%		22 (6.9%)	4 (5.0%)	18 (7.5%)	0.946	1.05 (0.27, 4.07)	No (% category)
FiO2 >80%		173 (53.9%)	57 (71.2%)	116 (48.1%)	0.060	2.32 (0.97, 5.56)	No (% category)
HR	488	116 (23.6)	118 (29.3)	116 (22.0)	0.287	1.01 (1.00, 1.01)	Mean (SD)
PCO2	411	6.6 (6.4, 6.7)	6.5 (6.2, 6.7)	6.6 (6.5, 6.7)	0.528	0.94 (0.76, 1.15)	GM (95% CI)
PO2	410	8.8 (8.5, 9.1)	8.3 (7.7, 8.9)	9.0 (8.6, 9.3)	0.528	0.94 (0.76, 1.15)	GM (95% CI)
RR Min	476	12 (4.2)	12 (3.9)	12 (4.3)	0.346	1.02 (0.98, 1.08)	Mean (SD)
RR Max	476	31 (8.9)	34 (8.9)	30 (8.7)	<0.001	1.06 (10.3, 1.09)	Mean (SD)
Temperature	410	35.7 (1.11)	35.2 (0.98)	35.8 (1.11)	<0.001	0.62 (0.50, 0.78)	Mean (SD)
Urine output	419	2444 (2201, 2714)	2920 (2543, 3353)	2338 (2061, 2652)	0.100	1.00 (1.00, 1.00)	GM (95% CI)
APTT	404	36.4 (35.0, 38.0)	40.2 (36.4, 44.3)	35.5 (34.0, 37.2)	0.130	1.01 (1.00, 1.01)	GM (95% CI)
Haematocrit	416	26.8 (7.09)	24.9 (5.26)	27.3 (7.42)	0.004	0.95 (0.91, 0.98)	Mean (SD)
Haemoglobin (Hb)	420	9.3 (2.26)	8.7 (1.73)	9.4 (2.35)	0.007	0.86 (0.76, 0.96)	Mean (SD)
Platelet count	404	130 (64.1)	120 (58.6)	133 (65.4)	0.105	1.00 (1.00, 1.00)	Mean (SD)
PT	398	15.3 (15.1, 15.6)	16.5 (15.8, 17.2)	15.0 (14.8, 15.3)	<0.001	1.15 (1.07, 1.24)	GM (95% CI)
WCC	404	15.3 (7.25)	16.3 (8.66)	15.0 (6.81)	0.135	1.03 (1.00, 1.06)	Mean (SD)
Albumin	403	25.4 (8.13)	22.6 (7.54)	26.2 (8.12)	<0.001	0.94 (0.92, 0.97)	Mean (SD)
BD	409	-3.4 (5.12)	-6.6 (5.22)	-2.5 (4.75)	<0.001	0.84 (0.79, 0.89)	Mean (SD)
Bilirubin	397	15.6 (14.9, 16.5)	16.2 (14.5, 18.2)	15.5 (14.6 (16.4)	0.411	1.01 (0.99, 1.03)	GM (95% CI)
CK	99	4643 (6652)	3376 (5512)	5071 (6978)	0.284	1.00 (1.00, 1.00)	Mean (SD)
Glucose	414	9.0 (8.8, 9.2)	8.8 (8.4, 9.2)	9.1 (8.9, 9.3)	0.217	0.94 (0.85, 1.04)	GM (95% CI)
Creatinine	403	90 (88, 93)	101 (92, 112)	88 (85, 90)	<0.001	1.01 (1.01, 1.02)	GM (95% CI)
Lactate	407	2.6 (2.4, 2.8)	3.5 (3.1, 4.1)	2.4 (2.2, 2.5)	<0.001	1.26 (1.14, 1.39)	GM (95% CI)
pH	409	7.29 (0.080)	7.28 (0.088)	7.30 (0.077)	0.194	0.16 (0.01, 2.50)	Mean (SD)
Potassium Min	419	3.8 (0.50)	3.7 (0.51)	3.8 (0.50)	0.238	0.76 (0.48, 1.20)	Mean (SD)
Potassium Max	419	4.3 (0.62)	4.3 (0.64)	4.3 (0.61)	0.492	0.88 (0.61, 1.27)	Mean (SD)
Sodium Min	419	137 (3.7)	138 (3.9)	137 (3.6)	0.407	1.03 (0.96, 1.10)	Mean (SD)
Sodium Max	419	141 (4.3)	143 (4.6)	141 (4.1)	<0.001	1.11 (1.05, 1.17)	Mean (SD)
Urea	216	6.5 (3.73)	6.1 (3.17)	6.5 (3.83)	0.490	0.96 (0.86, 1.08)	Mean (SD)
Any transfusion	491	145 (29.5%)	45 (40.2%)	100 (26.4%)	0.005	1.87 (1.21, 2.91)	No (% transfused)
Cryoprecipitate	491	10 (2.0%)	4 (3.6%)	6 (1.6%)	0.203	2.30 (0.64, 8.31)	No (% transfused)
FFP	491	52 (10.6%)	20 (17.9%)	32 (8.4%)	0.005	2.36 (1.29, 4.31)	No (% transfused)
Platelets	491	25 (5.1%)	10 (8.9%)	15 (4.0%)	0.041	2.38 (1.04, 5.46)	No (% transfused)
PRBCs	491	124 (25.3%)	38 (33.9%)	86 (22.7%)	0.017	1.75 (1.11, 2.77)	No (% transfused)
Transfusion level	491				0.003		No (% transfused)
Transfusion		114 (23.2%)	48 (24.1%)	66 (22.6%)	0.078	1.56 (0.95, 2.54)	No (% transfused)
Massive transfusion		31 (6.3%)	20 (10.1%)	11 (3.8%)	0.001	3.43 (1.61, 7.30)	No (% transfused)
Chest drain	491	93 (18.9%)	22 (19.6%)	71 (18.7%)	0.829	1.06 (0.62, 1.81)	No (% with drain)
ICP Bolt	491	135 (27.5%)	49 (43.8%)	86 (22.7%)	<0.001	2.65 (1.70, 4.13)	No (% with ICP Bolt)
Intra-operative time	491	168 (156, 181)	144 (122, 169)	176 (162, 191)	0.067	1.00 (1.00, 1.00)	GM (95% CI)
Operation	491	268 (54.6%)	43 (48.2%)	214 (56.5%)	0.124	0.72 (0.47, 1.10)	No (% operation)
CPR	491	24 (4.9%)	10 (8.9%)	14 (3.7%)	0.029	2.56 (1.10, 5.93)	No (% CPR)
Intubation	491	300 (61.1%)	71 (63.4%)	229 (60.4%)	0.571	1.13 (0.73, 1.75)	No (% intubated)
IV fluids	489	8092 (7506, 8724)	12091 (10328, 14153)	7182 (6615, 7797)	<0.001	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	173 (35.2%)	66 (58.9%)	107 (28.2%)	<0.001	3.65 (2.35, 5.65)	No (% vasopressors)

12.2. SOFA MOF UNIVARIATE ANALYSIS

12.2.1. FIXED TIME VARIABLES

Variable		All MOF risk	SOFA				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	39.8 (37.7, 42.1)	35.6 (33.5, 37.9)	0.005	1.01 (1.00, 1.02)	GM (95% CI)
BMI	83	25.6 (4.7)	26.2 (3.5)	24.3 (3.5)	0.076	1.12 (0.99, 1.27)	Mean (SD)
Sex	491	371 (75.5%)	220 (76.7%)	151 (74.0%)	0.503	1.15 (0.76, 1.75)	No (% male)
CV disease	470	29 (6.2%)	19 (7.0%)	10 (5.0%)	0.320	1.54 (0.66, 3.58)	No (% yes)
Diabetes	470	21 (4.5%)	12 (4.4%)	9 (4.5%)	0.924	0.95 (0.36, 2.51)	No (% yes)
Drugs/alcohol	470	39 (8.3%)	25 (9.3%)	14 (7.0%)	0.297	1.50 (0.70, 3.24)	No (% yes)
Hepatic disease	470	5 (1.1%)	5 (1.9%)	0 (0%)	0.999	N/A	No (% yes)
Immunocompromise	470	6 (1.3%)	3 (1.1%)	3 (1.5%)	0.507	0.53 (0.08, 3.41)	No (% yes)
Malignancy	470	9 (1.9%)	6 (2.2%)	3 (1.5%)	0.668	1.38 (0.32, 5.97)	No (% yes)
Other PMH	470	157 (33.4%)	92 (34.1%)	65 (32.5%)	0.385	1.34 (0.69, 2.60)	No (% yes)
PMH	470	219 (46.6%)	125 (46.3%)	94 (4.70%)	0.280	0.66 (0.31, 1.40)	No (% yes)
Psychiatric	470	38 (8.1%)	15 (5.6%)	23 (11.5%)	0.041	0.44 (0.20, 0.97)	No (% yes)
Renal disease	470	8 (1.7%)	5 (1.9%)	3 (1.5%)	0.731	1.31 (0.29, 5.96)	No (% yes)
Respiratory disease	470	56 (11.9%)	38 (14.1%)	18 (9.0%)	0.094	1.83 (0.90, 3.71)	No (% yes)
Head Injury	486	285 (58.6%)	184 (65.0%)	101 (49.8%)	<0.001	2.95 (1.90, 4.60)	No (% injured)
Face Injury	486	126 (25.9%)	71 (25.1%)	55 (27.1%)	0.114	0.69 (0.44, 1.09)	No (% injured)
Chest Injury	486	299 (61.5%)	188 (66.4%)	111 (54.7%)	0.115	1.39 (0.92, 2.09)	No (% injured)
Abdo Injury	486	170 (35.0%)	107 (37.8%)	63 (31.0%)	0.133	1.40 (0.90, 2.16)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	201 (71.0%)	121 (59.6%)	0.002	1.97 (1.27, 3.04)	No (% injured)
External Injury	486	176 (36.2%)	100 (35.3%)	76 (37.4%)	0.166	0.75 (0.50, 1.13)	No (% injured)
ISS	486	25.3 (12.5)	28.0 (13.1)	21.6 (10.5)	<0.001	1.05 (1.03, 1.06)	Mean (SD)
NISS	486	34.7 (15.2)	37.8 (15.2)	36.4 (14.1)	<0.001	1.04 (1.02, 1.05)	Mean (SD)
Blunt	491	477 (97.1%)	282 (98.3%)	195 (95.6%)	0.091	2.60 (0.86, .789)	No (% blunt)
Mechanism	491				0.241		
Protective gear	193	141 (73.1%)	78 (70.3%)	63 (76.8%)	0.311	0.71 (0.37, 1.37)	No (% with)
Trapped	479	153 (31.9%)	103 (36.9%)	50 (25.0%)	0.006	1.76 (1.18, 2.62)	No (% trapped)
Vehicle position	342				0.511		
1st GCS	370				0.759		
1st GCS 3-5		62 (16.8%)	39 (18.3%)	23 (14.6%)	0.320	1.37 (0.74, 2.52)	No (% category)
1st GCS 6-8		53 (14.3%)	33 (15.5%)	20 (12.7%)	0.390	1.33 (0.70, 2.54)	No (% category)
1st GCS 9-11		40 (10.8%)	23 (10.8%)	17 (10.8%)	0.813	1.09 (0.54, 2.22)	No (% category)
1st GCS 12-14		76 (20.5%)	41 (19.2%)	25 (22.3%)	0.838	0.94 (0.54, 1.65)	No (% category)
1st GCS 15		139 (37.6%)	77 (36.2%)	62 (39.5%)	N/A	N/A	No (% category)

12.2.2. 0 - 2 HOURS

Variable		All MOF risk	SOFA				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min GCS	370				0.856		
GCS 3-5		71 (19.2%)	45 (21.1%)	26 (16.6%)	0.330	1.35 (0.84, 2.46)	No (% category)
GCS 6-8		52 (14.1%)	29 (13.6%)	23 (14.6%)	0.958	0.98 (0.51, 1.89)	No (% category)
GCS 9-11		41 (11.1%)	24 (11.3%)	17 (10.8%)	0.794	1.10 (0.54, 2.26)	No (% category)
GCS 12-14		85 (23.0%	47 (22.1%)	38 (24.2%)	0.898	0.96 (0.55, 1.69)	No (% category)
GCS 15		121 (32.7%)	68 (31.9%)	53 (33.8%)	N/A	N/A	No (% category)
Time to hospital	430	67.7 (24.2)	68.5 (24.7)	66.7 (23.5)	0.460	1.00 (1.00, 1.01)	Mean (SD)
SBP	367	118 (34.2)	113 (34.8)	124 (32.6)	0.004	0.98 (0.99, 1.00)	Mean (SD)
MAP	255	91 (23.3)	89 (25.6)	93 (20.1)	0.140	0.99 (0.98, 1.00)	Mean (SD)
FiO2	12				0.492		
FiO2 21-40%		5 (41.7%)	3 (50.0%)	2 (33.3%)	N/A	N/A	No (% category)
FIO2 41-60%		4 (33.3%)	1 (16.7%)	3 (50.0%)	0.307	0.22 (0.01, 3.98)	No (% category)
FiO2 61-80%		0 (0%)	0 (0%)	0 (0%)	N/A	N/A	No (% category)
FiO2 >80%		3 (25.0%)	2 (33.3%)	1 (16.7%)	0.851	1.33 (0.07, 26.62)	No (% category)
HR	375	106 (26.3)	109 (27.2)	101 (24.4)	0.004	1.01 (1.00, 1.02)	Mean (SD)
PCO2	14	6.2 (1.7)	7.0 (1.6)	5.1 (1.2)	0.079	3.27 (0.87, 12.27)	Mean (SD)
PO2	14	25.8 (22.5)	24.3 (24.0)	27.8 (22.6)	0.761	0.99 (0.95, 1.04)	Mean (SD)
RR Min	357	20 (7.0)	21 (7.1)	19 (6.5)	0.065	1.04 (1.00, 1.09)	Mean (SD)
RR Max	357	24 (8.3)	25 (7.9)	24 (8.8)	0.884	1.00 (0.97, 1.03)	Mean (SD)
Temperature	3	37.3 (1.54)	N/A	37.3 (1.54)	N/A	N/A	Mean (SD)
Urine output	182	180 (98.9%)	100 (99.0%)	88 (98.8%)	0.875	1.25 (0.08, 20.30)	Categorical binary
APTT	8	26.7 (4.53)	27.7 (3.47)	25.6 (5.75)	0.503	1.13 (0.80, 1.59)	Mean (SD)
Haematocrit	58	38.7 (8.12)	38.4 (8.42)	39.1 (7.87)	0.718	0.99 (0.93, 1.05)	Mean (SD)
Haemoglobin (Hb)	69	13.1 (2.80)	12.9 (2.95)	13.4 (2.62)	0.429	0.93 (0.78, 1.11)	Mean (SD)
Platelet count	65	258 (72.3)	263 (71.6)	252 (73.9)	0.541	1.00 (1.00, 1.01)	Mean (SD)
PT	7	13.6 (1.84)	14.9 (1.35)	12.5 (1.51)	0.148	3.50 (0.64, 19.09)	Mean (SD)
WCC	65	20.3 (8.25)	22.1 (8.91)	17.9 (6.68)	0.044	1.07 (1.00, 1.14)	Mean (SD)
Albumin	8	42.0 (4.87)	39.0 (2.94)	45.0 (4.76)	0.174	0.61 (0.30, 1.25)	Mean (SD)
BD	7	-5.0 (6.76)	-7.3 (7.42)	-2.0 (5.57)	0.845	0.85 (0.61, 1.17)	Mean (SD)
Bilirubin	8	9.9 (4.55)	13.3 (3.40)	6.5 (2.52)	0.996	N/A	Mean (SD)
CK	2	844 (257)	N/A	N/A	N/A	N/A	LR not done
Glucose	8	9.2 (4.50)	104 (21.0)	98 (8.5)	0.571	1.03 (0.91, 1.13)	Mean (SD)
Creatinine	9	101 (16.1)	11.5 (6.87)	7.8 (2.32)	0.298	1.27 (0.81, 1.97)	Mean (SD)
Lactate	7	4.3 (4.15)	4.8 (4.92)	3.7 (3.79)	0.715	1.08 (0.72, 1.63)	Mean (SD)
pH	7	7.29 (0.143)	7.25 (0.311)	7.31 (0.073)	0.612	0.042 (N/A)	Mean (SD)
Potassium Min	15	3.6 (0.51)	3.8 (0.60)	3.4 (0.38)	0.197	5.43 (0.42, 70.90)	Mean (SD)
Potassium Max	15	3.6 (0.51)	3.8 (0.60)	3.4 (0.38)	0.197	5.43 (0.42, 70.90)	Mean (SD)
Sodium Min	15	139 (3.2)	139 (3.9)	139 (2.3)	0.805	0.96 (0.69, 1.34)	Mean (SD)
Sodium Max	15	139 (3.0)	139 (3.7)	139 (2.3)	0.925	0.98 (0.70, 1.39)	Mean (SD)
Urea	4	7.2 (0.97)	N/A	7.2 (0.97)	N/A	N/A	Mean (SD)
Chest drain	491	33 (6.7%)	23 (8.0%)	10 (4.9%)	0.179	1.69 (0.79, 3.62)	No (% with drain)
ICP Bolt	491	0 (0%)	N/A	N/A	N/A	N/A	N/A
Operation	491	8 (1.6%)	5 (1.7%)	3 (1.5%)	0.815	1.19 (0.28, 5.03)	No (% operation)
CPR	491	6 (1.2%)	4 (1.4%)	2 (1.0%)	0.683	0.70 (0.13, 3.86)	No (% CPR)
Intubation	491	64 (13.0%)	38 (13.2%)	26 (12.7%)	0.872	1.05 (0.61, 1.78)	N/A
IV fluids	129	1424 (1124, 1805)	1363 (1009, 1842)	1492 (1024, 2173)	0.244	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	2 (0.4%)	2 (0.6%)	N/A	N/A	N/A	No (% vasopressors)

12.2.3. 0 – 4 HOURS

Variable		All MOF risk	SOFA				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min GCS	383				0.860		
GCS 3-5		101 (26.4%)	59 (26.9%)	42 (25.6%)	0.765	1.09 (0.63, 1.86)	No (% category)
GCS 6-8		49 (12.8%)	27 (12.3%)	22 (13.4%)	0.877	0.95 (0.49, 1.86)	No (% category)
GCS 9-11		37 (9.7%)	24 (11.0%)	13 (7.9%)	0.364	1.43 (0.66, 3.07)	No (% category)
GCS 12-14		79 (20.6%)	43 (19.6%)	36 (22.0%)	0.784	0.92 (0.52, 1.64)	No (% category)
GCS 15		117 (30.5%)	66 (30.1%)	51 (31.1%)	N/A	N/A	No (% category)
Time to hospital	469	67.7 (64.8, 70.6)	68.4 (64.5, 72.6)	66.6 (62.5, 70.9)	0.338	1.00 (1.00, 1.01)	GM (95% CI)
SBP	382	114 (31.9)	111 (32.5)	119 (30.6)	0.011	0.99 (0.99, 1.00)	Mean (SD)
MAP	297	88 (24.2)	87 (25.1)	89 (23.0)	0.605	1.00 (0.99, 1.01)	Mean (SD)
FiO2	67				0.166		
FiO2 21-40%		9 (13.4%)	3 (8.6%)	6 (18.8%)	N/A	N/A	No (% category)
FIO2 41-60%		28 (41.8%)	12 (34.3%)	16 (50.0%)	0.614	1.50 (0.31, 7.25)	No (% category)
FiO2 61-80%		4 (6.0%)	2 (5.7%)	2 (6.2%)	0.571	2.00 (0.18, 22.06)	No (% category)
FiO2 >80%		26 (38.8%)	18 (51.4%)	8 (25.0%)	0.068	4.50 (0.89, 22.67)	No (% category)
HR	389	107 (25.7)	110 (26.4)	102 (24.2)	0.005	1.01 (1.01, 1.02)	Mean (SD)
PCO2	69	5.9 (5.7, 6.2)	6.1 (5.8, 6.5)	5.7 (5.3, 6.1)	0.116	1.42 (0.92, 2.19)	GM (95% CI)
PO2	69	24.6 (20.9, 28.8)	24.9 (19.9, 31.2)	24.2 (19.0, 30.7)	0.894	1.00 (0.98, 1.03)	GM (95% CI)
RR Min	373	19 (6.9)	19 (7.1)	18 (6.7)	0.414	1.02 (0.98, 1.05)	Mean (SD)
RR Max	373	25 (8.3)	25 (7.9)	24 (8.8)	0.729	1.01 (0.98, 1.03)	Mean (SD)
Temperature	51	36.2 (1.04)	36.1 (1.10)	36.4 (0.92)	0.269	0.73 (0.41, 1.28)	Mean (SD)
Urine output	206	159 (77.2%)	92 (80.7%)	67 (72.8%)	0.182	1.56 (0.81, 3.00)	Categorical binary
APTT	53	30.9 (14.56)	34.4 (18.7)	27.8 (8.68)	0.168	1.05 (0.98, 1.13)	Mean (SD)
Haematocrit	133	37.1 (8.05)	35.9 (8.78)	38.6 (6.80)	0.055	0.96 (0.91, 1.00)	Mean (SD)
Haemoglobin (Hb)	156	12.6 (2.69)	12.2 (2.87)	13.1 (2.39)	0.035	0.88 (0.77, 0.99)	Mean (SD)
Platelet count	133	233 (90;.1)	240 (94.4)	224 (84.9)	0.327	1.00 (1.00, 1.01)	Mean (SD)
PT	52	14.5 (2.61)	15.4 (2.94)	13.7 (2.03)	0.030	1.39 (1.03, 1.86)	Mean (SD)
WCC	132	19.7 (8.28)	20.8 (9.18)	18.2 (6.75)	0.069	1.04 (1.00, 1.09)	Mean (SD)
Albumin	47	35.4 (7.75)	34.0 (7.45)	38.6 (7.48)	0.051	0.92 (0.84, 1.00)	Mean (SD)
BD	61	-3.3 (4.01)	-3.8 (4.81)	-2.8 (2.78)	0.350	0.94 (0.82, 1.07)	Mean (SD)
Bilirubin	47	9.6 (8.1, 11.3)	9.8 (7.6, 12.8)	9.3 (7.5, 11.6)	0.530	1.03 (0.97, 1.11)	GM (95% CI)
CK	6	789 (334)	512 (212)	927 (307)	N/A	N/A	LR not done
Glucose	64	7.8 (7.2, 8.4)	87 (23.3)	86 (16.7)	0.795	1.00 (0.98, 1.03)	GM (95% CI)
Creatinine	53	87 (20.0)	7.6 (6.9, 8.3)	8.0 (4.1, 9.3)	0.467	0.94 (0.79, 1.11)	Mean (SD)
Lactate	60	2.1 (1.8, 2.5)	2.2 (1.7, 2.8)	2.0 (1.6, 2.6)	0.512	1.09 (0.84, 1.41)	GM (95% CI)
pH	62	7.32 (0.090)	7.32 (0.100)	7.32 (0.069)	0.898	0.68 (0.00, 241.92)	Mean (SD)
Potassium Min	80	3.6 (0.56)	3.6 (0.56)	3.6 (0.57)	0.909	1.05 (0.47, 2.37)	Mean (SD)
Potassium Max	80	3.7 (0.56)	3.6 (0.57)	3.7 (0.55)	0.770	1.13 (0.49, 2.60)	Mean (SD)
Sodium Min	79	138 (3.4)	138 (3.3)	139 (3.6)	0.540	0.96 (0.84, 1.09)	Mean (SD)
Sodium Max	79	139 (3.5)	138 (3.5)	139 (3.6)	0.737	0.98 (0.86, 1.11)	Mean (SD)
Urea	26	5.1 (1.85)	5.1 (1.49)	5.2 (2.13)	0.867	0.96 (0.63, 1.48)	Mean (SD)
Chest drain	491	57 (11.6%)	38 (13.2%)	19 (9.3%)	0.183	1.49 (0.83, 2.67)	No (% with drain)
ICP Bolt	491	2 (0.4%)	2 (0.7%)	N/A	N/A	N/A	No (% with ICP Bolt)
Operation	491	57 (11.6%)	30 (10.5%)	27 (13.2%)	0.344	0.77 (0.44, 1.33)	No (% operation)
CPR	491	8 (1.6%)	5 (1.7%)	3 (1.5%)	0.815	1.19 (0.28, 5.03)	No (% CPR)
Intubation	491	88 (17.9%)	48 (16.7%)	40 (19.6%)	0.412	0.82 (0.52, 1.31)	No (% intubated)
IV fluids	179	1130 (889, 1437)	1016 (705, 1463)	1262 (920, 1731)	0.800	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	10 (2.0%)	9 (3.1%)	1 (0.5%)	0.075	6.57 (0.83, 52.29)	No (% vasopressors)

12.2.4. 0 – 6 HOURS

Variable		All MOF risk	SOFA				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min GCS	395				0.795		
GCS 3-5		157 (39.6%)	89 (39.2%)	68 (40.2%)	0.942	0.98 (0.60, 1.62)	No (% category)
GCS 6-8		40 (10.1%)	24 (10.6%)	16 (9.5%)	0.755	1.13 (0.54, 2.36)	No (% category)
GCS 9-11		25 (6.3%)	17 (7.5%)	8 (4.7%)	0.323	1.59 (0.63, 4.02)	No (% category)
GCS 12-14		69 (17.4%)	37 (16.3%)	32 (18.9%)	0.648	0.87 (0.47, 1.60)	No (% category)
GCS 15		102 (26.5%)	60 (26.4%)	45 (26.6%)	N/A	N/A	No (% category)
Time to hospital	473	68.5 (65.5, 71.7)	69.6 (65.4, 74.0)	67.1 (62.9, 71.5)	0.213	1.00 (1.00, 1.01)	GM (95% CI)
SBP	396	109 (29.6)	106 (30.6)	113 (27.8)	0.019	0.99 (0.99, 1.00)	Mean (SD)
MAP	323	81 (22.1)	81 (23.4)	83 (20.4)	0.442	1.00 (0.99, 1.01)	Mean (SD)
FiO2	133				0.050		
FiO2 21-40%		18 (13.5%)	8 (10.7%)	10 (17.2%)	N/A	N/A	No (% category)
FIO2 41-60%		51 (38.3%)	23 (30.7%)	28 (48.3%)	0.962	1.03 (0.35, 3.03)	No (% category)
FiO2 61-80%		13 (9.8%)	8 (10.7%)	5 (8.6%)	0.350	2.00 (0.47, 8.56)	No (% category)
FiO2 >80%		51 (38.3%)	36 (48.0%)	15 (25.9%)	0.052	3.00 (0.99, 9.08)	No (% category)
HR	401	108 (25.0)	110 (25.6)	104 (23.7)	0.013	1.01 (1.01, 1.02)	Mean (SD)
PCO2	152	5.7 (5.5, 5.9)	5.8 (5.5, 6.0)	5.6 (5.4, 5.9)	0.509	1.09 (0.84, 1.43)	GM (95% CI)
PO2	152	21.8 (19.8, 23.9)	21.3 (18.5, 24.4)	22.5 (19.8, 25.5)	0.878	1.00 (0.98, 1.02)	GM (95% CI)
RR Min	393	17 (6.4)	17 (6.3)	17 (6.4)	0.862	1.00 (0.96, 1.03)	Mean (SD)
RR Max	393	25 (8.5)	25 (8.2)	24 (8.9)	0.216	1.02 (0.99, 1.04)	Mean (SD)
Temperature	139	36.1 (1.04)	35.9 (1.09)	36.3 (0.97)	0.038	0.70 (0.50, 0.98)	Mean (SD)
Urine output	268	131 (48.9%)	52 (42.6%)	79 (54.1%)	0.062	1.59 (0.98, 2.58)	Categorical binary
APTT	132	29.9 (28.1, 31.8)	32.1 (29.0, 35.5)	27.6 (25.9, 29.4)	0.082	1.03 (1.00, 1.07)	GM (95% CI)
Haematocrit	207	34.5 (8.26)	33.3 (8.67)	35.8 (7.58)	0.032	0.96 (0.93, 1.00)	Mean (SD)
Haemoglobin (Hb)	223	11.7 (2.80)	11.3 (2.90)	12.2 (2.62)	0.024	0.89 (0.81, 0.99)	Mean (SD)
Platelet count	188	204 (86.6)	204 (88.9)	203 (84.3)	0.931	1.00 (1.00, 1.00)	Mean (SD)
PT	126	14.5 (14.1, 15.0)	15.0 (14.4, 15.6)	13.9 (13.3, 14.6)	0.050	1.17 (1.00, 1.36)	GM (95% CI)
WCC	187	18.6 (7.98)	19.7 (8.77)	17.2 (6.67)	0.035	1.04 (1.00, 1.08)	Mean (SD)
Albumin	125	33.1 (8.38)	30.9 (8.16)	35.8 (7.90)	0.002	0.92 (0.88, 0.97)	Mean (SD)
BD	147	-3.3 (3.69)	-3.4 (4.19)	-3.3 (3.00)	0.873	0.99 (0.91, 1.09)	Mean (SD)
Bilirubin	121	9.2 (8.4, 10.1)	9.0 (7.9, 10.3)	9.5 (8.2, 10.9)	0.874	1.00 (0.94, 1.06)	GM (95% CI)
CK	16	842 (566)	1020 (674)	664 (399)	N/A	N/A	LR not done
Glucose	150	8.1 (7.7, 8.4)	87 (82, 92)	84 (80, 89)	0.322	1.01 (0.99, 1.03)	GM (95% CI)
Creatinine	129	86 (82, 89)	7.9 (7.4, 8.3)	8.4 (7.8, 9.1)	0.161	0.92 (0.81, 1.04)	GM (95% CI)
Lactate	145	2.1 (1.9, 2.3)	2.2 (1.9, 2.6)	1.9 (1.7, 2.3)	0.187	1.14 (0.94, 1.39)	GM (95% CI)
pH	147	7.33 (0.086)	7.32 (0.093)	7.34 (0.074)	0.390	0.17 (0.00, 9.56)	Mean (SD)
Potassium Min	169	3.7 (0.56)	3.7 (0.53)	3.8 (0.61)	0.516	0.83 (0.48, 1.45)	Mean (SD)
Potassium Max	169	3.8 (0.59)	3.8 (0.52)	3.8 (0.69)	0.465	0.82 (0.49, 1.39)	Mean (SD)
Sodium Min	169	138 (3.5)	138 (3.8)	138 (3.2)	0.465	0.97 (0.89, 1.06)	Mean (SD)
Sodium Max	169	139 (3.6)	139 (3.8)	139 (3.4)	0.773	0.99 (0.91, 1.07)	Mean (SD)
Urea	71	5.1 (1.65)	4.8 (1.32)	5.3 (1.90)	0.336	0.87 (0.65, 1.16)	Mean (SD)
Chest drain	491	61 (12.4%)	40 (13.9%)	21 (10.3%)	0.229	1.41 (0.81, 2.48)	No (% with drain)
ICP Bolt	491	29 (5.9%)	18 (6.3%)	11 (5.4%)	0.684	1.17 (0.54, 2.54)	No (% with ICP Bolt)
Operation	491	110 (22.4%)	65 (22.6%)	45 (22.1%)	0.877	1.04 (0.67, 1.59)	No (% operation)
CPR	491	8 (1.6%)	5 (1.7%)	3 (1.5%)	0.815	1.19 (0.28, 5.03)	No (% CPR)
Intubation	491	132 (26.9%)	67 (23.3%)	65 (31.9%)	0.036	0.65 (0.44, 0.97)	No (% intubated)
IV fluids	235	1029 (837, 1264)	1091 (828, 1438)	966 (706, 1320)	0.597	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	35 (7.1%)	28 (9.8%)	7 (3.4%)	0.010	3.04 (1.30, 7.11)	No (% vasopressors)

12.2.5. 0 – 12 HOURS

Variable		All MOF risk	SOFA				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min GCS	442				0.110		
GCS 3-5		266 (60.2%)	166 (64.3%)	100 (54.3%)	0.453	1.22 (0.73, 2.03)	No (% category)
GCS 6-8		31 (7.0%)	15 (5.8%)	16 (8.7%)	0.379	0.69 (0.30, 1.59)	No (% category)
GCS 9-11		16 (3.6%)	9 (3.5%)	7 (3.8%)	0.915	0.94 (0.32, 2.79)	No (% category)
GCS 12-14		51 (11.5%)	23 (8.9%)	28 (15.2%)	0.163	0.60 (0.30, 1.23)	No (% category)
GCS 15		78 (17.6%)	45 (17.4%)	33 (17.9%)	N/A	N/A	No (% category)
Time to hospital	480	70.5 (67.2, 74.1)	70.6 (66.2, 75.3)	70.5 (65.3, 76.0)	0.724	1.00 (1.00, 1.00)	GM (95% CI)
SBP	444	101 (27.5)	99 (27.9)	104 (26.8)	0.058	0.99 (0.99, 1.00)	Mean (SD)
MAP	407	71 (21.1)	70 (21.4)	72 (20.9)	0.329	1.00 (0.99, 1.01)	Mean (SD)
FiO2	249				0.047		
FiO2 21-40%		36 (14.5%)	19 (12.7%)	17 (7.2%)	N/A	N/A	No (% category)
FIO2 41-60%		101 (40.6%)	53 (35.3%)	48 (48.5%)	0.975	0.99 (0.46, 2.12)	No (% category)
FiO2 61-80%		22 (8.8%)	17 (11.3%)	5 (5.1%)	0.067	3.04 (0.92, 10.03)	No (% category)
FiO2 >80%		90 (36.1%)	61 (40.7%)	29 (29.3%)	0.117	1.88 (0.85, 4.15)	No (% category)
HR	446	110 (23.9)	112 (25.1)	107 (22.0)	0.042	1.01 (1.00, 1.02)	Mean (SD)
PCO2	314	6.0 (5.9, 6.2)	6.0 (5.8, 6.2)	6.1 (5.9, 6.3)	0.685	0.96 (0.80, 1.16)	GM (95% CI)
PO2	314	14.4 (13.7, 15.2)	15.1 (14.0, 16.2)	13.7 (12.7, 14.8)	0.087	1.03 (1.00, 1.05)	GM (95% CI)
RR Min	438	14 (5.2)	14 (5.2)	14 (5.1)	0.413	1.02 (0.98, 1.06)	Mean (SD)
RR Max	438	27 (8.7)	27 (8.7)	26 (8.7)	0.057	1.02 (1.00, 1.05)	Mean (SD)
Temperature	308	36.0 (1.26)	35.9 (1.20)	36.1 (1.32)	0.164	0.88 (0.73, 1.06)	Mean (SD)
Urine output	358	285 (225, 360)	631 (565, 704)	624 (537, 725)	0.567	1.00 (1.00, 1.00)	GM (95% CI)
APTT	273	32.3 (30.6, 34.0)	33.8 (31.3, 36.5)	30.3 (28.2, 32.4)	0.123	1.01 (1.00, 1.02)	GM (95% CI)
Haematocrit	338	31.6 (8.21)	30.7 (7.73)	32.7 (8.69)	0.026	0.97 (0.94, 1.00)	Mean (SD)
Haemoglobin (Hb)	345	10.9 (2.59)	10.6 (2.41)	11.2 (2.78)	0.043	0.92 (0.84, 1.00)	Mean (SD)
Platelet count	295	172 (79.8)	167 (82.0)	179 (76.5)	0.225	1.00 (1.00, 1.00)	Mean (SD)
PT	255	14.7 (14.4, 15.0)	15.1 (14.6, 15.5)	14.3 (13.8, 14.7)	0.045	1.10 (1.00, 1.22)	GM (95% CI)
WCC	294	16.3 (7.88)	16.8 (8.80)	15.8 (6.39)	0.280	1.02 (0.99, 1.05)	Mean (SD)
Albumin	269	29.7 (9.41)	28.0 (9.20)	31.9 (9.24)	0.001	0.95 (0.93, 0.98)	Mean (SD)
BD	314	-3.9 (3.83)	-4.3 (4.11)	-3.4 (3.38)	0.038	0.94 (0.88, 1.00)	Mean (SD)
Bilirubin	262	11.4 (10.7, 12.3)	12.1 (11.0, 13.3)	10.6 (9.6, 11.8)	0.050	1.03 (1.00, 1.06)	GM (95% CI)
CK	33	2002 (2387)	2560 (2845)	1409 (1673)	N/A	N/A	LR not done
Glucose	321	8.3 (8.1, 8.5)	88 (85, 92)	84 (80, 87)	0.045	1.01 (1.00, 1.02)	GM (95% CI)
Creatinine	275	86 (84, 89)	8.2 (7.9, 8.5)	8.5 (8.1, 8.9)	0.164	0.94 (0.86, 1.03)	GM (95% CI)
Lactate	313	2.5 (2.3, 2.7)	2.8 (2.5, 3.1)	2.2 (2.0, 2.4)	0.003	1.22 (1.07, 1.39)	GM (95% CI)
pH	314	7.31 (0.082)	7.31 (0.086)	7.31 (0.078)	0.895	1.20 (0.08, 18.59)	Mean (SD)
Potassium Min	328	3.9 (0.62)	3.9 (0.58)	4.0 (0.66)	0.208	0.79 (0.55, 1.14)	Mean (SD)
Potassium Max	328	4.1 (0.68)	4.0 (0.62)	4.1 (0.75)	0.190	0.80 (0.58, 1.11)	Mean (SD)
Sodium Min	328	138 (3.6)	138 (3.9)	138 (3.2)	0.792	0.99 (0.93, 1.05)	Mean (SD)
Sodium Max	328	139 (3.6)	139 (3.9)	139 (3.2)	0.835	1.01 (0.95, 1.07)	Mean (SD)
Urea	142	5.4 (1.97)	5.4 (2.01)	5.3 (1.93)	0.862	1.02 (0.86, 1.20)	Mean (SD)
Chest drain	491	70 (14.3%)	45 (15.7%)	25 (12.3%)	0.286	1.33 (0.79, 2.25)	No (% with drain)
ICP Bolt	491	96 (19.6%)	69 (24.0%)	27 (13.2%)	0.003	2.08 (1.28, 3.38)	No (% with ICP Bolt)
Operation	491	167 (34.0%)	102 (35.5%)	65 (31.9%)	0.397	1.18 (0.81, 1.73)	No (% operation)
CPR	491	12 (2.4%)	9 (3.1%)	3 (1.5%)	0.250	0.46 (0.12, 1.72)	No (% CPR)
Intubation	491	232 (47.3%)	130 (45.3%)	102 (50.0%)	0.304	0.83 (0.58, 1.19)	No (% intubated)
IV fluids	355	1676 (1479, 1899)	1838 (1531, 2205)	1504 (1272, 1778)	0.025	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	103 (21.0%)	77 (26.8%)	26 (12.7%)	<0.001	2.51 (1.54, 4.09)	No (% vasopressors)

12.2.6. 0 – 24 HOURS

Variable		All MOF risk	SOFA				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min GCS	463				0.001		
GCS 3-5		320 (69.1%)	205 (76.2%)	115 (59.3%)	0.148	1.54 (0.86, 2.75)	No (% category)
GCS 6-8		24 (5.2%	8 (3.0%)	16 (8.2%)	0.100	0.43 (0.16, 1.18)	No (% category)
GCS 9-11		18 (3.9%)	8 (3.0%)	10 (5.2%)	0.497	0.69 (0.24, 2.02)	No (% category)
GCS 12-14		47 (10.2%)	19 (7.1%)	28 (14.4%)	0.184	0.59 (0.27, 1.29)	No (% category)
GCS 15		54 (11.7%)	29 (10.8%)	25 (12.9%)	N/A	N/A	No (% category)
Time to hospital	482	71.4 (67.8, 75.1)	71.4 (66.7, 76.3)	71.4 (65.9, 77.3)	0.885	1.00 (1.00, 1.00)	GM (95% CI)
SBP	465	97 (24.8)	94 (25.5)	100 (23.4)	0.016	0.99 (0.99, 1.00)	Mean (SD)
MAP	442	67 (18.9)	65 (18.7)	69 (19.1)	0.068	1.00 (0.99, 1.00)	Mean (SD)
FiO2	290				0.018		
FiO2 21-40%		42 (14.5%)	23 (12.8%)	19 (17.1%)	N/A	N/A	No (% category)
FIO2 41-60%		99 (34.1%)	51 (28.5%)	48 (43.2%)	0.724	0.88 (0.43, 1.810	No (% category)
FiO2 61-80%		27 (9.3%)	20 (11.2%)	7 (6.3%)	0.110	2.36 (0.82, 6.77)	No (% category)
FiO2 >80%		122 (42.1%)	85 (45.7%)	37 (33.3%)	0.081	1.90 (0.92, 3.90)	No (% category)
HR	465	113 (23.6)	115 (25.1)	110 (21.0)	0.015	1.01 (1.00, 1.02)	Mean (SD)
PCO2	372	6.3 (6.2, 6.4)	6.3 (6.2, 6.4)	6.3 (6.2, 6.5)	0.885	0.99 (0.82, 1.19)	GM (95% CI)
PO2	371	10.5 (10.1, 11.0)	10.4 (9.9, 10.9)	10.7 (10.1, 11.5)	0.316	0.98 (0.94, 1.02)	GM (95% CI)
RR Min	455	13 (4.5)	13 (4.3)	13 (4.8)	0.969	1.00 (0.96, 1.04)	Mean (SD)
RR Max	455	29 (9.2)	30 (9.2)	29 (9.1)	0.018	1.03 (1.00, 1.05)	Mean (SD)
Temperature	362	35.8 (1.16)	35.7 (1.09)	36.0 (1.22)	0.004	0.75 (0.61, 0.91)	Mean (SD)
Urine output	389	1144 (991, 1323)	1474 (1352, 1607)	1442 (1304, 1594)	0.421	1.00 (1.00, 1.00)	GM (95% CI)
APTT	351	34.6 (33.1, 36.3)	36.7 (34.4, 39.2)	31.9 (30.1, 33.9)	0.042	1.01 (1.00, 1.02)	GM (95% CI)
Haematocrit	380	28.7 (7.53)	27.5 (6.71)	30.2 (8.28)	0.001	0.95 (0.93, 0.98)	Mean (SD)
Haemoglobin (Hb)	385	10.0 (2.43)	9.6 (2.19)	10.4 (2.64)	0.002	0.87 (0.80, 0.95)	Mean (SD)
Platelet count	355	150 (73.2)	143 (74.0)	158 (71.5)	0.055	1.00 (1.00, 1.00)	Mean (SD)
PT	339	15.0 (14.8, 15.3)	15.5 (15.1, 15.8)	14.5 (14.1, 14.9)	0.002	1.15 (1.05, 1.26)	GM (95% CI)
WCC	355	15.5 (7.62)	15.7 (5.95)	15.2 (6.11)	0.552	1.01 (0.98, 1.04)	Mean (SD)
Albumin	354	27.0 (8.91)	24.8 (8.45)	30.0 (8.67)	<0.001	0.93 (0.91, 0.96)	Mean (SD)
BD	369	-3.8 (4.42)	-4.4 (4.66)	-2.9 (3.91)	0.002	0.92 (0.88, 0.97)	Mean (SD)
Bilirubin	348	13.9 (13.1, 14.7)	14.4 (13.3, 15.5)	13.2 (12.1, 14.4)	0.192	1.02 (0.99, 1.04)	GM (95% CI)
CK	68	3603 (4583)	4242 (5181)	2431 (2965)	N/A	N/A	LR not done
Glucose	375	8.6 (8.4, 8.8)	92 (89, 95)	85 (81, 88)	0.003	1.01 (1.01, 1.02)	GM (95% CI)
Creatinine	356	89 (86, 91)	8.5 (8.3, 8.8)	8.8 (8.4, 9.2)	0.243	0.95 (0.87, 1.04)	GM (95% CI)
Lactate	368	2.6 (2.5, 2.8)	2.9 (2.7, 3.2)	2.2 (2.0, 2.4)	<0.001	1.27 (1.12, 1.44)	GM (95% CI)
pH	369	7.30 (0.079)	7.30 (0.081)	7.29 (0.076)	0.363	3.36 (0.25, 45.88)	Mean (SD)
Potassium Min	379	2.9 (0.54)	3.8 (0.51)	3.9 (0.58)	0.133	0.75 (0.51, 1.09)	Mean (SD)
Potassium Max	379	4.3 (0.62)	4.2 (0.57)	4.3 (0.69)	0.071	0.74 (0.53, 1.03)	Mean (SD)
Sodium Min	379	138 (3.6)	138 (3.7)	138 (3.4)	0.583	1.02 (0.96, 1.08)	Mean (SD)
Sodium Max	379	141 (3.8)	140 (3.6)	141 (3.9)	0.024	1.07 (1.01, 1.13)	Mean (SD)
Urea	189	5.8 (3.28)	5.6 (2.24)	6.1 (4.19)	0.350	0.96 (0.87, 1.05)	Mean (SD)
Any transfusion	491	145 (29.5%)	93 (32.4%)	52 (25.5%)	0.099	1.40 (0.94, 2.09)	No (% transfused)
Cryoprecipitate	491	10 (2.0%)	7 (2.4%)	3 (1.5%)	0.459	1.68 (0.43, 6.56)	No (% transfused)
FFP	491	52 (10.6%)	34 (11.8%)	18 (8.8%)	0.285	1.39 (0.76, 2.54)	No (% transfused)
Platelets	491	25 (5.1%)	20 (7.0%)	5 (2.5%)	0.032	2.98 (1.10, 8.08)	No (% transfused)
PRBCs	491	124 (25.3%)	81 (28.2%)	43 (21.1%)	0.073	1.47 (0.96, 2.25)	No (% transfused)
Transfusion level	491				0.038		No (% transfused)
Transfusion		114 (23.2%)	68 (23.7%)	46 (22.5%)	0.503	1.16 (0.75, 1.78)	No (% transfused)
Massive transfusion		31 (6.3%)	25 (8.7%)	6 (2.9%)	0.011	3.27 (1.31, 8.16)	No (% transfused)
Chest drain	491	77 (15.7%)	51 (17.8%)	26 (12.7%)	0.133	1.48 (0.89, 2.47)	No (% with drain)
ICP Bolt	491	125 (25.5%)	91 (31.7%)	34 (16.7%)	<0.001	2.32 (1.49, 3.62)	No (% with ICP Bolt)
Operation	491	227 (46.2%)	134 (46.7%)	93 (45.6%)	0.809	1.05 (0.73, 1.50)	No (% operation)
CPR	491	17 (3.5%)	11 (3.8%)	6 (2.9%)	0.595	0.76 (0.28, 2.09)	No (% CPR)
Intubation	491	270 (55.0%)	160 (55.7%)	110 (53.9%)	0.688	1.08 (0.75, 1.54)	No (% intubated)
IV fluids	404	3627 (3299, 3987)	4127 (3586, 4750)	3083 (2741, 3469)	<0.001	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	142 (28.9%)	110 (38.3%)	32 (15.7%)	<0.001	3.34 (2.14, 5.22)	No (% vasopressors)

12.2.7. 0 – 48 HOURS

Variable		All MOF risk	SOFA				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min GCS	485				<0.001		
GCS 3-5		354 (73.0%)	227 (80.2%)	127 (62.9%)	0.259	1.46 (0.76, 2.83)	No (% category)
GCS 6-8		29 (6.0%)	10 (3.5%)	19 (9.4%)	0.094	0.43 (0.16, 1.16)	No (% category)
GCS 9-11		15 (3.1%)	6 (2.1%)	9 (4.5%)	0.325	0.55 (0.16, 1.82)	No (% category)
GCS 12-14		47 (9.7%)	18 (16.4%)	29 (14.4%)	0.121	0.51 (0.22, 1.20)	No (% category)
GCS 15		40 (8.2%)	22 (7.8%)	18 (8.9%)	N/A	N/A	No (% category)
Time to hospital	491	75.6 (71.0, 80.5)	75.5 (69.5, 82.0)	75.8 (68.7, 83.6)	0.963	1.00 (1.00, 1.00)	GM (95% CI)
SBP	487	94 (25.3)	92 (27.1)	98 (22.1)	0.019	0.99 (0.99, 1.00)	Mean (SD)
MAP	472	65 (19.3)	64 (19.6)	66 (18.9)	0.109	1.00 (0.98, 1.00)	Mean (SD)
FiO2	321				<0.001		
FiO2 21-40%		40 (12.5%)	20 (10.3%)	20 (15.7%)	N/A	N/A	No (% category)
FIO2 41-60%		86 (26.8%)	37 (19.1%)	49 (38.6%)	0.464	0.76 (0.36, 1.60)	No (% category)
FiO2 61-80%		22 (6.9%)	14 (7.2%)	8 (6.3%)	0.304	1.75 (0.60, 5.09)	No (% category)
FiO2 >80%		173 (53.9%)	123 (63.4%)	50 (39.4%)	0.012	2.46 (1.22, 4.96)	No (% category)
HR	488	116 (23.6)	118 (25.5)	113 (20.4)	0.027	1.01 (1.00, 1.02)	Mean (SD)
PCO2	411	6.6 (6.4, 6.7)	6.6 (6.4, 6.7)	6.5 (6.4, 6.7)	0.482	1.06 (0.90, 1.26)	GM (95% CI)
PO2	410	8.8 (8.5, 9.1)	8.5 (8.1, 8.8)	9.3 (8.7, 9.9)	0.001	0.90 (0.85, 0.96)	GM (95% CI)
RR Min	476	12 (4.2)	12 (3.8)	12 (4.8)	0.904	1.00 (0.96, 1.04)	Mean (SD)
RR Max	476	31 (8.9)	32 (8.8)	29 (8.8)	0.001	1.04 (1.01, 1.06)	Mean (SD)
Temperature	410	35.7 (1.11)	35.5 (1.04)	36.0 (1.14)	<0.001	0.65 (0.53, 0.80)	Mean (SD)
Urine output	419	2444 (2201, 2714)	3032 (2812, 3270)	2308 (2069, 2576)	0.001	1.00 (1.00, 1.00)	GM (95% CI)
APTT	404	36.4 (35.0, 38.0)	39.2 (37.0, 41.5)	33.2 (31.4, 35.1)	0.014	1.01 (1.00, 1.02)	GM (95% CI)
Haematocrit	416	26.8 (7.09)	25.1 (5.75)	29.0 (8.00)	<0.001	0.92 (0.89, 0.95)	Mean (SD)
Haemoglobin (Hb)	420	9.3 (2.26)	8.7 (1.79)	10.0 (2.57)	<0.001	0.76 (0.69, 0.84)	Mean (SD)
Platelet count	404	130 (64.1)	120 (58.8)	144 (68.1)	<0.001	1.00 (1.00, 1.00)	Mean (SD)
PT	398	15.3 (15.1, 15.6)	15.9 (15.5, 16.3)	14.6 (14.3, 14.9)	<0.001	1.21 (1.11, 1.32)	GM (95% CI)
WCC	404	15.3 (7.25)	15.6 (8.09)	14.8 (5.95)	0.278	1.02 (0.99, 1.04)	Mean (SD)
Albumin	403	25.4 (8.13)	22.9 (7.26)	28.9 (7.99)	<0.001	0.90 (0.88, 0.93)	Mean (SD)
BD	409	-3.4 (5.12)	-4.4 (5.30)	-2.1 (4.57)	<0.001	0.91 (0.87, 0.95)	Mean (SD)
Bilirubin	397	15.6 (14.9, 16.5)	16.5 (15.4, 17.6)	14.6 (13.5, 15.8)	0.038	1.02 (1.00, 1.04)	GM (95% CI)
CK	99	4643 (6652)	4991 (6857)	3914 (6244)	0.455	1.00 (1.00, 1.00)	Mean (SD)
Glucose	414	9.0 (8.8, 9.2)	95 (91, 99)	85 (82, 88)	0.001	1.01 (1.01, 1.02)	GM (95% CI)
Creatinine	403	90 (88, 93)	8.9 (8.6, 9.1)	9.2 (8.9, 9.6)	0.097	0.93 (0.86, 1.01)	GM (95% CI)
Lactate	407	2.6 (2.4, 2.8)	3.1 (2.8, 3.3)	2.1 (1.9, 2.3)	<0.001	1.38 (1.22, 1.58)	GM (95% CI)
pH	409	7.29 (0.080)	7.29 (0.081)	7.28 (0.078)	0.245	4.32 (0.37, 50.92)	Mean (SD)
Potassium Min	419	3.8 (0.50)	3.7 (0.48)	3.8 (0.52)	0.095	0.71 (0.48, 1.06)	Mean (SD)
Potassium Max	419	4.3 (0.62)	4.3 (0.58)	4.4 (0.57)	0.073	0.75 (0.55, 1.03)	Mean (SD)
Sodium Min	419	137 (3.7)	138 (3.6)	137 (3.7)	0.122	1.04 (0.99, 1.10)	Mean (SD)
Sodium Max	419	141 (4.3)	142 (4.3)	140 (4.1)	<0.001	1.13 (1.07, 1.19)	Mean (SD)
Urea	216	6.5 (3.73)	6.3 (2.99)	6.7 (4.46)	0.479	0.97 (0.91, 1.05)	Mean (SD)
Any transfusion	491	145 (29.5%)	93 (32.4%)	52 (25.5%)	0.099	1.40 (0.94, 2.09)	No (% transfused)
Cryoprecipitate	491	10 (2.0%)	7 (2.4%)	3 (1.5%)	0.459	1.68 (0.43, 6.56)	No (% transfused)
FFP	491	52 (10.6%)	34 (11.8%)	18 (8.8%)	0.285	1.39 (0.76, 2.54)	No (% transfused)
Platelets	491	25 (5.1%)	20 (7.0%)	5 (2.5%)	0.032	2.98 (1.10, 8.08)	No (% transfused)
PRBCs	491	124 (25.3%)	81 (28.2%)	43 (21.1%)	0.073	1.47 (0.96, 2.25)	No (% transfused)
Transfusion level	491				0.038		No (% transfused)
Transfusion		114 (23.2%)	68 (23.7%)	46 (22.5%)	0.503	1.16 (0.75, 1.78)	No (% transfused)
Massive transfusion		31 (6.3%)	25 (8.7%)	6 (2.9%)	0.011	3.27 (1.31, 8.16)	No (% transfused)
Chest drain	491	93 (18.9%)	64 (22.3%)	29 (14.2%)	0.025	1.73 (1.07, 2.80)	No (% with drain)
ICP Bolt	491	135 (27.5%)	97 (33.8%)	38 (18.6%)	<0.001	2.23 (1.45, 3.43)	No (% with ICP Bolt)
Intra-operative time	491	168 (156, 181)	163 (147, 185)	177 (158, 198)	0.910	1.00 (1.00, 1.00)	GM (95% CI)
Operation	491	268 (54.6%)	154 (53.7%)	114 (55.9%)	0.626	0.91 (0.64, 1.31)	No (% operation)
CPR	491	24 (4.9%)	17 (5.9%)	7 (3.4%)	0.212	0.56 (0.23, 1.39)	No (% CPR)
Intubation	491	300 (61.1%)	178 (62.0%)	122 (59.8%)	0.620	1.10 (0.76, 1.59)	No (% intubated)
IV fluids	489	8092 (7506, 8724)	10853 (9983, 11800)	5332 (4746, 5991)	<0.001	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	173 (35.2%)	134 (46.7%)	39 (19.1%)	<0.001	3.71 (2.44, 5.63)	No (% vasopressors)

12.3. MARSHALL MOF UNIVARIATE ANALYSIS

12.3.1. FIXED TIME VARIABLES

Variable		All MOF risk	Marshall				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	40.1 (37.6, 42.8)	36.6 (34.7, 38.6)	0.034	1.01 (1.00, 1.02)	GM (95% CI)
BMI	83	25.6 (4.7)	26.1 (5.2)	24.9 (3.9)	0.270	1.06 (0.96, 1.17)	Mean (SD)
Sex	491	371 (75.5%)	157 (78.9%)	214 (73.3%)	0.157	1.36 (0.89, 2.09)	No (% male)
CV disease	470	29 (6.2%)	16 (8.5%)	13 (4.6%)	0.094	1.91 (0.90, 4.06)	No (% yes)
Diabetes	470	21 (4.5%)	5 (2.6%)	16 (5.7%)	0.126	0.45 (0.16, 1.25)	No (% yes)
Drugs/alcohol	470	39 (8.3%)	20 (10.6%)	19 (6.8%)	0.144	1.63 (0.85, 3.15)	No (% yes)
Hepatic disease	470	5 (1.1%)	5 (2.6%)	0 (0.0%)	0.999	N/A	No (% yes)
Immunocompromise	470	6 (1.3%)	2 (1.1%)	4 (1.4%)	0.730	0.74 (0.13, 4.09)	No (% yes)
Malignancy	470	9 (1.9%)	5 (2.6%)	4 (1.4%)	0.351	1.88 (0.50, 7.10)	No (% yes)
Other PMH	470	157 (33.4%)	64 (33.9%)	93 (33.1%)	0.863	1.04 (0.70, 1.53)	No (% yes)
PMH	470	219 (46.6%)	89 (47.1%)	130 (46.3%)	0.860	1.03 (0.71, 1.50)	No (% yes)
Psychiatric	470	38 (8.1%)	14 (7.4%)	24 (8.5%)	0.659	0.86 (0.43, 1.70)	No (% yes)
Renal disease	470	8 (1.7%)	4 (2.1%)	4 (1.4%)	0.572	1.50 (0.37, 6.06)	No (% yes)
Respiratory disease	470	56 (11.9%)	26 (13.8%)	30 (10.7%)	0.313	1.34 (0.76, 2.34)	No (% yes)
Head Injury	486	285 (58.6%)	128 (65.3%)	157 (54.1%)	0.014	1.60 (1.10, 2.32)	No (% injured)
Face Injury	486	126 (25.9%)	53 (27.0%)	73 (25.2%)	0.645	1.10 (0.73, 1.66)	No (% injured)
Chest Injury	486	299 (61.5%)	134 (68.4%)	165 (56.9%)	0.011	1.64 (1.12, 2.40)	No (% injured)
Abdo Injury	486	170 (35.0%)	84 (42.9%)	86 (29.7%)	0.003	1.78 (1.22, 2.60)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	142 (72.4%)	180 (62.1%)	0.018	1.61 (1.09, 2.38)	No (% injured)
External Injury	486	176 (36.2%)	64 (32.7%)	112 (38.6%)	0.180	0.77 (0.53, 1.13)	No (% injured)
ISS	486	25.3 (12.5)	28.7 (13.7)	23.0 (11.1)	<0.001	1.04 (1.02, 1.06)	Mean (SD)
NISS	486	34.7 (15.2)	38.4 (15.9)	32.3 (14.4)	<0.001	1.03 (1.02, 1.04)	Mean (SD)
Blunt	491	477 (97.1%)	196 (98.5%)	281 (96.2%)	0.154	2.56 (0.70, 9.29)	No (% blunt)
Mechanism	491				0.458		
Protective gear	193	141 (73.1%)	54 (74.0%)	87 (72.5%)	0.823	0.93 (0.48, 1.79)	No (% with)
Trapped	479	153 (31.9%)	68 (34.7%)	85 (30.0%)	0.283	1.24 (0.84, 1.83)	No (% trapped)
Vehicle position	342				0.896		
1st GCS	370				0.179		
1st GCS 3-5		62 (16.8%)	31 (21.5%)	31 (13.7%)	0.031	1.96 (1.06, 3.60)	No (% category)
1st GCS 6-8		53 (14.3%)	24 (16.7%)	29 (12.8%)	0.143	1.62(0.85, 3.09)	No (% category)
1st GCS 9-11		40 (10.8%)	16 (11.1%)	24 (10.6%)	0.471	1.31 (0.63, 2.69)	No (% category)
1st GCS 12-14		76 (20.5%)	26 (18.1%)	50 (22.1%)	0.953	1.02 (0.56, 1.84)	No (% category)
1st GCS 15		139 (37.6%)	47 (32.6%)	92 (40.7%)	N/A	N/A	No (% category)

12.3.2. 0 – 2 HOURS

Variable		All MOF risk	Marshall				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min GCS	370				0.233		
GCS 3-5		71 (19.2%)	36 (25.0%)	35 (15.5%)	0.030	1.94 (1.07, 3.52)	No (% category)
GCS 6-8		52 (14.1%)	21 (14.6%)	31 (13.7%)	0.477	1.27 (0.65, 2.49)	No (% category)
GCS 9-11		41 (11.1%)	15 (10.4%)	26 (11.5%)	0.828	1.09 (0.52, 2.27)	No (% category)
GCS 12-14		85 (23.0%	30 (20.8%)	55 (24.3%)	0.931	1.03 (0.57, 1.84)	No (% category)
GCS 15		121 (32.7%)	42 (29.2%)	79 (35.0%)	N/A	N/A	No (% category)
Time to hospital	430	67.7 (24.2)	68.7 (1.9)	67.1 (1.4)	0.502	1.00 (1.00, 1.01)	Mean (SD)
SBP	367	118 (34.2)	114 (36.1)	120 (32.8)	0.103	1.00 (0.99, 1.00)	Mean (SD)
MAP	255	91 (23.3)	88 (26.5)	92 (21.2)	0.119	0.99 (0.98, 1.00)	Mean (SD)
FiO2	12				0.895		
FiO2 21-40%		5 (41.7%)	2 (50.0%)	3 (37.5%)	N/A	N/A	No (% category)
FIO2 41-60%		4 (33.3%)	1 (25.0%)	3 (37.5%)	0.638	0.50 (0.03, 8.95)	No (% category)
FiO2 61-80%		0 (0%)	0 (0%)	0 (0%)	N/A	N/A	No (% category)
FiO2 >80%		3 (25.0%)	1 (25.0%)	2 (25.0%)	0.851	0.75 (0.04, 14.97)	No (% category)
HR	375	106 (26.3)	110 (27.9)	103 (24.8)	0.007	1.01 (1.00, 1.02)	Mean (SD)
PCO2	14	6.2 (1.7)	6.3 (1.0)	6.1 (2.1)	0.811	1.08 (0.56, 2.09)	Mean (SD)
PO2	14	25.8 (22.5)	21.2 (20.2)	29.3 (24.9)	0.811	1.08 (0.56, 2.09)	Mean (SD)
RR Min	357	20 (7.0)	21 (7.2)	19 (6.7)	0.002	1.05 (10.2, 1.09)	Mean (SD)
RR Max	357	24 (8.3)	25 (8.1)	24 (8.4)	0.190	1.02 (0.99, 1.04)	Mean (SD)
Temperature	3	37.3 (1.54)	N/A	37.3 (1.54)	N/A	N/A	Mean (SD)
Urine output	182	180 (98.9%)	67 (98.5%)	113 (99.1%)	0.713	0.59 (0.04, 9.64)	Categorical binary
APTT	8	26.7 (4.53)	26.0 (4.88)	26.9 (4.87)	0.788	0.95 (0.65, 1.39)	Mean (SD)
Haematocrit	58	38.7 (8.12)	36.5 (9.06)	39.9 (7.44)	0.140	0.95 (0.88, 1.02)	Mean (SD)
Haemoglobin (Hb)	69	13.1 (2.80)	12.2 (3.17)	13.6 (2.48)	0.057	0.83 (0.69, 1.01)	Mean (SD)
Platelet count	65	258 (72.3)	256 (68.8)	259 (74.7)	0.887	1.00 (1.00, 1.01)	Mean (SD)
PT	7	13.6 (1.84)	N/A	13.1 (1.52)	N/A	N/A	Mean (SD)
WCC	65	20.3 (8.25)	20.1 (9.03)	20.4 (7.90)	0.853	0.99 (0.93, 1.06)	Mean (SD)
Albumin	8	42.0 (4.87)	41.0 (2.83)	42.3 (5.57)	0.722	0.93 (0.64, 1.36)	Mean (SD)
BD	7	-5.0 (6.76)	-7.3 (7.41)	-2.0 (5.57)	0.315	0.85 (0.61, 1.17)	Mean (SD)
Bilirubin	8	9.9 (4.55)	14.0 (5.66)	8.5 (3.67)	0.196	1.49 (0.81, 2.73)	Mean (SD)
CK	2	844 (257)	N/A	N/A	N/A	N/A	LR not done
Glucose	8	9.2 (4.50)	9.3 (N/A)	9.1 (4.85)	0.837	1.05 (0.66, 1.66)	Mean (SD)
Creatinine	9	101 (16.1)	125 (9.9)	94 (9.0)	0.998	N/A	Mean (SD)
Lactate	7	4.3 (4.15)	4.8 (4.92)	3.7 (2.79)	0.715	1.08 (0.72, 1.63)	Mean (SD)
pH	7	7.29 (0.143)	N/A	7.29 (0.143)	N/A	N/A	Mean (SD)
Potassium Min	15	3.6 (0.51)	3.9 (0.63)	3.5 (0.44)	0.182	5.57 (0.45, 69.43)	Mean (SD)
Potassium Max	15	3.6 (0.51)	3.9 (0.63)	3.5 (0.44)	0.182	5.57 (0.45, 69.43)	Mean (SD)
Sodium Min	15	139 (3.2)	138 (4.6)	139 (2.5)	0.518	0.89 (0.63, 1.27)	Mean (SD)
Sodium Max	15	139 (3.0)	139 (4.3)	139 (2.5)	0.665	0.92 (0.64, 1.33)	Mean (SD)
Urea	4	7.2 (0.97)	N/A	7.2 (0.97)	N/A	N/A	Mean (SD)
Chest drain	491	33 (6.7%)	18 (9.0%)	15 (5.1%)	0.094	1.84 (0.90, 3.74)	No (% with drain)
ICP Bolt	491	0 (0%)	N/A	N/A	N/A	N/A	N/A
Operation	491	8 (1.6%)	4 (2.0%)	4 (1.4%)	0.585	1.48 (0.37, 5.98)	No (% operation)
CPR	491	6 (1.2%)	3 (1.5%)	3 (1.0%)	0.637	1.47 (0.30, 7.38)	No (% CPR)
Intubation	491	64 (13.0%)	29 (14.6%)	35 (12.0%)	0.404	1.25 (0.74, 2.13)	N/A
IV fluids	129	1424 (1124, 1805)	1397 (900, 1267)	1439 (1082, 1913)	0.622	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	2 (0.4%)	2 (1.0%)	N/A	N/A	N/A	No (% vasopressors)

12.3.3. 0 – 4 HOURS

Variable		All MOF risk	Marshall				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min GCS	383				0.449		
GCS 3-5		101 (26.4%)	46 (30.7%)	55 (23.6%)	0.088	1.61 (0.93, 2.78)	No (% category)
GCS 6-8		49 (12.8%)	21 (14.0%)	28 (12.0%)	0.292	1.44 (0.73, 2.86)	No (% category)
GCS 9-11		37 (9.7%)	15 (10.0%)	22 (9.4%)	0.483	1.31 (0.61, 2.81)	No (% category)
GCS 12-14		79 (20.6%)	28 (18.7%)	51 (21.9%)	0.856	1.06 (0.58, 1.92)	No (% category)
GCS 15		117 (30.5%)	40 (26.7%)	77 (33.0%)	N/A	N/A	No (% category)
Time to hospital	469	67.7 (64.8, 70.6)	68.9 (63.9, 74.3)	66.8 (63.4, 70.3)	0.160	1.00 (1.00, 1.01)	GM (95% CI)
SBP	382	114 (31.9)	112 (34.2)	116 (30.3)	0.181	1.00 (0.99, 1.00)	Mean (SD)
MAP	297	88 (24.2)	88 (25.8)	88 (23.3)	0.772	1.00 (0.99, 1.01)	Mean (SD)
FiO2	67				0.156		
FiO2 21-40%		9 (13.4%)	1 (4.2%)	8 (18.6%)	N/A	N/A	No (% category)
FIO2 41-60%		28 (41.8%)	9 (37.5%)	19 (44.2%)	0.241	3.79 (0.41, 35.07)	No (% category)
FiO2 61-80%		4 (6.0%)	0 (0%)	4 (9.3%)	0.999	N/A	No (% category)
FiO2 >80%		26 (38.8%)	14 (58.3%)	12 (27.9%)	0.048	9.33 (1.02, 85.70)	No (% category)
HR	389	107 (25.7)	111 (27.5)	104 (24.1)	0.006	1.01 (1.00, 1.02)	Mean (SD)
PCO2	69	5.9 (5.7, 6.2)	6.0 (5.6, 6.4)	5.9 (5.5, 6.2)	0.653	1.10 (0.73, 1.64)	GM (95% CI)
PO2	69	24.6 (20.9, 28.8)	23.2 (18.2, 29.7)	25.5 (20.5 (31.8)	0.653	1.10 (0.73, 1.64)	GM (95% CI)
RR Min	373	19 (6.9)	19 (7.1)	18 (6.8)	0.063	1.03 (1.00, 1.06)	Mean (SD)
RR Max	373	25 (8.3)	25 (8.2)	25 (8.4)	0.869	1.00 (0.98, 1.03)	Mean (SD)
Temperature	51	36.2 (1.04)	36.0 (1.14)	36.4 (0.93)	0.229	0.70 (0.39, 1.26)	Mean (SD)
Urine output	206	159 (77.2%)	70 (76.9%)	99 (77.3%)	0.944	0.98 (0.50, 1.91)	Categorical binary
APTT	53	30.9 (14.56)	35.5 (20.89)	28.1 (8.02)	0.146	1.05 (0.98, 1.12)	Mean (SD)
Haematocrit	133	37.1 (8.05)	34.5 (9.20)	38.8 (6.75)	0.004	0.93 (0.89, 0.98)	Mean (SD)
Haemoglobin (Hb)	156	12.6 (2.69)	11.7 (2.99)	13.1 (2.35)	0.003	0.82 (0.72, 0.93)	Mean (SD)
Platelet count	133	233 (90;.1)	231 (81.5)	233 (94.9)	0.896	1.00 (1.00, 1.00)	Mean (SD)
PT	52	14.5 (2.61)	15.6 (3.31)	13.8 (1.88)	0.035	1.35 (1.02, 1.77)	Mean (SD)
WCC	132	19.7 (8.28)	20.7 (9.64)	19.0 (7.29)	0.270	1.02 (0.98, 1.07)	Mean (SD)
Albumin	47	35.4 (7.75)	34.5 (8.34)	37.5 (7.30)	0.199	0.95 (0.88, 1.03)	Mean (SD)
BD	61	-3.3 (4.01)	-4.9 (4.58)	-2.2 (3.10)	0.015	0.81 (0.69, 0.96)	Mean (SD)
Bilirubin	47	9.6 (8.1, 11.3)	10.2 (7.3, 14.3)	9.2 (7.6, 11.0)	0.277	1.05 (0.96, 1.14)	GM (95% CI)
CK	6	789 (334)	512 (212)	927 (307)	N/A	N/A	LR not done
Glucose	64	7.8 (7.2, 8.4)	7.7 (6.9, 8.5)	7.8 (7.0, 8.8)	0.579	0.95 (0.80, 1.14)	GM (95% CI)
Creatinine	53	87 (20.0)	89 (26.0)	85 (15.6)	0.492	1.01 (0.98, 1.04)	Mean (SD)
Lactate	60	2.1 (1.8, 2.5)	2.5 (1.9, 3.4)	1.8 (1.5, 2.3)	0.073	1.32 (0.98, 1.77)	GM (95% CI)
pH	62	7.32 (0.090)	7.31 (0.094)	7.33 (0.086)	0.234	0.03 (0.00, 9.79)	Mean (SD)
Potassium Min	80	3.6 (0.56)	3.8 (0.65)	3.5 (0.47)	0.06	2.27 (0.97, 5.32)	Mean (SD)
Potassium Max	80	3.7 (0.56)	3.8 (0.64)	3.6 (0.46)	0.046	2.45 (1.02, 5.91)	Mean (SD)
Sodium Min	79	138 (3.4)	138 (3.3)	139 (3.5)	0.212	0.92 (0.80, 1.05)	Mean (SD)
Sodium Max	79	139 (3.5)	138 (3.5)	139 (3.5)	0.258	0.93 (0.81, 1.06)	Mean (SD)
Urea	26	5.1 (1.85)	5.1 (1.76)	5.2 (1.94)	0.937	0.98 (0.62, 1.55)	Mean (SD)
Chest drain	491	57 (11.6%)	28 (14.1%)	29 (9.9%)	0.162	1.49 (0.85, 2.58)	No (% with drain)
ICP Bolt	491	2 (0.4%)	1 (0.5%)	1 (0.3%)	0.786	1.47 (0.09, 23.64)	No (% with ICP Bolt)
Operation	491	57 (11.6%)	20 (10.1%)	37 (12.7%)	0.374	0.77 (0.43, 1.37)	No (% operation)
CPR	491	8 (1.6%)	4 (2.0%)	4 (1.4%)	0.585	1.48 (0.37, 5.98)	No (% CPR)
Intubation	491	88 (17.9%)	34 (17.1%)	54 (18.5%)	0.690	0.91 (0.57, 1.46)	No (% intubated)
IV fluids	179	1130 (889, 1437)	901 (550, 1477)	1271 (976, 1654)	0.922	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	10 (2.0%)	2 (1.0%)	8 (4.0%)	0.023	6.07 (1.28, 28.91)	No (% vasopressors)

12.3.4. 0 – 6 HOURS

Variable		All MOF risk	Marshall				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min GCS	395				0.571		
GCS 3-5		157 (39.6%)	66 (41.8%)	91 (38.2%)	0.208	1.39 (0.83, 2.32)	No (% category)
GCS 6-8		40 (10.1%)	18 (11.4%)	22 (9.2%)	0.235	1.57 (0.75, 3.29)	No (% category)
GCS 9-11		25 (6.3%)	12 (7.6%)	13 (5.5%)	0.205	1.78 (0.73, 4.27)	No (% category)
GCS 12-14		69 (17.4%)	26 (16.5%)	43 (18.1%)	0.647	1.16 (0.62, 2.18)	No (% category)
GCS 15		102 (26.5%)	36 (22.8%)	69 (29.0%)	N/A	N/A	No (% category)
Time to hospital	473	68.5 (65.5, 71.7)	70.0 (64.8, 75.8)	67.5 (64.0, 71.2)	0.133	1.00 (1.00, 1.01)	GM (95% CI)
SBP	396	109 (29.6)	107 (32.0)	111 (27.9)	0.182	1.00 (0.99, 1.00)	Mean (SD)
MAP	323	81 (22.1)	80 (24.1)	82 (20.8)	0.429	1.00 (0.99, 1.01)	Mean (SD)
FiO2	133				0.201		
FiO2 21-40%		18 (13.5%)	6 (10.9%)	12 (15.4%)	N/A	N/A	No (% category)
FIO2 41-60%		51 (38.3%)	17 (30.9%)	34 (43.6%)	1.000	1.00 (0.32, 3.13)	No (% category)
FiO2 61-80%		13 (9.8%)	5 (9.1%)	8 (10.3%)	0.769	1.25 (0.28, 5.53)	No (% category)
FiO2 >80%		51 (38.3%)	27 (49.1%)	24 (30.8%)	0.157	2.25 (0.73, 6.92)	No (% category)
HR	401	108 (25.0)	111 (26.6)	105 (23.6)	0.015	1.01 (1.00, 1.02)	Mean (SD)
PCO2	152	5.7 (5.5, 5.9)	5.8 (5.5, 6.1)	5.7 (5.4, 5.9)	0.634	1.07 (0.82, 1.39)	GM (95% CI)
PO2	152	21.8 (19.8, 23.9)	19.8 (16.9, 23.1)	23.1 (20.5, 26.1)	0.634	1.07 (0.82, 1.40)	GM (95% CI)
RR Min	393	17 (6.4)	17 (6.4)	17 (6.4)	0.353	1.02 (0.99, 1.05)	Mean (SD)
RR Max	393	25 (8.5)	25 (8.5)	25 (8.5)	0.750	1.00 (0.98, 1.03)	Mean (SD)
Temperature	139	36.1 (1.04)	35.8 (1.11)	36.3 (0.97)	0.014	0.64 (0.45, 0.92)	Mean (SD)
Urine output	268	131 (48.9%)	51 (51.0%)	80 (47.6%)	0.592	1.15 (0.70, 1.88)	Categorical binary
APTT	132	29.9 (28.1, 31.8)	33.3 (29.4, 37.6)	27.6 (26.2, 29.1)	0.033	1.04 (1.00, 1.08)	GM (95% CI)
Haematocrit	207	34.5 (8.26)	31.8 (8.96)	36.1 (7.38)	<0.001	0.94 (0.90, 0.97)	Mean (SD)
Haemoglobin (Hb)	223	11.7 (2.80)	10.8 (2.94)	12.3 (2.57)	<0.001	0.90 (0.82, 0.98)	Mean (SD)
Platelet count	188	204 (86.6)	195 (79.8)	209 (90.4)	0.286	1.00 (1.00, 1.00)	Mean (SD)
PT	126	14.5 (14.1, 15.0)	15.3 (14.5,16.0)	14.0 (13.5, 14.5)	0.016	1.21 (1.04, 1.41)	GM (95% CI)
WCC	187	18.6 (7.98)	19.5 (9.17)	18.0 (7.06)	0.200	1.02 (0.99, 1.06)	Mean (SD)
Albumin	125	33.1 (8.38)	29.5 (8.96)	35.5 (7.08)	<0.001	0.91 (0.87, 0.96)	Mean (SD)
BD	147	-3.3 (3.69)	-4.5 (4.12)	-2.6 (3.19)	0.004	0.86 (0.78, 0.95)	Mean (SD)
Bilirubin	121	9.2 (8.4, 10.1)	9.3 (7.8, 11.0)	9.2 (8.2, 10.3)	0.521	1.02 (0.96, 1.08)	GM (95% CI)
CK	16	842 (566)	712 (426)	920 (644)	N/A	N/A	LR not done
Glucose	150	8.1 (7.7, 8.4)	7.9 (7.4, 8.4)	8.2 (7.7, 8.7)	0.407	0.95 (0.84, 1.08)	GM (95% CI)
Creatinine	129	86 (82, 89)	90 (83, 97)	83 (79, 87)	0.024	1.02 (1.00, 1.04)	GM (95% CI)
Lactate	145	2.1 (1.9, 2.3)	2.6 (2.2, 3.1)	1.8 (1.6, 2.0)	0.002	1.42 (1.14, 1.77)	GM (95% CI)
pH	147	7.33 (0.086)	7.32 (0.094)	7.33 (0.080)	0.392	0.19 (0.00, 8.48)	Mean (SD)
Potassium Min	169	3.7 (0.56)	3.7 (0.56)	3.7 (0.56)	0.86	1.05 (0.01, 1.81)	Mean (SD)
Potassium Max	169	3.8 (0.59)	3.8 (0.54)	3.8 (0.62)	0.947	1.02 (0.61, 1.71)	Mean (SD)
Sodium Min	169	138 (3.5)	138 (3.8)	138 (3.4)	0.663	0.98 (0.90, 1.07)	Mean (SD)
Sodium Max	169	139 (3.6)	139 (3.9)	139 (3.5)	0.856	1.01 (0.93, 1.10)	Mean (SD)
Urea	71	5.1 (1.65)	4.8 (1.49)	5.2 (1.73)	0.306	0.85 (0.62, 1.16)	Mean (SD)
Chest drain	491	61 (12.4%)	29 (14.6%)	32 (11.0%)	0.235	1.39 (0.81, 2.38)	No (% with drain)
ICP Bolt	491	29 (5.9%)	11 (5.5%)	18 (6.2%)	0.769	0.89 (0.41, 1.93)	No (% with ICP Bolt)
Operation	491	110 (22.4%)	47 (23.6%)	63 (21.6%)	0.594	1.12 (0.73, 1.73)	No (% operation)
CPR	491	8 (1.6%)	4 (2.0%)	4 (1.4%)	0.585	1.48 (0.37, 5.98)	No (% CPR)
Intubation	491	132 (26.9%)	50 (25.1%)	82 (28.1%)	0.468	0.86 (0.57, 1.29)	No (% intubated)
IV fluids	235	1029 (837, 1264)	1092 (771, 1547)	997 (769, 1291)	0.546	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	35 (7.1%)	25 (12.6%)	10 (3.4%)	<0.001	4.05 (1.90, 8.64)	No (% vasopressors)

12.3.5. 0 – 12 HOURS

Variable		All MOF risk	Marshall				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min GCS	442				0.308		
GCS 3-5		266 (60.2%)	116 (64.8%)	150 (57.0%)	0.419	1.24 (0.74, 2.07)	No (% category)
GCS 6-8		31 (7.0%)	12 (6.7%)	19 (7.2%)	0.981	1.01 (0.43, 2.38)	No (% category)
GCS 9-11		16 (3.6%)	7 (3.9%)	9 (3.4%)	0.694	1.24 (0.42, 3.69)	No (% category)
GCS 12-14		51 (11.5%)	14 (7.8%)	37 (14.1%)	0.199	0.61 (0.28, 1.30)	No (% category)
GCS 15		78 (17.6%)	30 (16.8%)	48 (18.3%)	N/A	N/A	No (% category)
Time to hospital	480	70.5 (67.2, 74.1)	71.6 (65.9, 77.8)	69.8 (65.8, 74.2)	0.578	1.00 (1.00, 1.00)	GM (95% CI)
SBP	444	101 (27.5)	98 (28.7)	103 (26.6)	0.124	1.00 (0.99, 1.00)	Mean (SD)
MAP	407	71 (21.1)	70 (20.7)	72 (21.5)	0.450	1.00 (0.99, 1.01)	Mean (SD)
FiO2	249				0.007		
FiO2 21-40%		36 (14.5%)	17 (15.0%)	19 (14.0%)	N/A	N/A	No (% category)
FIO2 41-60%		101 (40.6%)	33 (29.2%)	68 (50.0%)	0.122	0.54 (0.25, 1.18)	No (% category)
FiO2 61-80%		22 (8.8%)	14 (12.4%)	8 (5.9%)	0.227	1.96 (0.66, 5.80)	No (% category)
FiO2 >80%		90 (36.1%)	49 (43.4%)	41 (30.1%)	0.464	1.34 (0.62, 2.90)	No (% category)
HR	446	110 (23.9)	112 (26.2)	108 (22.1)	0.061	1.01 (1.00, 1.02)	Mean (SD)
PCO2	314	6.0 (5.9, 6.2)	6.0 (5.8, 6.2)	6.1 (5.9, 6.2)	0.619	0.95 (0.79, 1.15)	GM (95% CI)
PO2	314	14.4 (13.7, 15.2)	14.7 (13.6, 15.9)	14.3 (13.3, 15.3)	0.619	0.95 (0.79, 1.15)	GM (95% CI)
RR Min	438	14 (5.2)	15 (5.4)	14 (5.0)	0.155	1.03 (0.99, 1.05)	Mean (SD)
RR Max	438	27 (8.7)	27 (9.1)	26 (8.5)	0.606	1.01 (0.99, 1.03)	Mean (SD)
Temperature	308	36.0 (1.26)	35.8 (1.19)	36.2 (1.28)	0.006	0.76 (0.63, 0.92)	Mean (SD)
Urine output	358	285 (225, 360)	248 (166, 371)	311 (234, 413)	0.581	1.00 (1.00, 1.00)	GM (95% CI)
APTT	273	32.3 (30.6, 34.0)	36.3 (32.9, 40.1)	29.6 (28.1, 31.3)	0.010	1.01 (1.00, 1.02)	GM (95% CI)
Haematocrit	338	31.6 (8.21)	30.2 (8.04)	32.5 (8.21)	0.012	0.97 (0.94, 0.99)	Mean (SD)
Haemoglobin (Hb)	345	10.9 (2.59)	10.4 (2.41)	11.2 (2.67)	0.012	0.90 (0.82, 0.98)	Mean (SD)
Platelet count	295	172 (79.8)	158 (73.5)	181 (82.6)	0.018	1.00 (1.00, 1.00)	Mean (SD)
PT	255	14.7 (14.4, 15.0)	15.5 (15.0, 16.1)	14.2 (13.8, 14.6)	0.001	1.19 (1.07, 1.32)	GM (95% CI)
WCC	294	16.3 (7.88)	16.9 (9.01)	16.0 (6.97)	0.321	1.02 (0.99, 1.05)	Mean (SD)
Albumin	269	29.7 (9.41)	26.7 (9.69)	31.7 (8.68)	<0.001	0.94 (0.92, 0.97)	Mean (SD)
BD	314	-3.9 (3.83)	-5.2 (4.07)	-3.0 (3.40)	<0.001	0.85 (0.79, 0.91)	Mean (SD)
Bilirubin	262	11.4 (10.7, 12.3)	12.5 (11.1, 14.0)	10.8 (9.9, 11.8)	0.020	1.04 (1.01, 1.07)	GM (95% CI)
CK	33	2002 (2387)	2653 (3400)	1630 (1538)	N/A	N/A	LR not done
Glucose	321	8.3 (8.1, 8.5)	8.2 (7.9, 8.5)	8.4 (8.1, 8.7)	0.188	0.94 (0.85, 1.03)	GM (95% CI)
Creatinine	275	86 (84, 89)	91 (86, 96)	83 (81, 86)	0.002	1.02 (1.01, 1.03)	GM (95% CI)
Lactate	313	2.5 (2.3, 2.7)	3.1 (2.7, 3.4)	2.2 (2.0, 2.4)	<0.001	1.30 (1.14, 1.47)	GM (95% CI)
pH	314	7.31 (0.082)	7.31 (0.083)	7.30 (0.083)	0.434	2.98 (0.19, 45.71)	Mean (SD)
Potassium Min	328	3.9 (0.62)	3.9 (0.56)	3.9 (0.66)	0.300	0.83 (0.58, 1.19)	Mean (SD)
Potassium Max	328	4.1 (0.68)	4.0 (0.62)	4.1 (0.72)	0.318	0.85 (0.61, 1.18)	Mean (SD)
Sodium Min	328	138 (3.6)	138 (4.0)	138 (3.3)	0.388	1.03 (0.97, 1.09)	Mean (SD)
Sodium Max	328	139 (3.6)	140 (4.0)	139 (3.3)	0.070	1.06 (1.00, 1.13)	Mean (SD)
Urea	142	5.4 (1.97)	5.3 (2.18)	5.4 (1.84)	0.642	0.96 (0.81, 1.14)	Mean (SD)
Chest drain	491	70 (14.3%)	34 (17.1%)	36 (12.3%)	0.140	1.47 (0.88, 2.44)	No (% with drain)
ICP Bolt	491	96 (19.6%)	44 (22.1%)	52 (17.8%)	0.239	1.31 (0.84, 2.05)	No (% with ICP Bolt)
Operation	491	167 (34.0%)	70 (35.2%)	97 (33.2%)	0.653	1.09 (0.75, 1.59)	No (% operation)
CPR	491	12 (2.4%)	8 (4.0%)	4 (1.4%)	0.075	3.02 (0.90, 10.16)	No (% CPR)
Intubation	491	232 (47.3%)	91 (45.7%)	141 (48.3%)	0.577	0.90 (0.63, 1.30)	No (% intubated)
IV fluids	355	1676 (1479, 1899)	2018 (1611, 2529)	1500 (1295, 1736)	0.005	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	103 (21.0%)	60 (30.2%)	43 (14.7%)	<0.001	2.50 (1.61, 3.89)	No (% vasopressors)

12.3.6. 0 – 24 HOURS

Variable		All MOF risk	Marshall				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min GCS	463				0.127		
GCS 3-5		320 (69.1%)	141 (75.8%)	179 (64.6%)	0.224	1.45 (0.80, 2.65)	No (% category)
GCS 6-8		24 (5.2%	6 (3.2%)	18 (6.5%)	0.376	0.61 (0.21, 1.81)	No (% category)
GCS 9-11		18 (3.9%)	6 (3.2%)	12 (4.3%)	0.886	0.92 (0.30, 2.85)	No (% category)
GCS 12-14		47 (10.2%)	14 (7.5%)	33 (11.9%)	0.564	0.78 (0.34, 1.81)	No (% category)
GCS 15		54 (11.7%)	19 (10.2%)	35 (12.6%)	N/A	N/A	No (% category)
Time to hospital	482	71.4 (67.8, 75.1)	72.7 (66.6, 79.4)	70.5 (66.2, 75.0)	0.410	1.00 (1.00, 1.00)	GM (95% CI)
SBP	465	97 (24.8)	94 (26.3)	98 (23.6)	0.123	1.00 (0.99, 1.00)	Mean (SD)
MAP	442	67 (18.9)	66 (18.3)	67 (19.3)	0.587	1.00 (0.99, 1.01)	Mean (SD)
FiO2	290				0.003		
FiO2 21-40%		42 (14.5%)	21 (15.3%)	21 (13.7%)	N/A	N/A	No (% category)
FIO2 41-60%		99 (34.1%)	32 (23.4%)	67 (43.8%)	0.049	0.48 (0.23, 1.00)	No (% category)
FiO2 61-80%		27 (9.3%)	15 (10.9%)	12 (7.8%)	0.652	1.25 (0.47, 3.30)	No (% category)
FiO2 >80%		122 (42.1%)	69 (50.4%)	53 (34.6%)	0.462	1.30 (0.65, 2.63)	No (% category)
HR	465	113 (23.6)	116 (26.5)	111 (21.3)	0.031	1.01 (1.00, 1.02)	Mean (SD)
PCO2	372	6.3 (6.2, 6.4)	6.3 (6.1, 6.4)	6.4 (6.2, 6.5)	0.334	0.91 (0.75, 1.10)	GM (95% CI)
PO2	371	10.5 (10.1, 11.0)	10.4 (9.8, 11.0)	10.7 (10.1, 11.2)	0.334	0.91 (0.75, 1.10)	GM (95% CI)
RR Min	455	13 (4.5)	13 (4.4)	13 (4.6)	0.760	1.03 (1.00, 1.07)	Mean (SD)
RR Max	455	29 (9.2)	30 (9.6)	28 (8.9)	0.125	1.02 (1.00, 1.04)	Mean (SD)
Temperature	362	35.8 (1.16)	35.6 (1.10)	36.0 (1.17)	<0.001	0.69 (0.57, 0.85)	Mean (SD)
Urine output	389	1144 (991, 1323)	1311 (1077, 1596)	1048 (856, 1284)	0.051	1.00 (1.00, 1.00)	GM (95% CI)
APTT	351	34.6 (33.1, 36.3)	39.6 (36.2, 43.3)	31.8 (30.4, 33.2)	0.001	1.02 (1.01, 1.02)	GM (95% CI)
Haematocrit	380	28.7 (7.53)	27.3 (7.04)	29.6 (7.70)	0.003	0.96 (0.93, 0.99)	Mean (SD)
Haemoglobin (Hb)	385	10.0 (2.43)	9.6 (2.30)	10.2 (2.48)	0.015	0.90 (0.82, 0.98)	Mean (SD)
Platelet count	355	150 (73.2)	137 (67.1)	158 (75.6)	0.009	1.00 (1.00, 1.00)	Mean (SD)
PT	339	15.0 (14.8, 15.3)	15.9 (15.4, 16.4)	14.5 (14.2, 14.8)	<0.001	1.21 (1.11, 1.32)	GM (95% CI)
WCC	355	15.5 (7.62)	16.0 (8.83)	15.2 (6.73)	0.323	1.01 (0.99, 1.04)	Mean (SD)
Albumin	354	27.0 (8.91)	24.1 (9.02)	28.9 (8.33)	<0.001	0.94 (0.91, 0.96)	Mean (SD)
BD	369	-3.8 (4.42)	-5.3 (4.74)	-2.8 (3.87)	<0.001	0.86 (0.82, 0.91)	Mean (SD)
Bilirubin	348	13.9 (13.1, 14.7)	15.0 (13.6, 16.5)	13.2 (12.3, 14.2)	0.026	1.03 (1.00, 1.05)	GM (95% CI)
CK	68	3603 (4583)	4464 (5880)	2837 (2880)	N/A	N/A	LR not done
Glucose	375	8.6 (8.4, 8.8)	8.5 (8.2, 8.8)	8.7 (8.4, 9.0)	0.188	0.85, 1.03)	GM (95% CI)
Creatinine	356	89 (86, 91)	95 (90, 99)	85 (82, 88)	<0.001	1.02 (1.01, 1.03)	GM (95% CI)
Lactate	368	2.6 (2.5, 2.8)	3.2 (2.9, 3.6)	2.3 (2.1, 2.4)	<0.001	1.35 (1.20, 1.53)	GM (95% CI)
pH	369	7.30 (0.079)	7.30 (0.078)	7.29 (0.080)	0.203	5.63 (0.39, 80.64)	Mean (SD)
Potassium Min	379	2.9 (0.54)	3.8 (0.50)	3.9 (0.57)	0.395	0.85 (0.58, 1.24)	Mean (SD)
Potassium Max	379	4.3 (0.62)	4.2 (0.58)	4.3 (0.65)	0.097	0.75 (0.53, 1.05)	Mean (SD)
Sodium Min	379	138 (3.6)	138 (3.8)	138 (3.4)	0.187	1.04 (0.98, 1.10)	Mean (SD)
Sodium Max	379	141 (3.8)	142 (4.0)	140 (3.5)	<0.001	1.11 (1.05, 1.18)	Mean (SD)
Urea	189	5.8 (3.28)	5.5 (2.40)	6.0 (3.69)	0.303	0.94 (0.84, 1.06)	Mean (SD)
Any transfusion	491	145 (29.5%)	68 (34.2%)	77 (26.4%)	0.063	1.45 (0.98, 2.15)	No (% transfused)
Cryoprecipitate	491	10 (2.0%)	5 (2.5%)	5 (1.7%)	0.540	1.48 (0.42, 5.18)	No (% transfused)
FFP	491	52 (10.6%)	26 (13.1%)	26 (8.9%)	0.143	1.54 (0.86, 2.74)	No (% transfused)
Platelets	491	25 (5.1%)	17 (8.5%)	8 (2.7%)	0.006	3.32 (1.40, 7.84)	No (% transfused)
PRBCs	491	124 (25.3%)	58 (29.1%)	66 (22.6%)	0.102	1.41 (0.93, 2.12)	No (% transfused)
Transfusion level	491				0.019		No (% transfused)
Transfusion		114 (23.2%)	48 (24.1%)	66 (22.6%)	0.420	1.19 (0.78, 1.84)	No (% transfused)
Massive transfusion		31 (6.3%)	20 (10.1%)	11 (3.8%)	0.005	2.98 (1.39, 6.43)	No (% transfused)
Chest drain	491	77 (15.7%)	39 (19.6%)	38 (13.0%)	0.050	1.63 (1.00, 2.66)	No (% with drain)
ICP Bolt	491	125 (25.5%)	63 (31.7%)	62 (21.2%)	0.010	1.72 (1.14, 2.59)	No (% with ICP Bolt)
Operation	491	227 (46.2%)	93 (46.7%)	134 (45.9%)	0.854	1.03 (0.72, 1.49)	No (% operation)
CPR	491	17 (3.5%)	9 (4.5%)	8 (2.7%)	0.294	1.68 (0.64, 4.44)	No (% CPR)
Intubation	491	270 (55.0%)	108 (54.3%)	162 (55.5%)	0.792	0.95 (0.66, 1.37)	No (% intubated)
IV fluids	404	3627 (3299, 3987)	4144 (3417, 5019)	3337 (3032, 3672)	<0.001	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	142 (28.9%)	81 (40.7%)	61 (20.9%)	<0.001	2.60 (1.74, 3.88)	No (% vasopressors)

12.3.7. 0 – 48 HOURS

Variable		All MOF risk	Marshall				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Min GCS	485				0.019		
GCS 3-5		354 (73.0%)	159 (81.1%)	195 (67.5%)	0.234	1.51 (0.77, 3.00)	No (% category)
GCS 6-8		29 (6.0%)	7 (3.6%)	22 (7.6%)	0.335	0.59 (0.20, 1.72)	No (% category)
GCS 9-11		15 (3.1%)	4 (2.0%)	11 (3.8%)	0.559	0.68 (0.18, 2.52)	No (% category)
GCS 12-14		47 (9.7%)	12 (6.1%)	35 (12.1%)	0.338	0.64 (0.25, 1.60)	No (% category)
GCS 15		40 (8.2%)	14 (7.1%)	26 (9.0%)	N/A	N/A	No (% category)
Time to hospital	491	75.6 (71.0, 80.5)	77.6 (69.7, 86.4)	74.3 (68.8, 80.3)	0.409	1.00 (1.00, 1.00)	GM (95% CI)
SBP	487	94 (25.3)	93 (27.4)	95 (23.7)	0.231	1.00 (0.99, 1.00)	Mean (SD)
MAP	472	65 (19.3)	65 (19.4)	65 (19.3)	0.837	0.99 (0.99, 1.01)	Mean (SD)
FiO2	321				<0.001		
FiO2 21-40%		40 (12.5%)	18 (12.2%)	22 (12.6%)	N/A	N/A	No (% category)
FIO2 41-60%		86 (26.8%)	22 (15.0%)	64 (36.8%)	0.031	0.42 (0.19, 0.93)	No (% category)
FiO2 61-80%		22 (6.9%)	9 (6.1%)	13 (7.5%)	0.756	0.85 (0.30, 2.43)	No (% category)
FiO2 >80%		173 (53.9%)	98 (66.7%)	75 (43.1%)	0.185	1.60 (0.80, 3.19)	No (% category)
HR	488	116 (23.6)	119 (26.6)	111 (21.2)	0.052	1.01 (1.00, 1.02)	Mean (SD)
PCO2	411	6.6 (6.4, 6.7)	6.6 (6.4, 6.7)	6.5 (6.4, 6.7)	0.784	1.02 (0.86, 1.21)	GM (95% CI)
PO2	410	8.8 (8.5, 9.1)	8.3 (7.9, 8.7)	9.2 (8.8, 9.7)	0.784	1.02 (0.86, 1.21)	GM (95% CI)
RR Min	476	12 (4.2)	11 (3.8)	12 (4.5)	0.331	1.01 (0.97, 1.05)	Mean (SD)
RR Max	476	31 (8.9)	32 (9.3)	30 (8.6)	0.009	1.03 (1.01, 1.05)	Mean (SD)
Temperature	410	35.7 (1.11)	35.4 (1.04)	35.9 (1.11)	<0.001	0.65 (0.53, 0.80)	Mean (SD)
Urine output	419	2444 (2201, 2714)	2817 (2383, 3330)	2235 (1955, 2555)	<0.001	1.00 (1.00, 1.00)	GM (95% CI)
APTT	404	36.4 (35.0, 38.0)	41.6 (38.5, 45.1)	33.5 (32.1, 34.9)	<0.001	1.02 (1.01, 1.03)	GM (95% CI)
Haematocrit	416	26.8 (7.09)	24.9 (5.94)	28.1 (7.48)	<0.001	0.93 (0.90, 0.96)	Mean (SD)
Haemoglobin (Hb)	420	9.3 (2.26)	8.7 (1.91)	9.6 (2.39)	<0.001	0.82 (0.75, 0.91)	Mean (SD)
Platelet count	404	130 (64.1)	115 (56.8)	140 (66.6)	<0.001	0.99 (0.99, 1.00)	Mean (SD)
PT	398	15.3 (15.1, 15.6)	16.3 (15.8, 16.8)	14.7 (14.5, 15.0)	<0.001	1.22 (1.12, 1.32)	GM (95% CI)
WCC	404	15.3 (7.25)	15.7 (8.31)	15.0 (6.48)	0.319	1.01 (0.99, 1.04)	Mean (SD)
Albumin	403	25.4 (8.13)	22.4 (7.88)	27.4 (7.71)	<0.001	0.92 (0.90, 0.95)	Mean (SD)
BD	409	-3.4 (5.12)	-5.2 (5.53)	-2.2 (4.45)	<0.001	0.88 (0.84, 0.92)	Mean (SD)
Bilirubin	397	15.6 (14.9, 16.5)	17.0 (15.6, 18.5)	14.8 (13.9, 15.8)	0.006	1.03 (1.01, 1.05)	GM (95% CI)
CK	99	4643 (6652)	5709 (7967)	3679 (5079)	0.146	1.00 (1.00, 1.00)	Mean (SD)
Glucose	414	9.0 (8.8, 9.2)	8.9 (8.6, 9.1)	9.1 (8.8, 9.4)	0.153	0.94 (0.87, 1.02)	GM (95% CI)
Creatinine	403	90 (88, 93)	99 (93, 105)	85 (83, 88)	<0.001	1.02 (1.01, 1.02)	GM (95% CI)
Lactate	407	2.6 (2.4, 2.8)	3.4 (3.1, 3.7)	2.2 (2.0, 2.3)	<0.001	1.43 (1.27, 1.62)	GM (95% CI)
pH	409	7.29 (0.080)	7.30 (0.078)	7.28 (0.081)	0.160	6.12 (0.49, 76.49)	Mean (SD)
Potassium Min	419	3.8 (0.50)	3.8 (0.47)	3.8 (0.52)	0.533	0.88 (0.60, 1.31)	Mean (SD)
Potassium Max	419	4.3 (0.62)	4.3 (0.58)	4.4 (0.65)	0.160	0.80 (0.58, 1.10)	Mean (SD)
Sodium Min	419	137 (3.7)	138 (3.7)	137 (3.6)	0.031	1.06 (1.01, 1.12)	Mean (SD)
Sodium Max	419	141 (4.3)	143 (4.5)	141 (4.0)	<0.001	1.13 (1.07, 1.19)	Mean (SD)
Urea	216	6.5 (3.73)	6.2 (3.06)	6.6 (4.07)	0.386	0.96 (0.89, 1.05)	Mean (SD)
Any transfusion	491	145 (29.5%)	68 (34.2%)	77 (26.4%)	0.063	1.45 (0.98, 2.15)	No (% transfused)
Cryoprecipitate	491	10 (2.0%)	5 (2.5%)	5 (1.7%)	0.540	1.48 (0.42, 5.18)	No (% transfused)
FFP	491	52 (10.6%)	26 (13.1%)	26 (8.9%)	0.143	1.54 (0.86, 2.74)	No (% transfused)
Platelets	491	25 (5.1%)	17 (8.5%)	8 (2.7%)	0.006	3.32 (1.40, 7.84)	No (% transfused)
PRBCs	491	124 (25.3%)	58 (29.1%)	66 (22.6%)	0.102	1.41 (0.93, 2.12)	No (% transfused)
Transfusion level	491				0.019		No (% transfused)
Transfusion		114 (23.2%)	48 (24.1%)	66 (22.6%)	0.420	1.19 (0.78, 1.84)	No (% transfused)
Massive transfusion		31 (6.3%)	20 (10.1%)	11 (3.8%)	0.005	2.98 (1.39, 6.43)	No (% transfused)
Chest drain	491	93 (18.9%)	51 (25.6%)	42 (14.4%)	0.002	2.05 (1.30, 3.24)	No (% with drain)
ICP Bolt	491	135 (27.5%)	68 (34.2%)	67 (22.9%)	0.007	1.74 (1.17, 2.60)	No (% with ICP Bolt)
Intra-operative time	491	168 (156, 181)	157 (140, 176)	176 (160, 194)	0.127	1.00 (1.00, 1.00)	GM (95% CI)
Operation	491	268 (54.6%)	105 (52.8%)	163 (55.8%)	0.504	0.88 (0.62, 1.27)	No (% operation)
CPR	491	24 (4.9%)	14 (7.0%)	10 (3.4%)	0.074	2.13 (0.93, 4.91)	No (% CPR)
Intubation	491	300 (61.1%)	124 (60.3%)	176 (62.3%)	0.649	1.09 (0.75, 1.58)	No (% intubated)
IV fluids	489	8092 (7506, 8724)	11555 (10399, 12838)	6337 (5763, 6967)	<0.001	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	173 (35.2%)	97 (48.7%)	76 (26.0%)	<0.001	2.70 (1.85, 2.96)	No (% vasopressors)

APPENDIX 13 VARIABLES SELECTED FOR MULTIVARIATE ANALYSIS

13.1. DENVER MOF MODELS

13.1.1. 0 – 2 HOURS

Variable		All MOF risk	Denver				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	40.1 (36.7, 43.8)	37.3 (35.6, 39.1)	0.137	1.01 (1.00, 1.02)	GM (95% CI)
CV disease	470	29 (6.2%)	11 (10.2%)	18 (5.0%)	0.053	2.17 (0.99, 4.74)	No (% yes)
Head Injury	486	285 (58.6%)	78 (70.3%)	207 (55.2%)	0.005	1.92 (.122, 3.02)	No (% injured)
Chest Injury	486	299 (61.5%)	76 (68.5%)	223 (59.5%)	0.088	1.48 (0.94, 2.32)	No (% injured)
Abdo Injury	486	170 (35.0%)	48 (43.2%)	122 (32.5%)	0.038	1.58 (1.03, 2.44)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	79 (71.2%)	243 (64.8%)	0.213	1.34 (0.85, 2.13)	No (% injured)
HR	375	106 (26.3)	111 (30.2)	104 (25.0)	0.045	1.01 (1.00, 1.02)	Mean (SD)
RR Min	357	20 (7.0)	22 (6.8)	19 (6.9)	0.001	1.06 (1.03, 1.10)	Mean (SD)

Total = 8

13.1.2. 0 – 4 HOURS

Variable		All MOF risk	Denver				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	40.1 (36.7, 43.8)	37.3 (35.6, 39.1)	0.137	1.01 (1.00, 1.02)	GM (95% CI)
CV disease	470	29 (6.2%)	11 (10.2%)	18 (5.0%)	0.053	2.17 (0.99, 4.74)	No (% yes)
Head Injury	486	285 (58.6%)	78 (70.3%)	207 (55.2%)	0.005	1.92 (.122, 3.02)	No (% injured)
Chest Injury	486	299 (61.5%)	76 (68.5%)	223 (59.5%)	0.088	1.48 (0.94, 2.32)	No (% injured)
Abdo Injury	486	170 (35.0%)	48 (43.2%)	122 (32.5%)	0.038	1.58 (1.03, 2.44)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	79 (71.2%)	243 (64.8%)	0.213	1.34 (0.85, 2.13)	No (% injured)
HR	389	107 (25.7)	112 (28.2)	105 (24.9)	0.025	1.01 (1.00, 1.02)	Mean (SD)
RR Min	373	19 (6.9)	20 (7.0)	18 (6.9)	0.164	1.03 (1.00, 1.06)	Mean (SD)
Operation	491	57 (11.6%)	6 (5.4%)	51 (13.5%)	0.023	0.36 (0.15, 0.87)	No (% operation)

Total = 9

13.1.3. 0 – 6 HOURS

Variable		All MOF risk	Denver				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	40.1 (36.7, 43.8)	37.3 (35.6, 39.1)	0.137	1.01 (1.00, 1.02)	GM (95% CI)
CV disease	470	29 (6.2%)	11 (10.2%)	18 (5.0%)	0.053	2.17 (0.99, 4.74)	No (% yes)
Head Injury	486	285 (58.6%)	78 (70.3%)	207 (55.2%)	0.005	1.92 (.122, 3.02)	No (% injured)
Chest Injury	486	299 (61.5%)	76 (68.5%)	223 (59.5%)	0.088	1.48 (0.94, 2.32)	No (% injured)
Abdo Injury	486	170 (35.0%)	48 (43.2%)	122 (32.5%)	0.038	1.58 (1.03, 2.44)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	79 (71.2%)	243 (64.8%)	0.213	1.34 (0.85, 2.13)	No (% injured)
MAP	323	81 (22.1)	78 (27.7)	82 (20.2)	0.146	0.99 (0.98, 1.00)	Mean (SD)
HR	401	108 (25.0)	112 (28.0)	106 (24.0)	0.065	1.01 (1.00, 1.02)	Mean (SD)
RR Min	393	17 (6.4)	18 (6.7)	16 (6.2)	0.033	1.04 (1.00, 1.08)	Mean (SD)
Operation	491	110 (22.4%)	18 (16.1%)	92 (24.3%)	0.069	0.60 (0.34, 1.04)	No (% operation)
Vasopressors	491	35 (7.1%)	19 (17.0%)	16 (4.2%)	<0.001	4.64 (2.30, 9.36)	No (% vasopressors)

Total = 11

13.1.4. 0 – 12 HOURS

Variable		All MOF risk	Denver				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	40.1 (36.7, 43.8)	37.3 (35.6, 39.1)	0.137	1.01 (1.00, 1.02)	GM (95% CI)
CV disease	470	29 (6.2%)	11 (10.2%)	18 (5.0%)	0.053	2.17 (0.99, 4.74)	No (% yes)
Head Injury	486	285 (58.6%)	78 (70.3%)	207 (55.2%)	0.005	1.92 (.122, 3.02)	No (% injured)
Chest Injury	486	299 (61.5%)	76 (68.5%)	223 (59.5%)	0.088	1.48 (0.94, 2.32)	No (% injured)
Abdo Injury	486	170 (35.0%)	48 (43.2%)	122 (32.5%)	0.038	1.58 (1.03, 2.44)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	79 (71.2%)	243 (64.8%)	0.213	1.34 (0.85, 2.13)	No (% injured)
MAP	407	71 (21.1)	69 (23.0)	72 (20.6)	0.217	0.99 (0.99, 1.00)	Mean (SD)
HR	446	110 (23.9)	113 (27.3)	109 (22.8)	0.101	1.01 (1.00, 1.02)	Mean (SD)
RR Min	438	14 (5.2)	15 (5.6)	14 (5.0)	0.011	1.06 (1.01, 1.10)	Mean (SD)
Temperature	308	36.0 (1.26)	35.7 (1.21)	36.1 (1.26)	0.027	0.79 (0.62, 0.97)	Mean (SD)
Platelet count	295	172 (79.8)	159 (68.6)	175 (82.2)	0.170	1.00 (1.00, 1.00)	Mean (SD)
PT	255	14.7 (14.4, 15.0)	15.4 (14.7, 16,1)	14.6 (14.2, 14.9)	0.126	1.07 (0.98, 1.18)	GM (95% CI)
WCC	294	16.3 (7.88)	18.4 (9.28)	15.8 (7.43)	0.029	1.04 (1.00, 1.08)	Mean (SD)
Albumin	269	29.7 (9.41)	27.2 (9.07)	30.3 (9.41)	0.030	0.97 (0.94, 1.00)	Mean (SD)
BD	314	-3.9 (3.83)	-5.8 (4.35)	-3.4 (3.53)	<0.001	0.85 (0.79, 0.92)	Mean (SD)
Creatinine	275	86 (84, 89)	92 (85, 99)	85 (82, 88)	0.020	1.02 (1.00, 1.03)	GM (95% CI)
Lactate	313	2.5 (2.3, 2.7)	3.0 (2.5, 3.6)	2.4 (2.2, 2.6)	0.006	1.17 (1.05, 1.30)	GM (95% CI)
Potassium Min	328	3.9 (0.62)	3.8 (0.53)	3.9 (0.64)	0.087	0.68 (0.43, 1.06)	Mean (SD)
Sodium Max	328	139 (3.6)	140 (4.6)	139 (3.3)	0.097	1.07 (0.99, 1.15)	Mean (SD)
Operation	491	167 (34.0%)	33 (29.5%)	134 (35.4%)	0.248	0.76 (0.48, 1.21)	No (% operation)
Vasopressors	491	103 (21.0%)	40 (35.7%)	63 (16.6%)	<0.001	2.79 (1.74, 4.47)	No (% vasopressors)

Total = 22

13.1.5. 0 – 24 HOURS

Variable		All MOF risk	Denver				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	40.1 (36.7, 43.8)	37.3 (35.6, 39.1)	0.137	1.01 (1.00, 1.02)	GM (95% CI)
CV disease	470	29 (6.2%)	11 (10.2%)	18 (5.0%)	0.053	2.17 (0.99, 4.74)	No (% yes)
Head Injury	486	285 (58.6%)	78 (70.3%)	207 (55.2%)	0.005	1.92 (.122, 3.02)	No (% injured)
Chest Injury	486	299 (61.5%)	76 (68.5%)	223 (59.5%)	0.088	1.48 (0.94, 2.32)	No (% injured)
Abdo Injury	486	170 (35.0%)	48 (43.2%)	122 (32.5%)	0.038	1.58 (1.03, 2.44)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	79 (71.2%)	243 (64.8%)	0.213	1.34 (0.85, 2.13)	No (% injured)
HR	465	113 (23.6)	118 (28.5)	112 (21.9)	0.048	1.01 (1.00, 1.02)	Mean (SD)
RR Max	455	29 (9.2)	31 (9.5)	28 (9.0)	0.007	1.03 (1.01, 1.06)	Mean (SD)
Temperature	362	35.8 (1.16)	35.4 (1.08)	35.9 (1.16)	0.001	0.70 (0.56, 0.87)	Mean (SD)
Haemoglobin (Hb)	385	10.0 (2.43)	9.6 (2.12)	10.1 (2.50)	0.087	0.91 (0.82, 1.01)	Mean (SD)
PT	339	15.0 (14.8, 15.3)	15.8 (15.2, 16.5)	14.8 (14.5, 15.1)	0.017	1.10 (1.02, 1.19)	GM (95% CI)
WCC	355	15.5 (7.62)	17.3 (9.12)	15.1 (7.16)	0.037	1.04 (1.00, 1.07)	Mean (SD)
Albumin	354	27.0 (8.91)	24.9 (8.76)	27.6 (8.88)	0.025	0.97 (0.94, 1.00)	Mean (SD)
BD	369	-3.8 (4.42)	-6.1 (4.84)	-3.2 (4.10)	<0.001	0.86 (0.80, 0.91)	Mean (SD)
Glucose	375	8.6 (8.4, 8.8)	8.4 (8.0, 8.8)	8.7 (8.5, 9.0)	0.179	0.93 (0.83, 1.04)	GM (95% CI)
Creatinine	356	89 (86, 91)	95 (88, 102)	87 (85, 90)	0.003	1.01 (1.01, 1.02)	GM (95% CI)
Lactate	368	2.6 (2.5, 2.8)	3.2 (2.8, 3.8)	2.5 (2.3, 2.6)	<0.001	1.21 (1.09, 1.34)	GM (95% CI)
Potassium Max	379	4.3 (0.62)	4.2 (0.59)	4.3 (0.63)	0.063	0.67 (0.44, 1.02)	Mean (SD)
Sodium Max	379	141 (3.8)	141 (4.2)	140 (3.6)	0.040	1.07 (1.00, 1.14)	Mean (SD)
Transfusion level	491				0.003		
Transfusion		114 (23.2%)	48 (24.1%)	66 (22.6%)	0.078	1.56 (0.95, 2.54)	No (% transfused)
Massive transfusion		31 (6.3%)	20 (10.1%)	11 (3.8%)	0.001	3.43 (1.61, 7.30)	No (% transfused)
IV fluids	404	3627 (3299, 3987)	3702 (2703, 5070)	3608 (3302, 3942)	0.057	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	142 (28.9%)	55 (49.1%)	87 (23.0%)	<0.001	3.24 (2.08, 5.03)	No (% vasopressors)

Total = 22

13.1.6. 0 – 48 HOURS

Variable		All MOF risk	Denver				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	40.1 (36.7, 43.8)	37.3 (35.6, 39.1)	0.137	1.01 (1.00, 1.02)	GM (95% CI)
CV disease	470	29 (6.2%)	11 (10.2%)	18 (5.0%)	0.053	2.17 (0.99, 4.74)	No (% yes)
Head Injury	486	285 (58.6%)	78 (70.3%)	207 (55.2%)	0.005	1.92 (.122, 3.02)	No (% injured)
Chest Injury	486	299 (61.5%)	76 (68.5%)	223 (59.5%)	0.088	1.48 (0.94, 2.32)	No (% injured)
Abdo Injury	486	170 (35.0%)	48 (43.2%)	122 (32.5%)	0.038	1.58 (1.03, 2.44)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	79 (71.2%)	243 (64.8%)	0.213	1.34 (0.85, 2.13)	No (% injured)
FiO2	321				0.006		
FiO2 21-40%		40 (12.5%)	7 (8.8%)	33 (13.7%)	N/A	N/A	No (% category)
FIO2 41-60%		86 (26.8%)	12 (15.0%)	74 (30.7%)	0.605	0.76 (0.28, 2.18)	No (% category)
FiO2 61-80%		22 (6.9%)	4 (5.0%)	18 (7.5%)	0.946	1.05 (0.27, 4.07)	No (% category)
FiO2 >80%		173 (53.9%)	57 (71.2%)	116 (48.1%)	0.060	2.32 (0.97, 5.56)	No (% category)
RR Max	476	31 (8.9)	34 (8.9)	30 (8.7)	<0.001	1.06 (10.3, 1.09)	Mean (SD)
Temperature	410	35.7 (1.11)	35.2 (0.98)	35.8 (1.11)	<0.001	0.62 (0.50, 0.78)	Mean (SD)
APTT	404	36.4 (35.0, 38.0)	40.2 (36.4, 44.3)	35.5 (34.0, 37.2)	0.130	1.01 (1.00, 1.01)	GM (95% CI)
Haemoglobin (Hb)	420	9.3 (2.26)	8.7 (1.73)	9.4 (2.35)	0.007	0.86 (0.76, 0.96)	Mean (SD)
Platelet count	404	130 (64.1)	120 (58.6)	133 (65.4)	0.105	1.00 (1.00, 1.00)	Mean (SD)
PT	398	15.3 (15.1, 15.6)	16.5 (15.8, 17.2)	15.0 (14.8, 15.3)	<0.001	1.15 (1.07, 1.24)	GM (95% CI)
WCC	404	15.3 (7.25)	16.3 (8.66)	15.0 (6.81)	0.135	1.03 (1.00, 1.06)	Mean (SD)
Albumin	403	25.4 (8.13)	22.6 (7.54)	26.2 (8.12)	<0.001	0.94 (0.92, 0.97)	Mean (SD)
BD	409	-3.4 (5.12)	-6.6 (5.22)	-2.5 (4.75)	<0.001	0.84 (0.79, 0.89)	Mean (SD)
Glucose	414	9.0 (8.8, 9.2)	8.8 (8.4, 9.2)	9.1 (8.9, 9.3)	0.217	0.94 (0.85, 1.04)	GM (95% CI)
Creatinine	403	90 (88, 93)	101 (92, 112)	88 (85, 90)	<0.001	1.01 (1.01, 1.02)	GM (95% CI)
Lactate	407	2.6 (2.4, 2.8)	3.5 (3.1, 4.1)	2.4 (2.2, 2.5)	<0.001	1.26 (1.14, 1.39)	GM (95% CI)
Potassium Min	419	3.8 (0.50)	3.7 (0.51)	3.8 (0.50)	0.238	0.76 (0.48, 1.20)	Mean (SD)
Sodium Max	419	141 (4.3)	143 (4.6)	141 (4.1)	<0.001	1.11 (1.05, 1.17)	Mean (SD)
Transfusion level	491				0.003		
Transfusion		114 (23.2%)	48 (24.1%)	66 (22.6%)	0.078	1.56 (0.95, 2.54)	No (% transfused)
Massive transfusion		31 (6.3%)	20 (10.1%)	11 (3.8%)	0.001	3.43 (1.61, 7.30)	No (% transfused)
Intra-operative time	491	168 (156, 181)	144 (122, 169)	176 (162, 191)	0.067	1.00 (1.00, 1.00)	GM (95% CI)
Operation	491	268 (54.6%)	43 (48.2%)	214 (56.5%)	0.124	0.72 (0.47, 1.10)	No (% operation)
IV fluids	489	8092 (7506, 8724)	12091 (10328, 14153)	7182 (6615, 7797)	<0.001	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	173 (35.2%)	66 (58.9%)	107 (28.2%)	<0.001	3.65 (2.35, 5.65)	No (% vasopressors)

Total = 26

13.2. SOFA MOF MODELS

13.2.1. 0 – 2 HOURS

Variable		All MOF risk	SOFA				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	39.8 (37.7, 42.1)	35.6 (33.5, 37.9)	0.005	1.01 (1.00, 1.02)	GM (95% CI)
Psychiatric	470	38 (8.1%)	15 (5.6%)	23 (11.5%)	0.041	0.44 (0.20, 0.97)	No (% yes)
Respiratory disease	470	56 (11.9%)	38 (14.1%)	18 (9.0%)	0.094	1.83 (0.90, 3.71)	No (% yes)
Head Injury	486	285 (58.6%)	184 (65.0%)	101 (49.8%)	<0.001	2.95 (1.90, 4.60)	No (% injured)
Face Injury	486	126 (25.9%)	71 (25.1%)	55 (27.1%)	0.114	0.69 (0.44, 1.09)	No (% injured)
Chest Injury	486	299 (61.5%)	188 (66.4%)	111 (54.7%)	0.115	1.39 (0.92, 2.09)	No (% injured)
Abdo Injury	486	170 (35.0%)	107 (37.8%)	63 (31.0%)	0.133	1.40 (0.90, 2.16)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	201 (71.0%)	121 (59.6%)	0.002	1.97 (1.27, 3.04)	No (% injured)
External Injury	486	176 (36.2%)	100 (35.3%)	76 (37.4%)	0.166	0.75 (0.50, 1.13)	No (% injured)
Trapped	479	153 (31.9%)	103 (36.9%)	50 (25.0%)	0.006	1.76 (1.18, 2.62)	No (% trapped)
SBP	367	118 (34.2)	113 (34.8)	124 (32.6)	0.004	0.98 (0.99, 1.00)	Mean (SD)
HR	375	106 (26.3)	109 (27.2)	101 (24.4)	0.004	1.01 (1.00, 1.02)	Mean (SD)
RR Min	357	20 (7.0)	21 (7.1)	19 (6.5)	0.065	1.04 (1.00, 1.09)	Mean (SD)

Total = 13

13.2.2. 0 – 4 HOURS

Variable		All MOF risk	SOFA				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	39.8 (37.7, 42.1)	35.6 (33.5, 37.9)	0.005	1.01 (1.00, 1.02)	GM (95% CI)
Psychiatric	470	38 (8.1%)	15 (5.6%)	23 (11.5%)	0.041	0.44 (0.20, 0.97)	No (% yes)
Respiratory disease	470	56 (11.9%)	38 (14.1%)	18 (9.0%)	0.094	1.83 (0.90, 3.71)	No (% yes)
Head Injury	486	285 (58.6%)	184 (65.0%)	101 (49.8%)	<0.001	2.95 (1.90, 4.60)	No (% injured)
Face Injury	486	126 (25.9%)	71 (25.1%)	55 (27.1%)	0.114	0.69 (0.44, 1.09)	No (% injured)
Chest Injury	486	299 (61.5%)	188 (66.4%)	111 (54.7%)	0.115	1.39 (0.92, 2.09)	No (% injured)
Abdo Injury	486	170 (35.0%)	107 (37.8%)	63 (31.0%)	0.133	1.40 (0.90, 2.16)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	201 (71.0%)	121 (59.6%)	0.002	1.97 (1.27, 3.04)	No (% injured)
External Injury	486	176 (36.2%)	100 (35.3%)	76 (37.4%)	0.166	0.75 (0.50, 1.13)	No (% injured)
Trapped	479	153 (31.9%)	103 (36.9%)	50 (25.0%)	0.006	1.76 (1.18, 2.62)	No (% trapped)
SBP	382	114 (31.9)	111 (32.5)	119 (30.6)	0.011	0.99 (0.99, 1.00)	Mean (SD)
HR	389	107 (25.7)	110 (26.4)	102 (24.2)	0.005	1.01 (1.01, 1.02)	Mean (SD)

Total = 12

13.2.3. 0 – 6 HOURS

Variable		All MOF risk	SOFA				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	39.8 (37.7, 42.1)	35.6 (33.5, 37.9)	0.005	1.01 (1.00, 1.02)	GM (95% CI)
Psychiatric	470	38 (8.1%)	15 (5.6%)	23 (11.5%)	0.041	0.44 (0.20, 0.97)	No (% yes)
Respiratory disease	470	56 (11.9%)	38 (14.1%)	18 (9.0%)	0.094	1.83 (0.90, 3.71)	No (% yes)
Head Injury	486	285 (58.6%)	184 (65.0%)	101 (49.8%)	<0.001	2.95 (1.90, 4.60)	No (% injured)
Face Injury	486	126 (25.9%)	71 (25.1%)	55 (27.1%)	0.114	0.69 (0.44, 1.09)	No (% injured)
Chest Injury	486	299 (61.5%)	188 (66.4%)	111 (54.7%)	0.115	1.39 (0.92, 2.09)	No (% injured)
Abdo Injury	486	170 (35.0%)	107 (37.8%)	63 (31.0%)	0.133	1.40 (0.90, 2.16)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	201 (71.0%)	121 (59.6%)	0.002	1.97 (1.27, 3.04)	No (% injured)
External Injury	486	176 (36.2%)	100 (35.3%)	76 (37.4%)	0.166	0.75 (0.50, 1.13)	No (% injured)
Trapped	479	153 (31.9%)	103 (36.9%)	50 (25.0%)	0.006	1.76 (1.18, 2.62)	No (% trapped)
Time to hospital	473	68.5 (65.5, 71.7)	69.6 (65.4, 74.0)	67.1 (62.9, 71.5)	0.213	1.00 (1.00, 1.01)	GM (95% CI)
SBP	396	109 (29.6)	106 (30.6)	113 (27.8)	0.019	0.99 (0.99, 1.00)	Mean (SD)
HR	401	108 (25.0)	110 (25.6)	104 (23.7)	0.013	1.01 (1.01, 1.02)	Mean (SD)
RR Max	393	25 (8.5)	25 (8.2)	24 (8.9)	0.216	1.02 (0.99, 1.04)	Mean (SD)
Intubation	491	132 (26.9%)	67 (23.3%)	65 (31.9%)	0.036	0.65 (0.44, 0.97)	No (% intubated)

Total = 15

13.2.4. 0 – 12 HOURS

Variable		All MOF risk	SOFA				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	39.8 (37.7, 42.1)	35.6 (33.5, 37.9)	0.005	1.01 (1.00, 1.02)	GM (95% CI)
Psychiatric	470	38 (8.1%)	15 (5.6%)	23 (11.5%)	0.041	0.44 (0.20, 0.97)	No (% yes)
Respiratory disease	470	56 (11.9%)	38 (14.1%)	18 (9.0%)	0.094	1.83 (0.90, 3.71)	No (% yes)
Head Injury	486	285 (58.6%)	184 (65.0%)	101 (49.8%)	<0.001	2.95 (1.90, 4.60)	No (% injured)
Face Injury	486	126 (25.9%)	71 (25.1%)	55 (27.1%)	0.114	0.69 (0.44, 1.09)	No (% injured)
Chest Injury	486	299 (61.5%)	188 (66.4%)	111 (54.7%)	0.115	1.39 (0.92, 2.09)	No (% injured)
Abdo Injury	486	170 (35.0%)	107 (37.8%)	63 (31.0%)	0.133	1.40 (0.90, 2.16)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	201 (71.0%)	121 (59.6%)	0.002	1.97 (1.27, 3.04)	No (% injured)
External Injury	486	176 (36.2%)	100 (35.3%)	76 (37.4%)	0.166	0.75 (0.50, 1.13)	No (% injured)
Trapped	479	153 (31.9%)	103 (36.9%)	50 (25.0%)	0.006	1.76 (1.18, 2.62)	No (% trapped)
SBP	444	101 (27.5)	99 (27.9)	104 (26.8)	0.058	0.99 (0.99, 1.00)	Mean (SD)
FiO2	249				0.047		
FiO2 21-40%		36 (14.5%)	19 (12.7%)	17 (7.2%)	N/A	N/A	No (% category)
FIO2 41-60%		101 (40.6%)	53 (35.3%)	48 (48.5%)	0.975	0.99 (0.46, 2.12)	No (% category)
FiO2 61-80%		22 (8.8%)	17 (11.3%)	5 (5.1%)	0.067	3.04 (0.92, 10.03)	No (% category)
FiO2 >80%		90 (36.1%)	61 (40.7%)	29 (29.3%)	0.117	1.88 (0.85, 4.15)	No (% category)
HR	446	110 (23.9)	112 (25.1)	107 (22.0)	0.042	1.01 (1.00, 1.02)	Mean (SD)
PO2	314	14.4 (13.7, 15.2)	15.1 (14.0, 16.2)	13.7 (12.7, 14.8)	0.087	1.03 (1.00, 1.05)	GM (95% CI)
RR Max	438	27 (8.7)	27 (8.7)	26 (8.7)	0.057	1.02 (1.00, 1.05)	Mean (SD)
Temperature	308	36.0 (1.26)	35.9 (1.20)	36.1 (1.32)	0.164	0.88 (0.73, 1.06)	Mean (SD)
APTT	273	32.3 (30.6, 34.0)	33.8 (31.3, 36.5)	30.3 (28.2, 32.4)	0.123	1.01 (1.00, 1.02)	GM (95% CI)
Haemoglobin (Hb)	345	10.9 (2.59)	10.6 (2.41)	11.2 (2.78)	0.043	0.92 (0.84, 1.00)	Mean (SD)
Platelet count	295	172 (79.8)	167 (82.0)	179 (76.5)	0.225	1.00 (1.00, 1.00)	Mean (SD)
PT	255	14.7 (14.4, 15.0)	15.1 (14.6, 15.5)	14.3 (13.8, 14.7)	0.045	1.10 (1.00, 1.22)	GM (95% CI)
Albumin	269	29.7 (9.41)	28.0 (9.20)	31.9 (9.24)	0.001	0.95 (0.93, 0.98)	Mean (SD)
BD	314	-3.9 (3.83)	-4.3 (4.11)	-3.4 (3.38)	0.038	0.94 (0.88, 1.00)	Mean (SD)
Bilirubin	262	11.4 (10.7, 12.3)	12.1 (11.0, 13.3)	10.6 (9.6, 11.8)	0.050	1.03 (1.00, 1.06)	GM (95% CI)
Glucose	321	8.3 (8.1, 8.5)	88 (85, 92)	84 (80, 87)	0.045	1.01 (1.00, 1.02)	GM (95% CI)
Creatinine	275	86 (84, 89)	8.2 (7.9, 8.5)	8.5 (8.1, 8.9)	0.164	0.94 (0.86, 1.03)	GM (95% CI)
Lactate	313	2.5 (2.3, 2.7)	2.8 (2.5, 3.1)	2.2 (2.0, 2.4)	0.003	1.22 (1.07, 1.39)	GM (95% CI)
Potassium Max	328	4.1 (0.68)	4.0 (0.62)	4.1 (0.75)	0.190	0.80 (0.58, 1.11)	Mean (SD)
IV fluids	355	1676 (1479, 1899)	1838 (1531, 2205)	1504 (1272, 1778)	0.025	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	103 (21.0%)	77 (26.8%)	26 (12.7%)	<0.001	2.51 (1.54, 4.09)	No (% vasopressors)

Total = 29

13.2.5. 0 – 24 HOURS

Variable		All MOF risk	SOFA				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	39.8 (37.7, 42.1)	35.6 (33.5, 37.9)	0.005	1.01 (1.00, 1.02)	GM (95% CI)
Psychiatric	470	38 (8.1%)	15 (5.6%)	23 (11.5%)	0.041	0.44 (0.20, 0.97)	No (% yes)
Respiratory disease	470	56 (11.9%)	38 (14.1%)	18 (9.0%)	0.094	1.83 (0.90, 3.71)	No (% yes)
Head Injury	486	285 (58.6%)	184 (65.0%)	101 (49.8%)	<0.001	2.95 (1.90, 4.60)	No (% injured)
Face Injury	486	126 (25.9%)	71 (25.1%)	55 (27.1%)	0.114	0.69 (0.44, 1.09)	No (% injured)
Chest Injury	486	299 (61.5%)	188 (66.4%)	111 (54.7%)	0.115	1.39 (0.92, 2.09)	No (% injured)
Abdo Injury	486	170 (35.0%)	107 (37.8%)	63 (31.0%)	0.133	1.40 (0.90, 2.16)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	201 (71.0%)	121 (59.6%)	0.002	1.97 (1.27, 3.04)	No (% injured)
External Injury	486	176 (36.2%)	100 (35.3%)	76 (37.4%)	0.166	0.75 (0.50, 1.13)	No (% injured)
Trapped	479	153 (31.9%)	103 (36.9%)	50 (25.0%)	0.006	1.76 (1.18, 2.62)	No (% trapped)
SBP	465	97 (24.8)	94 (25.5)	100 (23.4)	0.016	0.99 (0.99, 1.00)	Mean (SD)
FiO2	290				0.018		
FiO2 21-40%		42 (14.5%)	23 (12.8%)	19 (17.1%)	N/A	N/A	No (% category)
FIO2 41-60%		99 (34.1%)	51 (28.5%)	48 (43.2%)	0.724	0.88 (0.43, 1.810	No (% category)
FiO2 61-80%		27 (9.3%)	20 (11.2%)	7 (6.3%)	0.110	2.36 (0.82, 6.77)	No (% category)
FiO2 >80%		122 (42.1%)	85 (45.7%)	37 (33.3%)	0.081	1.90 (0.92, 3.90)	No (% category)
HR	465	113 (23.6)	115 (25.1)	110 (21.0)	0.015	1.01 (1.00, 1.02)	Mean (SD)
RR Max	455	29 (9.2)	30 (9.2)	29 (9.1)	0.018	1.03 (1.00, 1.05)	Mean (SD)
Temperature	362	35.8 (1.16)	35.7 (1.09)	36.0 (1.22)	0.004	0.75 (0.61, 0.91)	Mean (SD)
APTT	351	34.6 (33.1, 36.3)	36.7 (34.4, 39.2)	31.9 (30.1, 33.9)	0.042	1.01 (1.00, 1.02)	GM (95% CI)
Haemoglobin (Hb)	385	10.0 (2.43)	9.6 (2.19)	10.4 (2.64)	0.002	0.87 (0.80, 0.95)	Mean (SD)
Platelet count	355	150 (73.2)	143 (74.0)	158 (71.5)	0.055	1.00 (1.00, 1.00)	Mean (SD)
PT	339	15.0 (14.8, 15.3)	15.5 (15.1, 15.8)	14.5 (14.1, 14.9)	0.002	1.15 (1.05, 1.26)	GM (95% CI)
Albumin	354	27.0 (8.91)	24.8 (8.45)	30.0 (8.67)	<0.001	0.93 (0.91, 0.96)	Mean (SD)
BD	369	-3.8 (4.42)	-4.4 (4.66)	-2.9 (3.91)	0.002	0.92 (0.88, 0.97)	Mean (SD)
Bilirubin	348	13.9 (13.1, 14.7)	14.4 (13.3, 15.5)	13.2 (12.1, 14.4)	0.192	1.02 (0.99, 1.04)	GM (95% CI)
Glucose	375	8.6 (8.4, 8.8)	92 (89, 95)	85 (81, 88)	0.003	1.01 (1.01, 1.02)	GM (95% CI)
Creatinine	356	89 (86, 91)	8.5 (8.3, 8.8)	8.8 (8.4, 9.2)	0.243	0.95 (0.87, 1.04)	GM (95% CI)
Lactate	368	2.6 (2.5, 2.8)	2.9 (2.7, 3.2)	2.2 (2.0, 2.4)	<0.001	1.27 (1.12, 1.44)	GM (95% CI)
Potassium Max	379	4.3 (0.62)	4.2 (0.57)	4.3 (0.69)	0.071	0.74 (0.53, 1.03)	Mean (SD)
Sodium Max	379	141 (3.8)	140 (3.6)	141 (3.9)	0.024	1.07 (1.01, 1.13)	Mean (SD)
Transfusion level	491				0.038		No (% transfused)
Transfusion		114 (23.2%)	68 (23.7%)	46 (22.5%)	0.503	1.16 (0.75, 1.78)	No (% transfused)
Massive transfusion		31 (6.3%)	25 (8.7%)	6 (2.9%)	0.011	3.27 (1.31, 8.16)	No (% transfused)
IV fluids	404	3627 (3299, 3987)	4127 (3586, 4750)	3083 (2741, 3469)	<0.001	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	142 (28.9%)	110 (38.3%)	32 (15.7%)	<0.001	3.34 (2.14, 5.22)	No (% vasopressors)

Total = 30

13.2.6. 0 – 48 HOURS

	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	39.8 (37.7, 42.1)	35.6 (33.5, 37.9)	0.005	1.01 (1.00, 1.02)	GM (95% CI)
Psychiatric	470	38 (8.1%)	15 (5.6%)	23 (11.5%)	0.041	0.44 (0.20, 0.97)	No (% yes)
Respiratory disease	470	56 (11.9%)	38 (14.1%)	18 (9.0%)	0.094	1.83 (0.90, 3.71)	No (% yes)
Head Injury	486	285 (58.6%)	184 (65.0%)	101 (49.8%)	<0.001	2.95 (1.90, 4.60)	No (% injured)
Face Injury	486	126 (25.9%)	71 (25.1%)	55 (27.1%)	0.114	0.69 (0.44, 1.09)	No (% injured)
Chest Injury	486	299 (61.5%)	188 (66.4%)	111 (54.7%)	0.115	1.39 (0.92, 2.09)	No (% injured)
Abdo Injury	486	170 (35.0%)	107 (37.8%)	63 (31.0%)	0.133	1.40 (0.90, 2.16)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	201 (71.0%)	121 (59.6%)	0.002	1.97 (1.27, 3.04)	No (% injured)
External Injury	486	176 (36.2%)	100 (35.3%)	76 (37.4%)	0.166	0.75 (0.50, 1.13)	No (% injured)
Trapped	479	153 (31.9%)	103 (36.9%)	50 (25.0%)	0.006	1.76 (1.18, 2.62)	No (% trapped)
SBP	487	94 (25.3)	92 (27.1)	98 (22.1)	0.019	0.99 (0.99, 1.00)	Mean (SD)
FiO2	321				<0.001		
FiO2 21-40%		40 (12.5%)	20 (10.3%)	20 (15.7%)	N/A	N/A	No (% category)
FIO2 41-60%		86 (26.8%)	37 (19.1%)	49 (38.6%)	0.464	0.76 (0.36, 1.60)	No (% category)
FiO2 61-80%		22 (6.9%)	14 (7.2%)	8 (6.3%)	0.304	1.75 (0.60, 5.09)	No (% category)
FiO2 >80%		173 (53.9%)	123 (63.4%)	50 (39.4%)	0.012	2.46 (1.22, 4.96)	No (% category)
HR	488	116 (23.6)	118 (25.5)	113 (20.4)	0.027	1.01 (1.00, 1.02)	Mean (SD)
PO2	410	8.8 (8.5, 9.1)	8.5 (8.1, 8.8)	9.3 (8.7, 9.9)	0.001	0.90 (0.85, 0.96)	GM (95% CI)
RR Max	476	31 (8.9)	32 (8.8)	29 (8.8)	0.001	1.04 (1.01, 1.06)	Mean (SD)
Temperature	410	35.7 (1.11)	35.5 (1.04)	36.0 (1.14)	<0.001	0.65 (0.53, 0.80)	Mean (SD)
APTT	404	36.4 (35.0, 38.0)	39.2 (37.0, 41.5)	33.2 (31.4, 35.1)	0.014	1.01 (1.00, 1.02)	GM (95% CI)
Haemoglobin (Hb)	420	9.3 (2.26)	8.7 (1.79)	10.0 (2.57)	<0.001	0.76 (0.69, 0.84)	Mean (SD)
Platelet count	404	130 (64.1)	120 (58.8)	144 (68.1)	<0.001	1.00 (1.00, 1.00)	Mean (SD)
PT	398	15.3 (15.1, 15.6)	15.9 (15.5, 16.3)	14.6 (14.3, 14.9)	<0.001	1.21 (1.11, 1.32)	GM (95% CI)
Albumin	403	25.4 (8.13)	22.9 (7.26)	28.9 (7.99)	<0.001	0.90 (0.88, 0.93)	Mean (SD)
BD	409	-3.4 (5.12)	-4.4 (5.30)	-2.1 (4.57)	<0.001	0.91 (0.87, 0.95)	Mean (SD)
Bilirubin	397	15.6 (14.9, 16.5)	16.5 (15.4, 17.6)	14.6 (13.5, 15.8)	0.038	1.02 (1.00, 1.04)	GM (95% CI)
Glucose	414	9.0 (8.8, 9.2)	95 (91, 99)	85 (82, 88)	0.001	1.01 (1.01, 1.02)	GM (95% CI)
Creatinine	403	90 (88, 93)	8.9 (8.6, 9.1)	9.2 (8.9, 9.6)	0.097	0.93 (0.86, 1.01)	GM (95% CI)
Lactate	407	2.6 (2.4, 2.8)	3.1 (2.8, 3.3)	2.1 (1.9, 2.3)	<0.001	1.38 (1.22, 1.58)	GM (95% CI)
pH	409	7.29 (0.080)	7.29 (0.081)	7.28 (0.078)	0.245	4.32 (0.37, 50.92)	Mean (SD)
Potassium Max	419	4.3 (0.62)	4.3 (0.58)	4.4 (0.57)	0.073	0.75 (0.55, 1.03)	Mean (SD)
Sodium Max	419	141 (4.3)	142 (4.3)	140 (4.1)	<0.001	1.13 (1.07, 1.19)	Mean (SD)
Transfusion level	491				0.038		No (% transfused)
Transfusion		114 (23.2%)	68 (23.7%)	46 (22.5%)	0.503	1.16 (0.75, 1.78)	No (% transfused)
Massive transfusion		31 (6.3%)	25 (8.7%)	6 (2.9%)	0.011	3.27 (1.31, 8.16)	No (% transfused)
IV fluids	489	8092 (7506, 8724)	10853 (9983, 11800)	5332 (4746, 5991)	<0.001	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	173 (35.2%)	134 (46.7%)	39 (19.1%)	<0.001	3.71 (2.44, 5.63)	No (% vasopressors)

Total = 32

13.3. MARSHALL MOF MODELS

13.3.1. 0 – 2 HOURS

Variable		All MOF risk	Marshall				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	40.1 (37.6, 42.8)	36.6 (34.7, 38.6)	0.034	1.01 (1.00, 1.02)	GM (95% CI)
Sex	491	371 (75.5%)	157 (78.9%)	214 (73.3%)	0.157	1.36 (0.89, 2.09)	No (% male)
CV disease	470	29 (6.2%)	16 (8.5%)	13 (4.6%)	0.094	1.91 (0.90, 4.06)	No (% yes)
Drugs/alcohol	470	39 (8.3%)	20 (10.6%)	19 (6.8%)	0.144	1.63 (0.85, 3.15)	No (% yes)
Respiratory disease	470	56 (11.9%)	26 (13.8%)	30 (10.7%)	0.313	1.34 (0.76, 2.34)	No (% yes)
Head Injury	486	285 (58.6%)	128 (65.3%)	157 (54.1%)	0.014	1.60 (1.10, 2.32)	No (% injured)
Chest Injury	486	299 (61.5%)	134 (68.4%)	165 (56.9%)	0.011	1.64 (1.12, 2.40)	No (% injured)
Abdo Injury	486	170 (35.0%)	84 (42.9%)	86 (29.7%)	0.003	1.78 (1.22, 2.60)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	142 (72.4%)	180 (62.1%)	0.018	1.61 (1.09, 2.38)	No (% injured)
External Injury	486	176 (36.2%)	64 (32.7%)	112 (38.6%)	0.180	0.77 (0.53, 1.13)	No (% injured)
SBP	367	118 (34.2)	114 (36.1)	120 (32.8)	0.103	1.00 (0.99, 1.00)	Mean (SD)
HR	375	106 (26.3)	110 (27.9)	103 (24.8)	0.007	1.01 (1.00, 1.02)	Mean (SD)
RR Min	357	20 (7.0)	21 (7.2)	19 (6.7)	0.002	1.05 (10.2, 1.09)	Mean (SD)

Total = 13

13.3.2. 0 – 4 HOURS

Variable		All MOF risk	Marshall				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	40.1 (37.6, 42.8)	36.6 (34.7, 38.6)	0.034	1.01 (1.00, 1.02)	GM (95% CI)
Sex	491	371 (75.5%)	157 (78.9%)	214 (73.3%)	0.157	1.36 (0.89, 2.09)	No (% male)
CV disease	470	29 (6.2%)	16 (8.5%)	13 (4.6%)	0.094	1.91 (0.90, 4.06)	No (% yes)
Drugs/alcohol	470	39 (8.3%)	20 (10.6%)	19 (6.8%)	0.144	1.63 (0.85, 3.15)	No (% yes)
Respiratory disease	470	56 (11.9%)	26 (13.8%)	30 (10.7%)	0.313	1.34 (0.76, 2.34)	No (% yes)
Head Injury	486	285 (58.6%)	128 (65.3%)	157 (54.1%)	0.014	1.60 (1.10, 2.32)	No (% injured)
Chest Injury	486	299 (61.5%)	134 (68.4%)	165 (56.9%)	0.011	1.64 (1.12, 2.40)	No (% injured)
Abdo Injury	486	170 (35.0%)	84 (42.9%)	86 (29.7%)	0.003	1.78 (1.22, 2.60)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	142 (72.4%)	180 (62.1%)	0.018	1.61 (1.09, 2.38)	No (% injured)
External Injury	486	176 (36.2%)	64 (32.7%)	112 (38.6%)	0.180	0.77 (0.53, 1.13)	No (% injured)
Time to hospital	469	67.7 (64.8, 70.6)	68.9 (63.9, 74.3)	66.8 (63.4, 70.3)	0.160	1.00 (1.00, 1.01)	GM (95% CI)
SBP	382	114 (31.9)	112 (34.2)	116 (30.3)	0.181	1.00 (0.99, 1.00)	Mean (SD)
HR	389	107 (25.7)	111 (27.5)	104 (24.1)	0.006	1.01 (1.00, 1.02)	Mean (SD)
RR Min	373	19 (6.9)	19 (7.1)	18 (6.8)	0.063	1.03 (1.00, 1.06)	Mean (SD)

Total = 14

13.3.3. 0 – 6 HOURS

Variable		All MOF risk	Marshall				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	40.1 (37.6, 42.8)	36.6 (34.7, 38.6)	0.034	1.01 (1.00, 1.02)	GM (95% CI)
Sex	491	371 (75.5%)	157 (78.9%)	214 (73.3%)	0.157	1.36 (0.89, 2.09)	No (% male)
CV disease	470	29 (6.2%)	16 (8.5%)	13 (4.6%)	0.094	1.91 (0.90, 4.06)	No (% yes)
Drugs/alcohol	470	39 (8.3%)	20 (10.6%)	19 (6.8%)	0.144	1.63 (0.85, 3.15)	No (% yes)
Respiratory disease	470	56 (11.9%)	26 (13.8%)	30 (10.7%)	0.313	1.34 (0.76, 2.34)	No (% yes)
Head Injury	486	285 (58.6%)	128 (65.3%)	157 (54.1%)	0.014	1.60 (1.10, 2.32)	No (% injured)
Chest Injury	486	299 (61.5%)	134 (68.4%)	165 (56.9%)	0.011	1.64 (1.12, 2.40)	No (% injured)
Abdo Injury	486	170 (35.0%)	84 (42.9%)	86 (29.7%)	0.003	1.78 (1.22, 2.60)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	142 (72.4%)	180 (62.1%)	0.018	1.61 (1.09, 2.38)	No (% injured)
External Injury	486	176 (36.2%)	64 (32.7%)	112 (38.6%)	0.180	0.77 (0.53, 1.13)	No (% injured)
Time to hospital	473	68.5 (65.5, 71.7)	70.0 (64.8, 75.8)	67.5 (64.0, 71.2)	0.133	1.00 (1.00, 1.01)	GM (95% CI)
SBP	396	109 (29.6)	107 (32.0)	111 (27.9)	0.182	1.00 (0.99, 1.00)	Mean (SD)
HR	401	108 (25.0)	111 (26.6)	105 (23.6)	0.015	1.01 (1.00, 1.02)	Mean (SD)
Vasopressors	491	35 (7.1%)	25 (12.6%)	10 (3.4%)	<0.001	4.05 (1.90, 8.64)	No (% vasopressors)

Total = 14

13.3.4. 0 – 12 HOURS

Variable		All MOF risk	Marshall				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	40.1 (37.6, 42.8)	36.6 (34.7, 38.6)	0.034	1.01 (1.00, 1.02)	GM (95% CI)
Sex	491	371 (75.5%)	157 (78.9%)	214 (73.3%)	0.157	1.36 (0.89, 2.09)	No (% male)
CV disease	470	29 (6.2%)	16 (8.5%)	13 (4.6%)	0.094	1.91 (0.90, 4.06)	No (% yes)
Drugs/alcohol	470	39 (8.3%)	20 (10.6%)	19 (6.8%)	0.144	1.63 (0.85, 3.15)	No (% yes)
Respiratory disease	470	56 (11.9%)	26 (13.8%)	30 (10.7%)	0.313	1.34 (0.76, 2.34)	No (% yes)
Head Injury	486	285 (58.6%)	128 (65.3%)	157 (54.1%)	0.014	1.60 (1.10, 2.32)	No (% injured)
Chest Injury	486	299 (61.5%)	134 (68.4%)	165 (56.9%)	0.011	1.64 (1.12, 2.40)	No (% injured)
Abdo Injury	486	170 (35.0%)	84 (42.9%)	86 (29.7%)	0.003	1.78 (1.22, 2.60)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	142 (72.4%)	180 (62.1%)	0.018	1.61 (1.09, 2.38)	No (% injured)
External Injury	486	176 (36.2%)	64 (32.7%)	112 (38.6%)	0.180	0.77 (0.53, 1.13)	No (% injured)
SBP	444	101 (27.5)	98 (28.7)	103 (26.6)	0.124	1.00 (0.99, 1.00)	Mean (SD)
FiO2	249				0.007		
FiO2 21-40%		36 (14.5%)	17 (15.0%)	19 (14.0%)	N/A	N/A	No (% category)
FIO2 41-60%		101 (40.6%)	33 (29.2%)	68 (50.0%)	0.122	0.54 (0.25, 1.18)	No (% category)
FiO2 61-80%		22 (8.8%)	14 (12.4%)	8 (5.9%)	0.227	1.96 (0.66, 5.80)	No (% category)
FiO2 >80%		90 (36.1%)	49 (43.4%)	41 (30.1%)	0.464	1.34 (0.62, 2.90)	No (% category)
HR	446	110 (23.9)	112 (26.2)	108 (22.1)	0.061	1.01 (1.00, 1.02)	Mean (SD)
RR Min	438	14 (5.2)	15 (5.4)	14 (5.0)	0.155	1.03 (0.99, 1.05)	Mean (SD)
Temperature	308	36.0 (1.26)	35.8 (1.19)	36.2 (1.28)	0.006	0.76 (0.63, 0.92)	Mean (SD)
APTT	273	32.3 (30.6, 34.0)	36.3 (32.9, 40.1)	29.6 (28.1, 31.3)	0.010	1.01 (1.00, 1.02)	GM (95% CI)
Haemoglobin (Hb)	345	10.9 (2.59)	10.4 (2.41)	11.2 (2.67)	0.012	0.90 (0.82, 0.98)	Mean (SD)
Platelet count	295	172 (79.8)	158 (73.5)	181 (82.6)	0.018	1.00 (1.00, 1.00)	Mean (SD)
PT	255	14.7 (14.4, 15.0)	15.5 (15.0, 16.1)	14.2 (13.8, 14.6)	0.001	1.19 (1.07, 1.32)	GM (95% CI)
Albumin	269	29.7 (9.41)	26.7 (9.69)	31.7 (8.68)	<0.001	0.94 (0.92, 0.97)	Mean (SD)
BD	314	-3.9 (3.83)	-5.2 (4.07)	-3.0 (3.40)	<0.001	0.85 (0.79, 0.91)	Mean (SD)
Bilirubin	262	11.4 (10.7, 12.3)	12.5 (11.1, 14.0)	10.8 (9.9, 11.8)	0.020	1.04 (1.01, 1.07)	GM (95% CI)
Glucose	321	8.3 (8.1, 8.5)	8.2 (7.9, 8.5)	8.4 (8.1, 8.7)	0.188	0.94 (0.85, 1.03)	GM (95% CI)
Creatinine	275	86 (84, 89)	91 (86, 96)	83 (81, 86)	0.002	1.02 (1.01, 1.03)	GM (95% CI)
Lactate	313	2.5 (2.3, 2.7)	3.1 (2.7, 3.4)	2.2 (2.0, 2.4)	<0.001	1.30 (1.14, 1.47)	GM (95% CI)
Sodium Max	328	139 (3.6)	140 (4.0)	139 (3.3)	0.070	1.06 (1.00, 1.13)	Mean (SD)
IV fluids	355	1676 (1479, 1899)	2018 (1611, 2529)	1500 (1295, 1736)	0.005	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	103 (21.0%)	60 (30.2%)	43 (14.7%)	<0.001	2.50 (1.61, 3.89)	No (% vasopressors)

Total = 28

13.3.5. 0 – 24 HOURS

Variable		All MOF risk	Marshall				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	40.1 (37.6, 42.8)	36.6 (34.7, 38.6)	0.034	1.01 (1.00, 1.02)	GM (95% CI)
Sex	491	371 (75.5%)	157 (78.9%)	214 (73.3%)	0.157	1.36 (0.89, 2.09)	No (% male)
CV disease	470	29 (6.2%)	16 (8.5%)	13 (4.6%)	0.094	1.91 (0.90, 4.06)	No (% yes)
Drugs/alcohol	470	39 (8.3%)	20 (10.6%)	19 (6.8%)	0.144	1.63 (0.85, 3.15)	No (% yes)
Respiratory disease	470	56 (11.9%)	26 (13.8%)	30 (10.7%)	0.313	1.34 (0.76, 2.34)	No (% yes)
Head Injury	486	285 (58.6%)	128 (65.3%)	157 (54.1%)	0.014	1.60 (1.10, 2.32)	No (% injured)
Chest Injury	486	299 (61.5%)	134 (68.4%)	165 (56.9%)	0.011	1.64 (1.12, 2.40)	No (% injured)
Abdo Injury	486	170 (35.0%)	84 (42.9%)	86 (29.7%)	0.003	1.78 (1.22, 2.60)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	142 (72.4%)	180 (62.1%)	0.018	1.61 (1.09, 2.38)	No (% injured)
External Injury	486	176 (36.2%)	64 (32.7%)	112 (38.6%)	0.180	0.77 (0.53, 1.13)	No (% injured)
SBP	465	97 (24.8)	94 (26.3)	98 (23.6)	0.123	1.00 (0.99, 1.00)	Mean (SD)
FiO2	290				0.003		
FiO2 21-40%		42 (14.5%)	21 (15.3%)	21 (13.7%)	N/A	N/A	No (% category)
FIO2 41-60%		99 (34.1%)	32 (23.4%)	67 (43.8%)	0.049	0.48 (0.23, 1.00)	No (% category)
FiO2 61-80%		27 (9.3%)	15 (10.9%)	12 (7.8%)	0.652	1.25 (0.47, 3.30)	No (% category)
FiO2 >80%		122 (42.1%)	69 (50.4%)	53 (34.6%)	0.462	1.30 (0.65, 2.63)	No (% category)
HR	465	113 (23.6)	116 (26.5)	111 (21.3)	0.031	1.01 (1.00, 1.02)	Mean (SD)
RR Max	455	29 (9.2)	30 (9.6)	28 (8.9)	0.125	1.02 (1.00, 1.04)	Mean (SD)
Temperature	362	35.8 (1.16)	35.6 (1.10)	36.0 (1.17)	<0.001	0.69 (0.57, 0.85)	Mean (SD)
APTT	351	34.6 (33.1, 36.3)	39.6 (36.2, 43.3)	31.8 (30.4, 33.2)	0.001	1.02 (1.01, 1.02)	GM (95% CI)
Haemoglobin (Hb)	385	10.0 (2.43)	9.6 (2.30)	10.2 (2.48)	0.015	0.90 (0.82, 0.98)	Mean (SD)
Platelet count	355	150 (73.2)	137 (67.1)	158 (75.6)	0.009	1.00 (1.00, 1.00)	Mean (SD)
PT	339	15.0 (14.8, 15.3)	15.9 (15.4, 16.4)	14.5 (14.2, 14.8)	<0.001	1.21 (1.11, 1.32)	GM (95% CI)
Albumin	354	27.0 (8.91)	24.1 (9.02)	28.9 (8.33)	<0.001	0.94 (0.91, 0.96)	Mean (SD)
BD	369	-3.8 (4.42)	-5.3 (4.74)	-2.8 (3.87)	<0.001	0.86 (0.82, 0.91)	Mean (SD)
Bilirubin	348	13.9 (13.1, 14.7)	15.0 (13.6, 16.5)	13.2 (12.3, 14.2)	0.026	1.03 (1.00, 1.05)	GM (95% CI)
Glucose	375	8.6 (8.4, 8.8)	8.5 (8.2, 8.8)	8.7 (8.4, 9.0)	0.188	0.85, 1.03)	GM (95% CI)
Creatinine	356	89 (86, 91)	95 (90, 99)	85 (82, 88)	<0.001	1.02 (1.01, 1.03)	GM (95% CI)
Lactate	368	2.6 (2.5, 2.8)	3.2 (2.9, 3.6)	2.3 (2.1, 2.4)	<0.001	1.35 (1.20, 1.53)	GM (95% CI)
Potassium Max	379	4.3 (0.62)	4.2 (0.58)	4.3 (0.65)	0.097	0.75 (0.53, 1.05)	Mean (SD)
Sodium Max	379	141 (3.8)	142 (4.0)	140 (3.5)	<0.001	1.11 (1.05, 1.18)	Mean (SD)
Transfusion level	491				0.019		No (% transfused)
Transfusion		114 (23.2%)	48 (24.1%)	66 (22.6%)	0.420	1.19 (0.78, 1.84)	No (% transfused)
Massive transfusion		31 (6.3%)	20 (10.1%)	11 (3.8%)	0.005	2.98 (1.39, 6.43)	No (% transfused)
IV fluids	404	3627 (3299, 3987)	4144 (3417, 5019)	3337 (3032, 3672)	<0.001	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	142 (28.9%)	81 (40.7%)	61 (20.9%)	<0.001	2.60 (1.74, 3.88)	No (% vasopressors)

Total = 30

13.3.6. 0 – 48 HOURS

Variable		All MOF risk	Marshall				
	n		MOF	Non-MOF	p	Unadjusted OR	Notes/measurement
Age	491	39.7 (37.7, 41.8)	40.1 (37.6, 42.8)	36.6 (34.7, 38.6)	0.034	1.01 (1.00, 1.02)	GM (95% CI)
Sex	491	371 (75.5%)	157 (78.9%)	214 (73.3%)	0.157	1.36 (0.89, 2.09)	No (% male)
CV disease	470	29 (6.2%)	16 (8.5%)	13 (4.6%)	0.094	1.91 (0.90, 4.06)	No (% yes)
Drugs/alcohol	470	39 (8.3%)	20 (10.6%)	19 (6.8%)	0.144	1.63 (0.85, 3.15)	No (% yes)
Respiratory disease	470	56 (11.9%)	26 (13.8%)	30 (10.7%)	0.313	1.34 (0.76, 2.34)	No (% yes)
Head Injury	486	285 (58.6%)	128 (65.3%)	157 (54.1%)	0.014	1.60 (1.10, 2.32)	No (% injured)
Chest Injury	486	299 (61.5%)	134 (68.4%)	165 (56.9%)	0.011	1.64 (1.12, 2.40)	No (% injured)
Abdo Injury	486	170 (35.0%)	84 (42.9%)	86 (29.7%)	0.003	1.78 (1.22, 2.60)	No (% injured)
Limb/pelvic Injury	486	322 (66.3%)	142 (72.4%)	180 (62.1%)	0.018	1.61 (1.09, 2.38)	No (% injured)
External Injury	486	176 (36.2%)	64 (32.7%)	112 (38.6%)	0.180	0.77 (0.53, 1.13)	No (% injured)
SBP	487	94 (25.3)	93 (27.4)	95 (23.7)	0.231	1.00 (0.99, 1.00)	Mean (SD)
FiO2	321				<0.001		
FiO2 21-40%		40 (12.5%)	18 (12.2%)	22 (12.6%)	N/A	N/A	No (% category)
FIO2 41-60%		86 (26.8%)	22 (15.0%)	64 (36.8%)	0.031	0.42 (0.19, 0.93)	No (% category)
FiO2 61-80%		22 (6.9%)	9 (6.1%)	13 (7.5%)	0.756	0.85 (0.30, 2.43)	No (% category)
FiO2 >80%		173 (53.9%)	98 (66.7%)	75 (43.1%)	0.185	1.60 (0.80, 3.19)	No (% category)
HR	488	116 (23.6)	119 (26.6)	111 (21.2)	0.052	1.01 (1.00, 1.02)	Mean (SD)
RR Max	476	31 (8.9)	32 (9.3)	30 (8.6)	0.009	1.03 (1.01, 1.05)	Mean (SD)
Temperature	410	35.7 (1.11)	35.4 (1.04)	35.9 (1.11)	<0.001	0.65 (0.53, 0.80)	Mean (SD)
APTT	404	36.4 (35.0, 38.0)	41.6 (38.5, 45.1)	33.5 (32.1, 34.9)	<0.001	1.02 (1.01, 1.03)	GM (95% CI)
Haemoglobin (Hb)	420	9.3 (2.26)	8.7 (1.91)	9.6 (2.39)	<0.001	0.82 (0.75, 0.91)	Mean (SD)
Platelet count	404	130 (64.1)	115 (56.8)	140 (66.6)	<0.001	0.99 (0.99, 1.00)	Mean (SD)
PT	398	15.3 (15.1, 15.6)	16.3 (15.8, 16.8)	14.7 (14.5, 15.0)	<0.001	1.22 (1.12, 1.32)	GM (95% CI)
Albumin	403	25.4 (8.13)	22.4 (7.88)	27.4 (7.71)	<0.001	0.92 (0.90, 0.95)	Mean (SD)
BD	409	-3.4 (5.12)	-5.2 (5.53)	-2.2 (4.45)	<0.001	0.88 (0.84, 0.92)	Mean (SD)
Bilirubin	397	15.6 (14.9, 16.5)	17.0 (15.6, 18.5)	14.8 (13.9, 15.8)	0.006	1.03 (1.01, 1.05)	GM (95% CI)
Glucose	414	9.0 (8.8, 9.2)	8.9 (8.6, 9.1)	9.1 (8.8, 9.4)	0.153	0.94 (0.87, 1.02)	GM (95% CI)
Creatinine	403	90 (88, 93)	99 (93, 105)	85 (83, 88)	<0.001	1.02 (1.01, 1.02)	GM (95% CI)
Lactate	407	2.6 (2.4, 2.8)	3.4 (3.1, 3.7)	2.2 (2.0, 2.3)	<0.001	1.43 (1.27, 1.62)	GM (95% CI)
Potassium Max	419	4.3 (0.62)	4.3 (0.58)	4.4 (0.65)	0.160	0.80 (0.58, 1.10)	Mean (SD)
Sodium Max	419	141 (4.3)	143 (4.5)	141 (4.0)	<0.001	1.13 (1.07, 1.19)	Mean (SD)
Transfusion level	491				0.019		No (% transfused)
Transfusion		114 (23.2%)	48 (24.1%)	66 (22.6%)	0.420	1.19 (0.78, 1.84)	No (% transfused)
Massive transfusion		31 (6.3%)	20 (10.1%)	11 (3.8%)	0.005	2.98 (1.39, 6.43)	No (% transfused)
Intra-operative time	491	168 (156, 181)	157 (140, 176)	176 (160, 194)	0.127	1.00 (1.00, 1.00)	GM (95% CI)
IV fluids	489	8092 (7506, 8724)	11555 (10399, 12838)	6337 (5763, 6967)	<0.001	1.00 (1.00, 1.00)	GM (95% CI)
Vasopressors	491	173 (35.2%)	97 (48.7%)	76 (26.0%)	<0.001	2.70 (1.85, 2.96)	No (% vasopressors)

Total = 31

APPENDIX 14 MULTIVARIATE MODEL DEVELOPMENT

14.1. DENVER MOF MULTIVARIATE MODEL DEVELOPMENT

14.1.1. DENVER 0 - 2 HOURS MODEL

MODEL VARIABLE LISTS

Model 1	Model 2	Model 3	Model 4
n = 257	**n = 257**	**n = 257**	**n = 257**
Age	Age	CV disease	CV disease
CV disease	CV disease	Head injury	Head injury
Head injury	Head injury	Chest injury	Abdominal injury
Chest injury	Chest injury	Abdominal injury	HR max
Abdominal injury	Abdominal injury	HR max	RR min
Limb/pelvis injury	HR max	RR min	
HR max	RR min		
RR min			

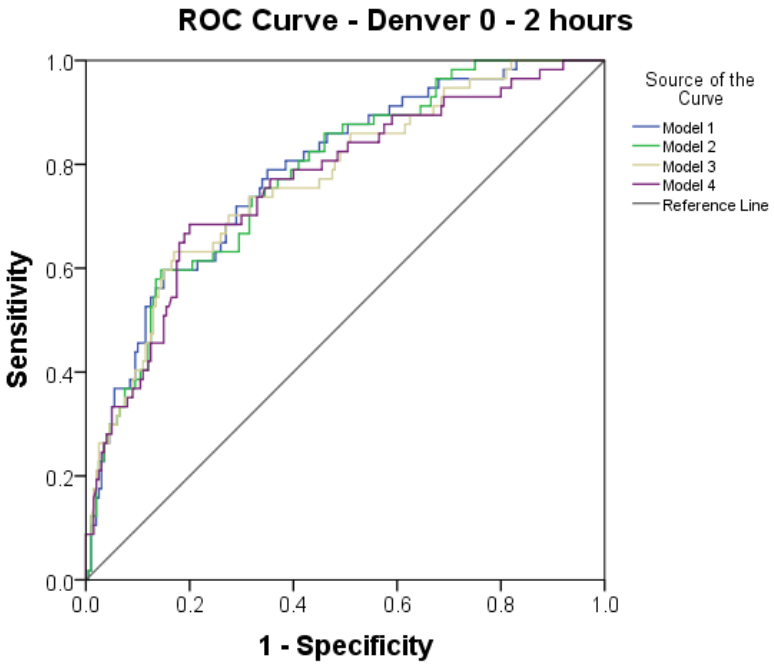
GOODNESS-OF-FIT MEASURES

DENVER 0-2 hours	Model χ^2	Model χ^2 p value	-2 log likelihood	Nagelkerke R^2	Hosmer-Lemeshow χ^2	Hosmer-Lemeshow χ^2 p value
Model 1	48.217	<0.001	48.217	0.262	1.415	0.994
Model 2	47.462	<0.001	47.462	0.258	10.370	0.240
Model 3	46.333	<0.001	46.333	0.253	7.351	0.499
Model 4	43.237	<0.001	43.237	0.237	9.036	0.339

CATEGORY PREDICTORS

DENVER 0-2 hours	PAC (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Model 1	80.9	31.6	95.0	64.2	82.3
Model 2	80.5	29.8	95.0	63.0	82.6
Model 3	80.2	26.3	95.5	62.5	82.0
Model 4	80.5	28.1	95.5	64.0	82.3

ROC CURVES



DENVER 0-2 hours	ROC AUC	95% CI
Model 1	0.786	0.720, 0.851
Model 2	0.779	0.714, 0.845
Model 3	0.770	0.700, 0.840
Model 4	0.765	0.693, 0.837

SELECTED MODEL STATISTICS

Model 4

Variable	Coefficient	Wald statistic p value	Adjusted OR (95% CI)
Constant	-6.108		
CV disease	1.982	0.001	7.26 (2.20, 23.93)
Head injury	1.546	<0.001	4.69 (21.4, 10.27)
Abdominal injury	1.016	0.005	2.76 (1.36, 5.60)
HR Max	0.018	0.004	1.02 (1.01, 1.02)
RR Min	0.066	0.004	1.07 (1.02, 1.12)

14.1.2. DENVER 0 - 4 HOURS MODEL

MODEL VARIABLE LISTS

Model 1	Model 2	Model 3	Model 4	Model 5
n = 280	**n = 280**	**n = 372**	**n = 372**	**n = 372**
Age	Age	Age	Age	Age
CV disease	CV disease	CV disease	CV disease	CV disease
Head injury	Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Abdominal injury	Abdominal injury
Abdominal injury	Abdominal injury	Abdominal injury	Limb/pelvis injury	HR max
Limb/pelvis injury	Limb/pelvis injury	Limb/pelvis injury	HR max	
HR max	HR max	HR max		
RR min	RR min			
Operation				

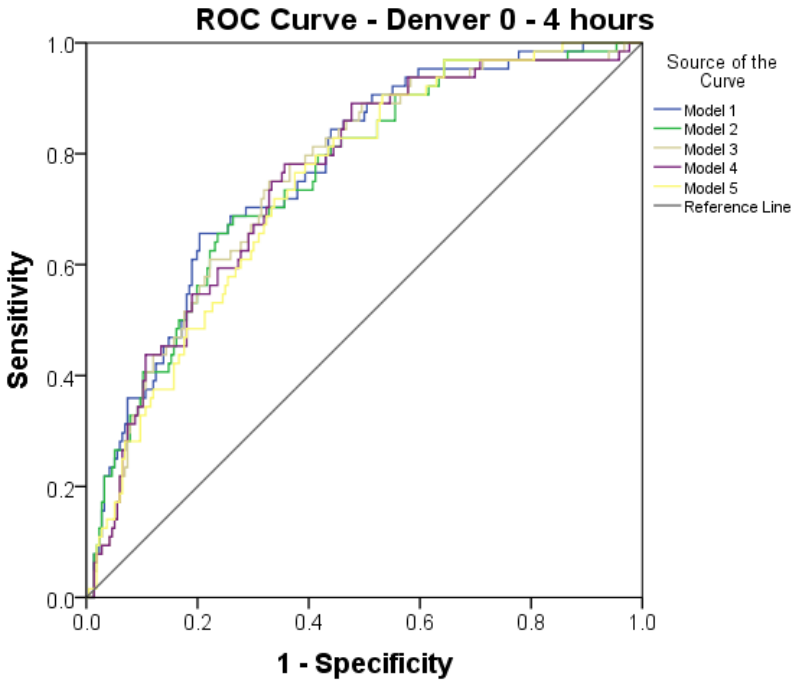
GOODNESS-OF-FIT MEASURES

DENVER 0-4 hours	Model χ^2	Model χ^2 p value	-2 log likelihood	Nagelkerke R^2	Hosmer-Lemeshow χ^2	Hosmer-Lemeshow χ^2 p value
Model 1	47.938	<0.001	253.087	0.239	9.622	0.293
Model 2	42.534	<0.001	258.671	0.213	2.578	0.958
Model 3	36.907	<0.001	352.975	0.145	3.333	0.912
Model 4	36.801	<0.001	353.081	0.145	4.704	0.789
Model 5	33.052	<0.001	356.830	0.131	7.565	0.477

CATEGORY PREDICTORS

DENVER 0-4 hours	PAC (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Model 1	78.6	26.6	94.0	56.7	81.2
Model 2	78.6	26.6	94.0	56.7	81.2
Model 3	77.7	7.4	97.3	42.9	79.1
Model 4	78.0	7.4	97.6	46.1	79.1
Model 5	78.0	6.2	97.9	45.5	78.9

ROC CURVES



DENVER 0-4 hours	ROC AUC	95% CI
Model 1	0.771	0.709, 0.833
Model 2	0.758	0.693, 0.822
Model 3	0.758	0.693, 0.822
Model 4	0.754	0.690, 0.819
Model 5	0.745	0.682, 0.808

SELECTED MODEL STATISTICS

Model 2

Variable	Coefficient	Wald statistic p value	Adjusted OR (95% CI)
Constant	-5.181		
Age	0.011	0.216	5.64 (1.78, 17.81)
CV disease	0.1729	0.003	4.47 (2.16, 9.25)
Head injury	1.498	<0.001	4.47 (2.16, 9.25)
Chest injury	0.424	0.267	1.53 (0.72, 3.23)
Abdominal injury	0.965	0.006	2.63 (1.33, 5.20)
Limb/pelvis injury	-0.393	0.307	0.68 (0.32, 1.44)
HR Max	0.016	0.014	1.02 (1.00, 1.03)
RR Min	0.004	0.851	1.00 (0.96, 1.05)

14.1.3. DENVER 0 – 6 HOURS MODEL

MODEL DEVELOPMENT LISTS

Model 1	Model 2	Model 3	Model 4
n = 246	**n = 246**	**n = 247**	**n = 373**
Age	Age	Age	Age
CV disease	CV disease	CV disease	CV disease
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Chest injury
Abdominal injury	Abdominal injury	Abdominal injury	Abdominal injury
Limb/pelvis injury	Limb/pelvis injury	Limb/pelvis injury	Limb/pelvis injury
MAP	MAP	MAP	RR min
HR max	HR max	RR min	Vasopressors
RR min	RR min	Vasopressors	
Operation	Vasopressors		
Vasopressors			

Model 5	Model 6	Model 7	Model 8
n = 373	**n = 465**	**n = 465**	**n = 465**
CV disease	CV disease	CV disease	CV disease
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Abdominal injury	Abdominal injury
Abdominal injury	Abdominal injury	Limb/pelvis injury	Vasopressors
Limb/pelvis injury	Limb/pelvis injury	Vasopressors	
RR min	Vasopressors		
Vasopressors			

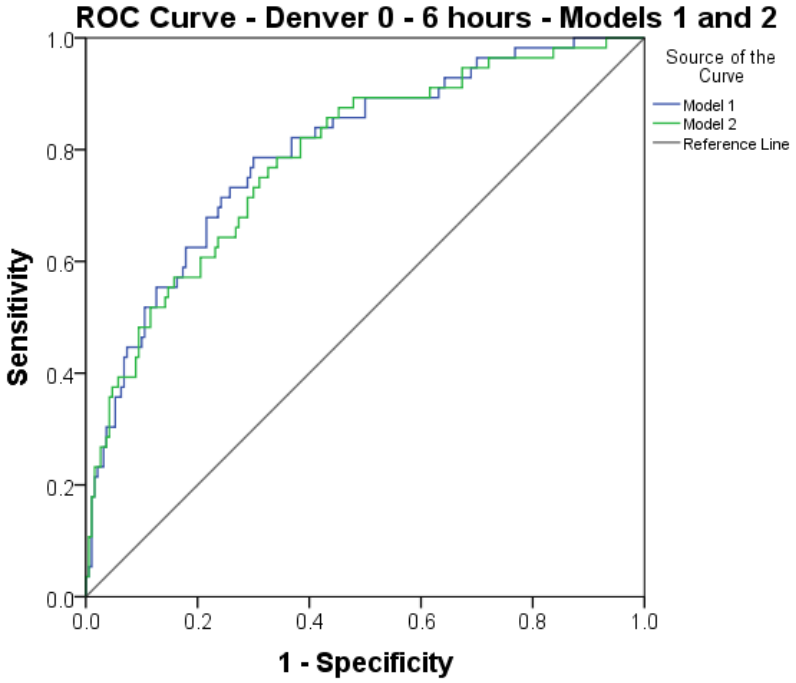
GOODNESS-OF-FIT MEASURES

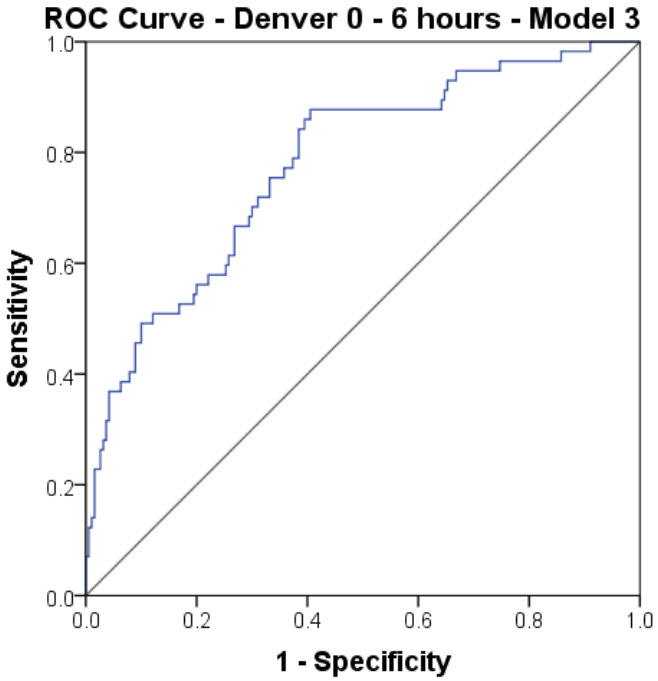
DENVER 0-6 hours	Model χ^2	Model χ^2 p value	-2 log likelihood	Nagelkerke R^2	Hosmer-Lemeshow χ^2	Hosmer-Lemeshow χ^2 p value
Model 1	53.792	<0.001	210.123	0.299	2.123	0.977
Model 2	50.390	<0.001	213.524	0.282	5.292	0.726
Model 3	48.045	<0.001	218.816	0.268	15.077	0.058
Model 4	45.766	<0.001	354.615	0.175	6.338	0.609
Model 5	45.697	<0.001	354.685	0.175	7.577	0.476
Model 6	39.905	<0.001	461.743	0.125	13.978	0.052
Model 7	39.899	<0.001	461.749	0.125	11.814	0.160
Model 8	38.123	<0.001	463.434	0.120	3.390	0.335

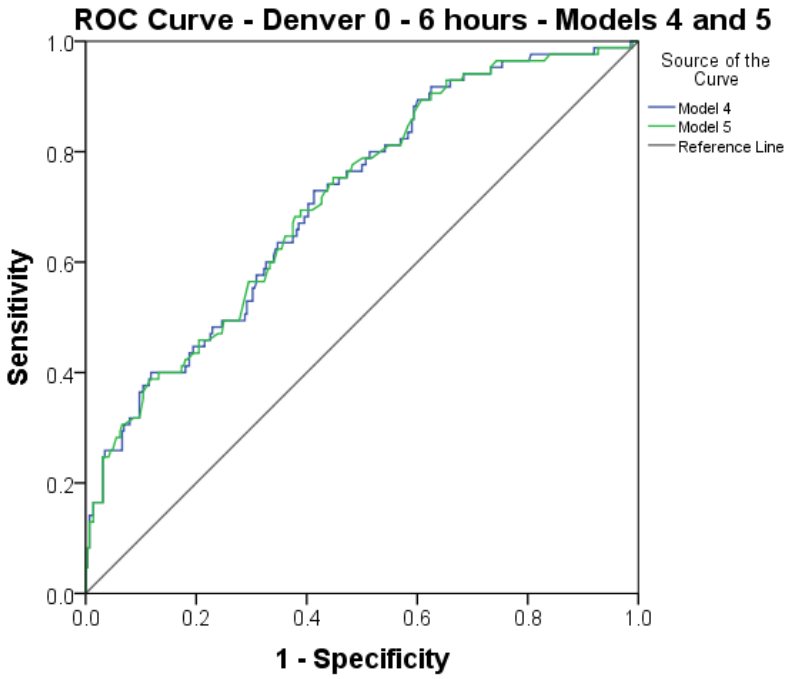
CATEGORY PREDICTORS

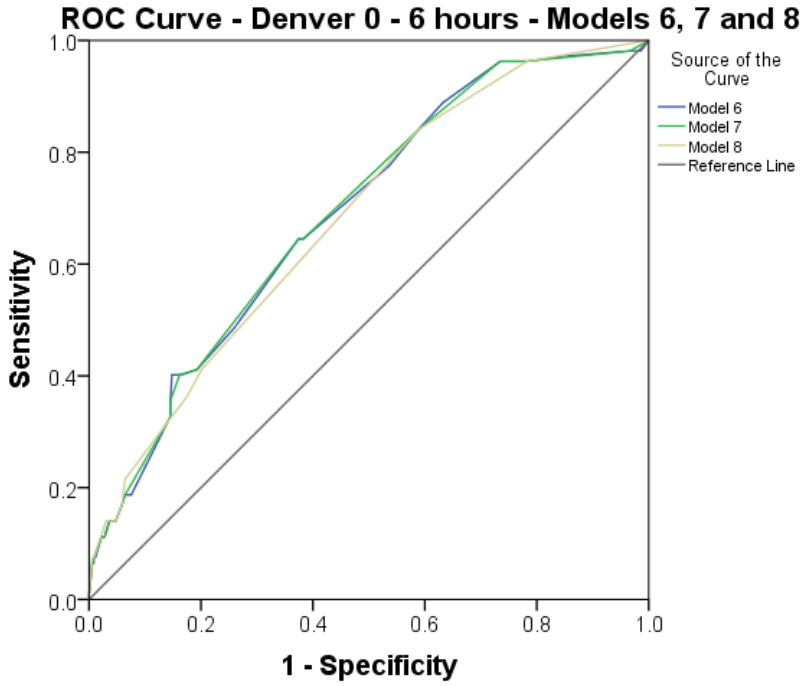
DENVER 0-6 hours	PAC (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Model 1	80.5	30.4	95.3	65.4	82.3
Model 2	80.9	30.4	95.8	68.0	82.4
Model 3	81.0	29.8	96.3	70.8	82.1
Model 4	78.8	17.6	96.9	62.5	79.9
Model 5	78.8	17.6	96.9	62.5	79.9
Model 6	77.4	11.1	97.2	54.5	78.2
Model 7	77.4	11.2	97.2	54.5	78.2
Model 8	77.8	14.0	96.9	57.7	79.0

ROC CURVES




ROC Curve - Denver 0 - 6 hours - Model 3
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Denver 0 - 6 hours - Models 4 and 5
Sensitivity
1 - Specificity
Source of the Curve
Model 4
Model 5
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0



DENVER 0-6 hours	ROC AUC	95% CI
Model 1	0.798	0.732, 0.864
Model 2	0.788	0.719, 0.856
Model 3	0.779	0.710, 0.848
Model 4	0.714	0.653, 0.774
Model 5	0.714	0.653, 0.775
Model 6	0.689	0.634, 0.744
Model 7	0.691	0.637, 0.746
Model 8	0.681	0.626, 0.736

SELECTED MODEL STATISTICS

Model 3

Variable	Coefficient	Wald statistic p value	Adjusted OR (95% CI)
Constant	-4.268		
Age	0.004	0.696	1.00 (0.99, 1.02)
CV disease	1.492	0.022	4.45 (1.24, 15.95)
Head injury	1.361	0.001	3.90 (1.76, 8.65)
Chest injury	0.819	0-.070	2.27 (0.93, 5.50)
Abdominal injury	0.711	0.064	2.04 (0.96, 4.32)
Limb/pelvis injury	0.373	0.368	1.45 (0.65, 32.7)
MAP	0.001	0.888	1.00 (0.99, 1.02)
RR min	0.028	0.279	1.03 (0.98, 1.08)
Vasopressors	1.873	0.001	6.51 (2.25, 18.80)

14.1.4. DENVER 0 – 12 HOURS MODEL

MODEL VARIABLE LISTS

Model 1	Model 2	Model 3	Model 4
n = 107	**n = 107**	**n = 108**	**n = 116**
Age	Age	Age	Age
CV disease	CV disease	CV disease	CV disease
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Chest injury
Abdominal injury	Abdominal injury	Abdominal injury	Abdominal injury
Limb/pelvis injury	Limb/pelvis injury	Limb/pelvis injury	Limb/pelvis injury
MAP	MAP	MAP	MAP
HR	HR	HR	HR
RR min	RR min	RR min	RR min
Temperature	Temperature	Temperature	Platelet count
Platelet count	Platelet count	Platelet count	PT
PT	PT	PT	Albumin
WCC	WCC	Albumin	BD
Albumin	Albumin	BD	Creatinine
BD	BD	Creatinine	Lactate
Creatinine	Creatinine	Lactate	Potassium min
Lactate	Lactate	Potassium min	Sodium max
Potassium min	Potassium min	Sodium max	Vasopressors
Sodium max	Sodium max	Vasopressors	
Operation	Vasopressors		
Vasopressors			

Model 5	Model 6	Model 7	Model 8
n = 120	**n = 120**	**n = 120**	**n = 168**
Age	Age	Age	Age
CV disease	CV disease	CV disease	CV disease
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Chest injury
Abdominal injury	Abdominal injury	Abdominal injury	Abdominal injury
Limb/pelvis injury	Limb/pelvis injury	Limb/pelvis injury	Limb/pelvis injury
MAP	MAP	MAP	MAP
HR	HR	RR min	RR min
RR min	RR min	Platelet count	Platelet count
Platelet count	Platelet count	PT	PT
PT	PT	BD	BD
BD	BD	Creatinine	Creatinine
Creatinine	Creatinine	Lactate	Lactate
Lactate	Lactate	Potassium min	Vasopressors
Potassium min	Potassium min	Vasopressors	
Sodium max	Vasopressors		
Vasopressors			

Model 9	Model 10	Model 11	Model 12
n = 187	**n = 187**	**n = 219**	**n = 219**
Age	Age	Age	Age
CV disease	CV disease	CV disease	CV disease
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Chest injury
Abdominal injury	Abdominal injury	Abdominal injury	Abdominal injury
Limb/pelvis injury	Limb/pelvis injury	Limb/pelvis injury	Limb/pelvis injury
MAP	Platelet count	PT	PT
Platelet count	PT	BD	BD
PT	BD	Creatinine	Creatinine
BD	Creatinine	Lactate	Vasopressors
Creatinine	Lactate	Vasopressors	
Lactate	Vasopressors		
Vasopressors			

Model 13	Model 14	Model 15	Model 16
n = 229	**n = 229**	**n = 229**	**n = 260**
Age	Age	Head injury	Head injury
Head injury	Head injury	Abdominal injury	Abdominal injury
Chest injury	Abdominal injury	Limb/pelvis injury	Limb/pelvis injury
Abdominal injury	Limb/pelvis injury	PT	BD
Limb/pelvis injury	PT	BD	Creatinine
PT	BD	Creatinine	Vasopressors
BD	Creatinine	Vasopressors	
Creatinine	Vasopressors		
Vasopressors			

Model 17	Model 18
n = 310	**n = 310**
Head injury	Head injury
Abdominal injury	Abdominal injury
Limb/pelvis injury	BD
BD	Vasopressors
Vasopressors	

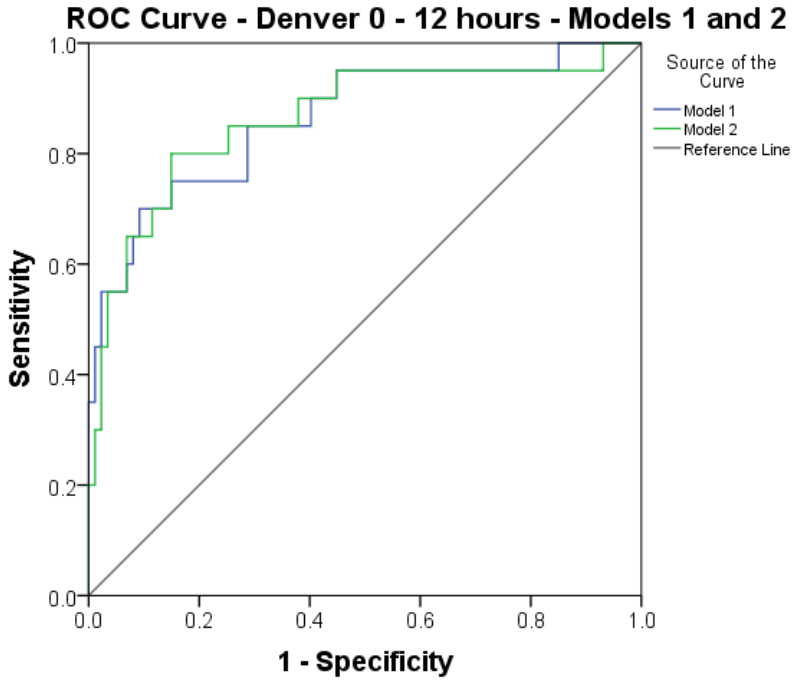
GOODNESS-OF-FIT MEASURES

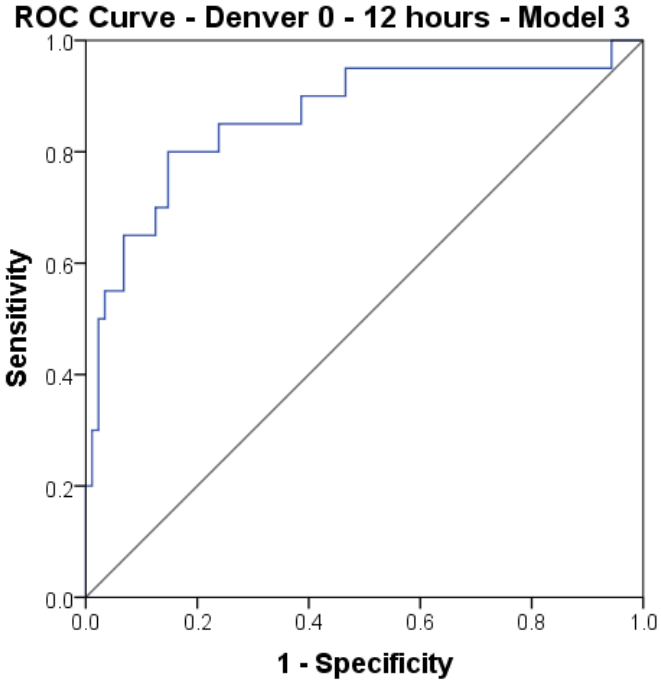
DENVER 0-12 hours	Model χ^2	Model χ^2 p value	-2 log likelihood	Nagelkerke R^2	Hosmer-Lemeshow χ^2	Hosmer-Lemeshow χ^2 p value
Model 1	34.117	0.035	68.972	0.441	9.918	0.271
Model 2	32.383	0.039	70.705	0.422	17.801	0.023
Model 3	32.465	0.028	71.035	0.421	17.469	0.026
Model 4	33.949	0.013	75.777	0.415	20.330	0.009
Model 5	34.317	0.008	80.022	0.405	18.834	0.016
Model 6	34.278	0.005	80.060	0.404	17.715	0.023
Model 7	34.278	0.003	80.061	0.404	17.623	0.024
Model 8	43.816	<0.001	119.787	0.369	13.447	0.097
Model 9	45.303	<0.001	137.900	0.344	2.663	0.954
Model 10	45.167	<0.001	138.036	0.344	4.620	0.797
Model 11	55.477	<0.001	164.252	0.353	9.325	0.316
Model 12	53.897	<0.001	165.832	0.344	9.139	0.331
Model 13	57.101	<0.001	175.372	0.346	14.346	0.073
Model 14	55.919	<0.001	176.553	0.340	7.703	0.463
Model 15	54.213	<0.001	178.259	0.211	5.917	0.657
Model 16	48.456	<0.001	214.502	0.267	13.714	0.090
Model 17	53.979	<0.001	259.023	0.251	10.055	0.261
Model 18	50.757	<0.001	262.245	0.238	10.594	0.226

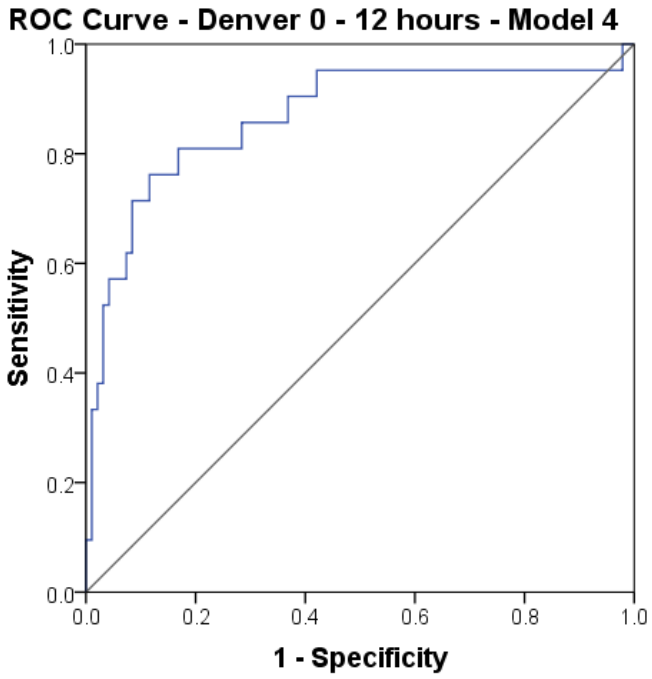
CATEGORY PREDICTORS

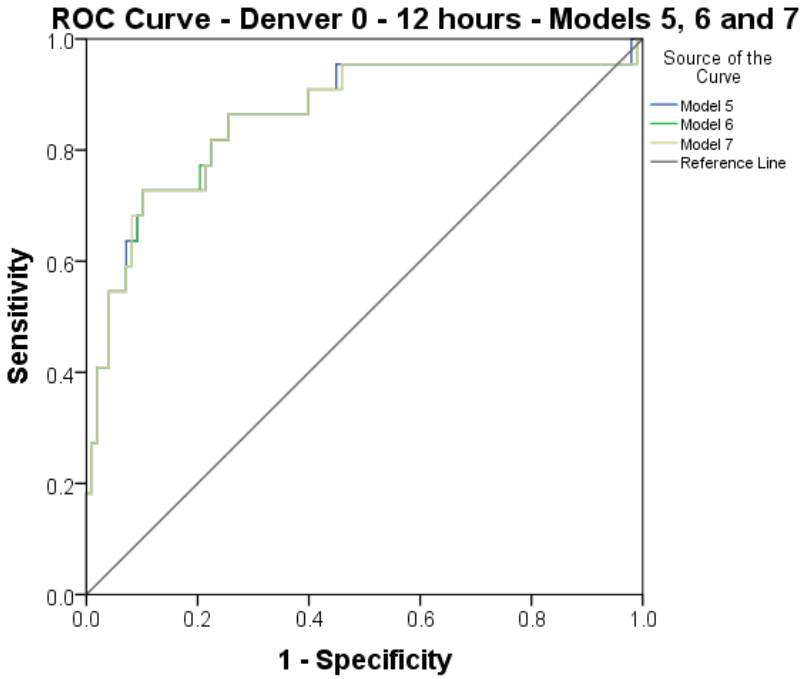
DENVER 0-12 hours	PAC (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Model 1	88.8	55.0	96.6	78.6	90.3
Model 2	87.9	55.0	95.4	73.3	90.2
Model 3	88.0	55.0	95.5	73.3	90.2
Model 4	87.9	47.6	96.8	76.9	89.3
Model 5	87.5	54.5	94.9	70.6	90.3
Model 6	87.5	54.5	94.9	70.6	90.3
Model 7	87.5	54.5	94.9	70.6	90.3
Model 8	88.7	56.3	96.3	78.3	90.3
Model 9	84.0	38.9	94.7	63.6	86.7
Model 10	84.0	36.1	95.4	65.0	86.2
Model 11	84.0	45.5	93.7	64.5	87.2
Model 12	84.5	40.9	95.4	69.2	86.5
Model 13	84.7	44.7	95.1	70.0	86.9
Model 14	83.4	40.4	94.5	65.5	86.0
Model 15	83.4	34.0	96.2	69.6	85.0
Model 16	82.3	30.2	95.7	64.0	84.3
Model 17	82.9	33.3	95.5	65.6	84.9
Model 18	81.9	27.0	96.0	63.0	83.7

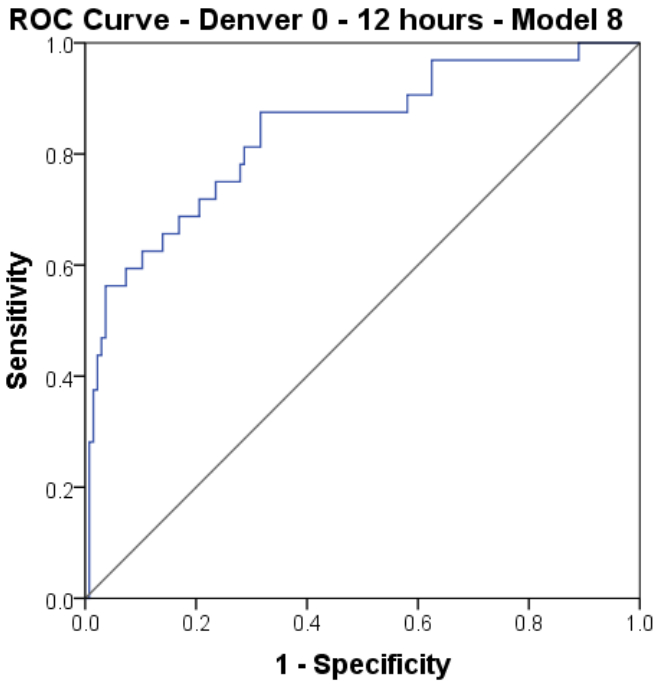
ROC CURVES

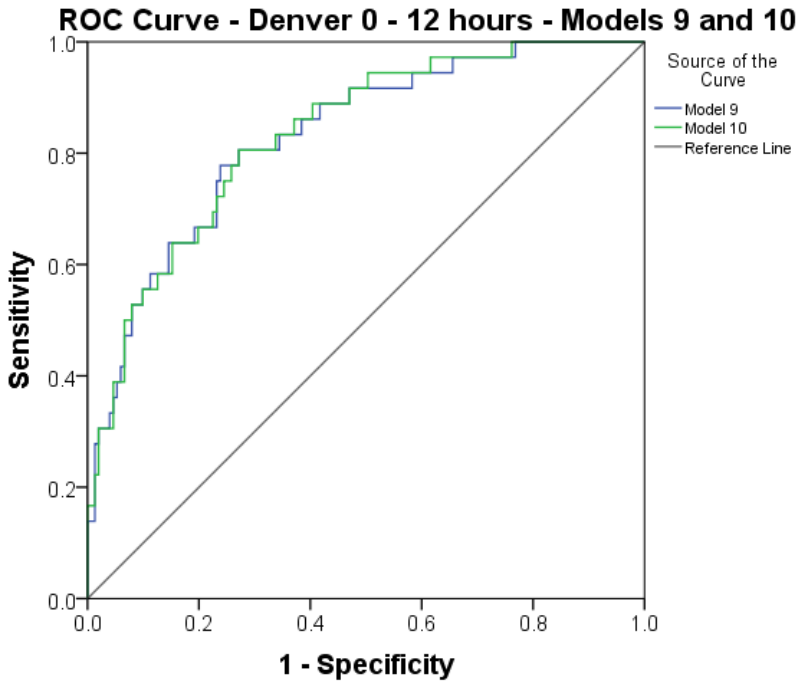


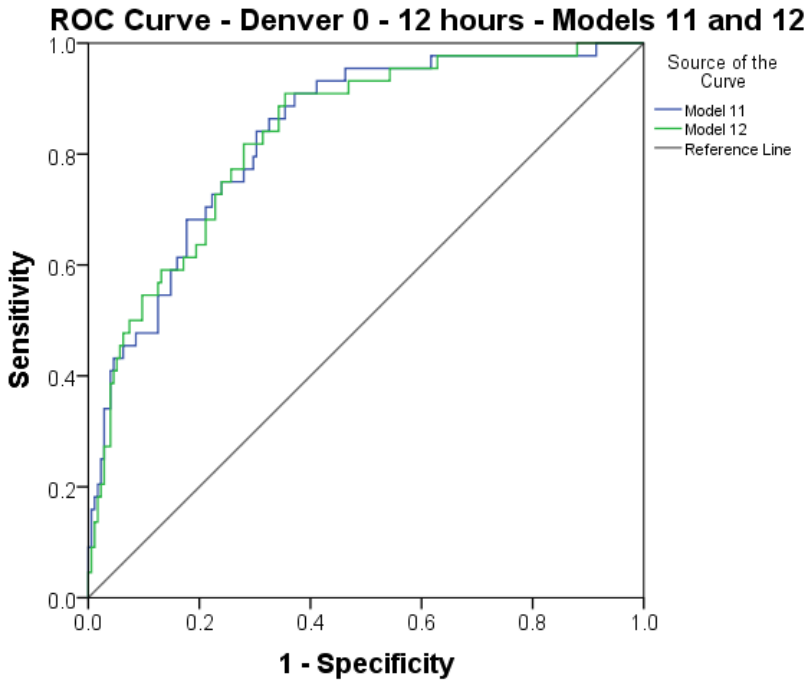

ROC Curve - Denver 0 - 12 hours - Model 3
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

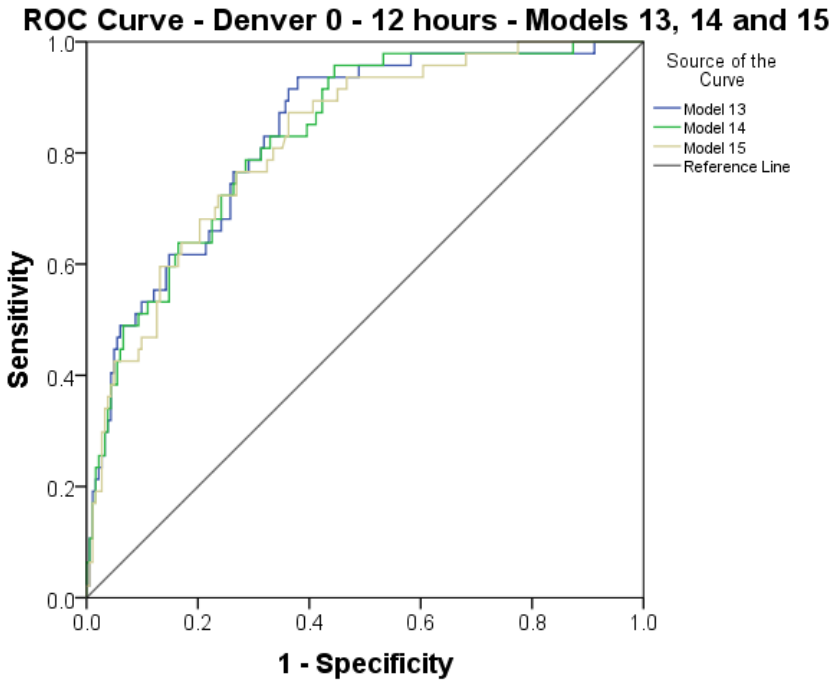

ROC Curve - Denver 0 - 12 hours - Model 4
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

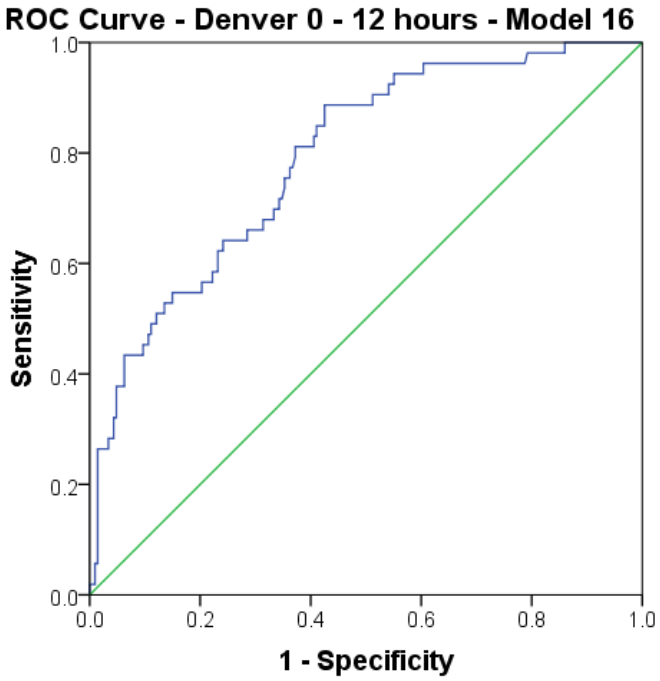

ROC Curve - Denver 0 - 12 hours - Models 5, 6 and 7
Sensitivity
1 - Specificity
Source of the Curve
Model 5
Model 6
Model 7
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0

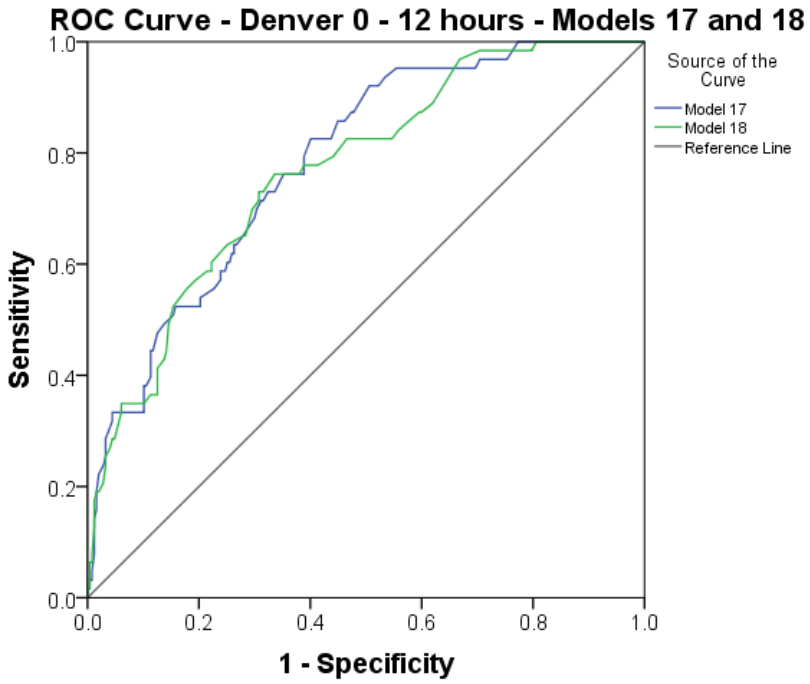

ROC Curve - Denver 0 - 12 hours - Model 8
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Denver 0 - 12 hours - Models 9 and 10
Source of the Curve
Model 9
Model 10
Reference Line
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Denver 0 - 12 hours - Models 11 and 12
Source of the Curve
Model 11
Model 12
Reference Line
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Denver 0 - 12 hours - Models 13, 14 and 15
Source of the Curve
Model 13
Model 14
Model 15
Reference Line
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Denver 0 - 12 hours - Model 16
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0



DENVER 0-12 hours	ROC AUC	95% CI
Model 1	0.863	0.764, 0.962
Model 2	0.864	0.761, 0.966
Model 3	0.863	0.759, 0.967
Model 4	0.867	0.767, 0.968
Model 5	0.861	0.762, 0.959
Model 6	0.860	0.761, 0.959
Model 7	0.860	0.761, 0.959
Model 8	0.839	0.756, 0.922
Model 9	0.831	0.758, 0.903
Model 10	0.834	0.763, 0.904
Model 11	0.836	0.773, 0.900
Model 12	0.834	0.700, 0.898
Model 13	0.834	0.773, 0.896
Model 14	0.831	0.769, 0.892
Model 15	0.823	0.760, 0.886
Model 16	0.791	0.725, 0.856
Model 17	0.783	0.725, 0.842
Model 18	0.769	0.706, 0.832

SELECTED MODEL STATISTICS

Model 8

Variable	Coefficient	Wald statistic p value	Adjusted OR (95% CI)
Constant	-1.45		
Age	-0.006	0.722	0.99 (0.96, 1.03)
CV disease	1.194	0.244	3.30 (0.44 (24.58)
Head injury	1.108	0.085	3.03 (0.86, 10.70)
Chest injury	0.958	0.166	2.61 (0.67, 10.13)
Abdominal injury	0.336	0.549	1.40 (0.48, 4.19)
Limb/pelvis injury	-0.038	0.952	0.96 (0.28, 3.32)
MAP	-0.013	0.306	0.99 (0.96, 1.01)
RR min	0.045	0.312	1.05 (0.96, 1.14)
Platelet count	-0.006	0.160	1.00 (0.99, 1.00)
PT	-0.187	0.080	0.83 (0.67 (1.02)
BD	-0.153	0.087	0.86 (0.72, 1.02)
Creatinine	0.018	0.102	1.02 (1.00, 1.04)
Lactate	-0.233	0.088	0.79 (0.61, 1.04)
Vasopressors	1.941	<0.001	6.96 (2.35, 20.61)

14.1.5. DENVER 0 - 24 HOURS MODEL

MODEL VARIABLE LISTS

Model 1	Model 2	Model 3	Model 4
n = 214	**n = 214**	**n = 214**	**n = 227**
Age	Age	Age	Age
CV disease	CV disease	CV disease	CV disease
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Chest injury
Abdominal injury	Abdominal injury	Abdominal injury	Abdominal injury
Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury
HR	HR	HR	HR
RR max	RR max	RR max	RR max
Temperature	Temperature	Temperature	Temperature
Haemoglobin	Haemoglobin	Haemoglobin	Haemoglobin
PT	PT	PT	WCC
WCC	WCC	WCC	Albumin
Albumin	Albumin	Albumin	BD
BD	BD	BD	Glucose
Glucose	Glucose	Glucose	Creatinine
Creatinine	Creatinine	Creatinine	Potassium max
Lactate	Potassium max	Potassium max	Transfusion level
Potassium max	Sodium max	Transfusion level	IV fluids
Sodium max	Transfusion level	IV fluids	Vasopressors
Transfusion level	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 5	Model 6	Model 7	Model 8
n = 227	**n = 228**	**n = 228**	**n = 231**
Age	Age	Age	Age
CV disease	CV disease	CV disease	CV disease
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Abdominal injury	Abdominal injury
Abdominal injury	Abdominal injury	Limb/pelvic injury	Limb/pelvic injury
Limb/pelvic injury	Limb/pelvic injury	HR	HR
HR	HR	RR max	RR max
RR max	RR max	Temperature	Temperature
Temperature	Temperature	WCC	WCC
WCC	WCC	BD	BD
Albumin	BD	Glucose	Creatinine
BD	Glucose	Creatinine	Potassium max
Glucose	Creatinine	Potassium max	Transfusion level
Creatinine	Potassium max	Transfusion level	IV fluids
Potassium max	Transfusion level	IV fluids	Vasopressors
Transfusion level	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 9	Model 10	Model 11	Model 12
n = 231	**n = 239**	**n = 239**	**n = 254**
CV disease	CV disease	CV disease	CV disease
Head injury	Head injury	Head injury	Head injury
Abdominal injury	Abdominal injury	Abdominal injury	Abdominal injury
Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury
HR	HR	HR	HR
RR max	RR max	RR max	RR max
Temperature	Temperature	Temperature	Temperature
WCC	BD	BD	BD
BD	Creatinine	Creatinine	Potassium max
Creatinine	Potassium max	Potassium max	IV fluids
Potassium max	Transfusion level	IV fluids	Vasopressors
Transfusion level	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 13	Model 14	Model 15	Model 16
n = 266	**n = 266**	**n = 267**	**n = 267**
CV disease	CV disease	CV disease	CV disease
Head injury	Head injury	Head injury	Head injury
Abdominal injury	Limb/pelvic injury	Limb/pelvic injury	HR
Limb/pelvic injury	HR	HR	RR max
HR	RR max	RR max	BD
RR max	BD	BD	Potassium max
BD	Potassium max	Potassium max	Vasopressors
Potassium max	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 17	Model 18
n = 281	**n = 343**
Head injury	Head injury
HR	HR
RR max	RR max
BD	BD
Potassium max	Vasopressors
Vasopressors	

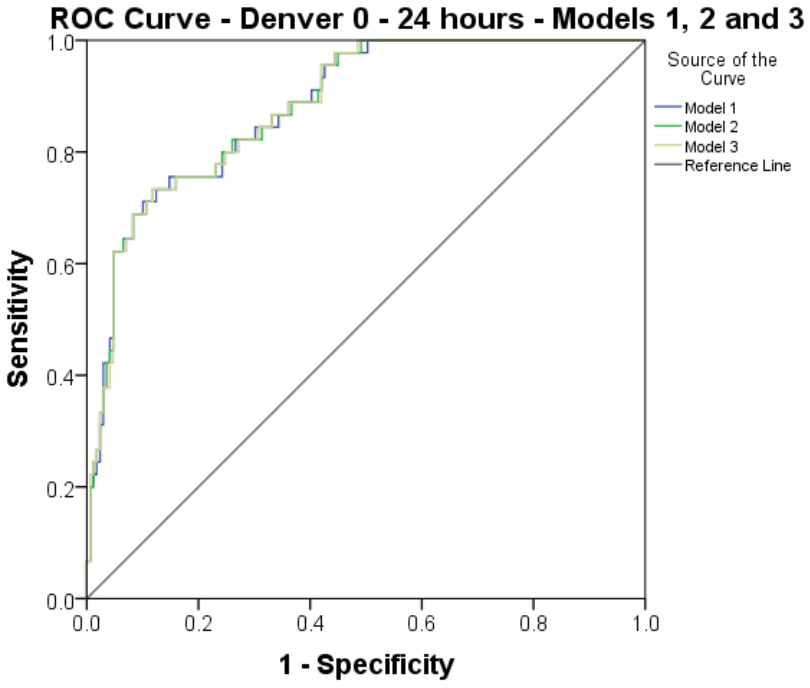
GOODNESS-OF-FIT MEASURES

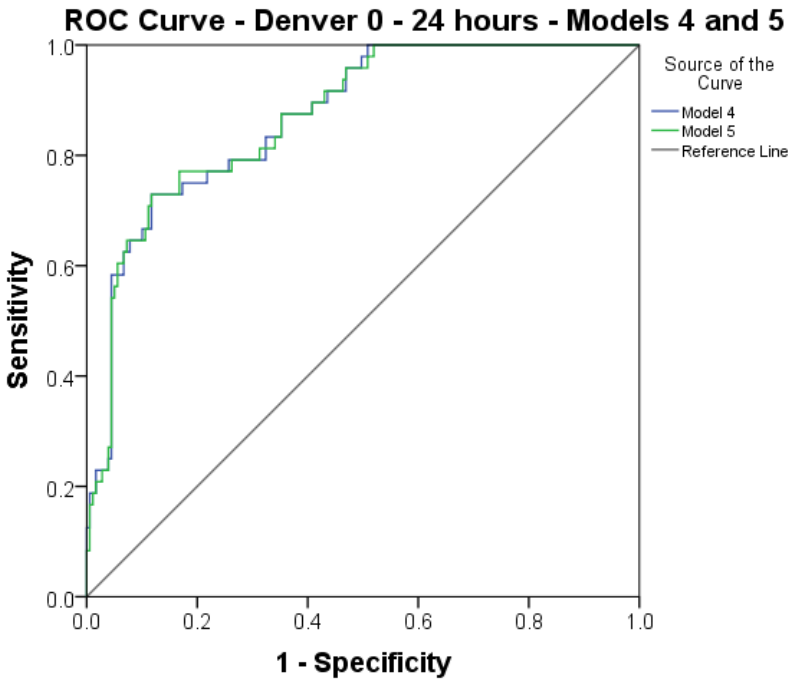
DENVER 0-24 hours	Model χ^2	Model χ^2 p value	-2 log likelihood	Nagelkerke R^2	Hosmer-Lemeshow χ^2	Hosmer-Lemeshow χ^2 p value
Model 1	80.876	<0.001	139.256	0.490	9.420	0.308
Model 2	80.848	<0.001	139.285	0.490	12.069	0.148
Model 3	80.823	<0.001	139.309	0.490	13.110	0.108
Model 4	78.636	<0.001	155.572	0.455	14.959	0.060
Model 5	78.351	<0.001	155.837	0.454	11.510	0.174
Model 6	78.445	<0.001	158.854	0.450	12.131	0.145
Model 7	78.419	<0.001	158.880	0.450	11.966	0.152
Model 8	80.922	<0.001	160.417	0.456	11.600	0.170
Model 9	79.896	<0.001	161.442	0.451	20.787	0.008
Model 10	72.731	<0.001	180.190	0.402	9.376	0.312
Model 11	71.855	<0.001	181.066	0.398	7.908	0.442
Model 12	76.733	<0.001	193.743	0.398	5.481	0.705
Model 13	76.562	<0.001	207.452	0.381	4.851	0.773
Model 14	74.670	<0.001	209.344	0.373	5.872	0.662
Model 15	71.601	<0.001	212.923	0.359	2.419	0.965
Model 16	69.200	<0.001	215.324	0.348	11.755	0.162
Model 17	64.824	<0.001	234.256	0.315	12.012	0.151
Model 18	67.521	<0.001	290.205	0.276	7.523	0.481

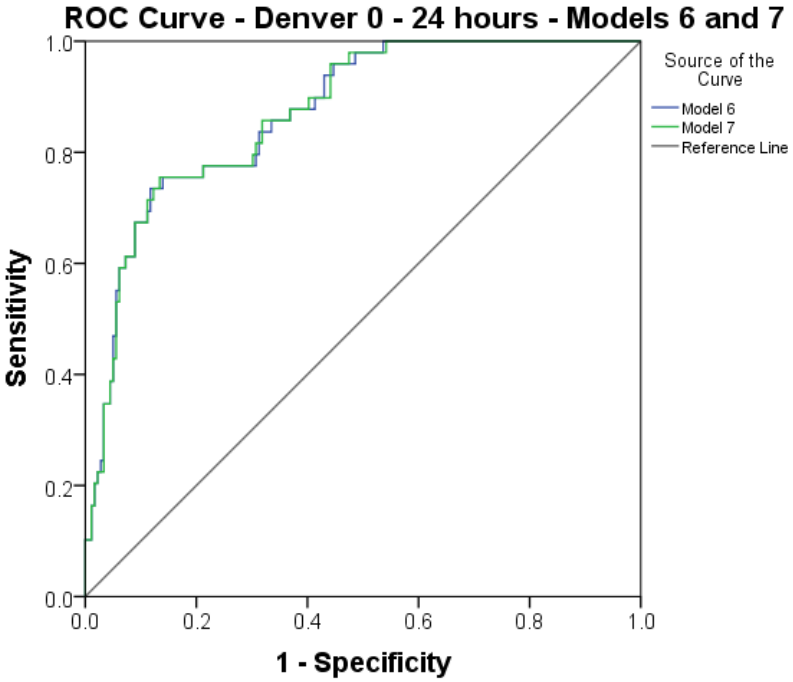
CATEGORY PREDICTORS

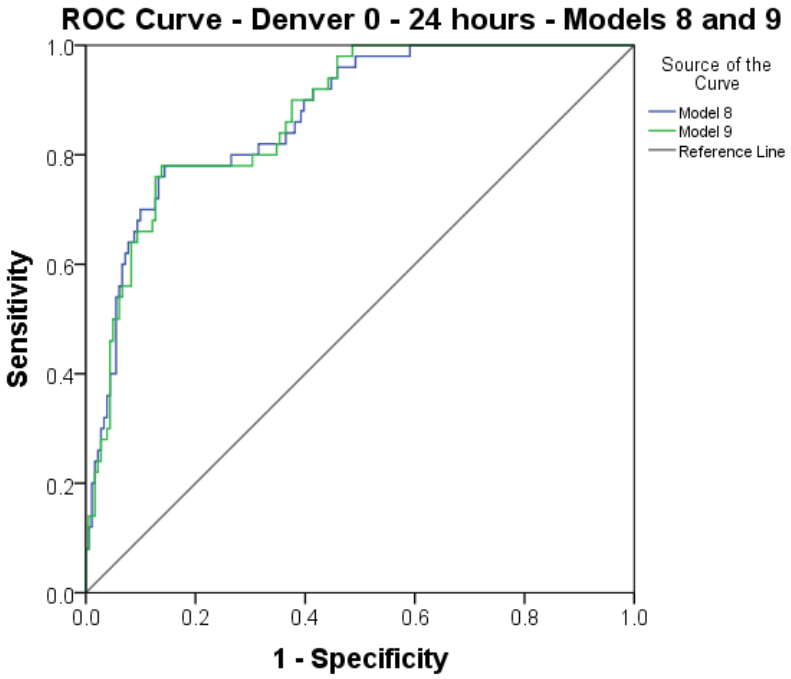
DENVER 0-24 hours	PAC (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Model 1	88.3	62.2	95.3	77.8	90.4
Model 2	88.3	62.2	95.3	77.8	90.4
Model 3	88.3	62.2	95.3	77.8	90.4
Model 4	87.7	58.3	95.5	77.8	89.5
Model 5	86.8	58.3	94.4	73.7	89.4
Model 6	85.5	55.1	93.9	71.1	88.4
Model 7	85.5	55.1	93.9	71.1	88.4
Model 8	85.3	54.0	93.9	71.1	88.1
Model 9	85.3	50.0	95.0	73.5	87.3
Model 10	84.1	49.1	94.1	70.3	86.6
Model 11	84.1	47.2	94.6	71.4	86.3
Model 12	83.1	45.6	93.9	68.4	85.6
Model 13	84.2	45.0	95.6	75.9	85.7
Model 14	82.3	43.3	93.7	66.7	85.0
Model 15	82.0	38.3	94.7	67.6	83.8
Model 16	81.6	38.3	94.2	65.7	84.1
Model 17	81.5	34.9	95.0	66.7	83.5
Model 18	80.8	29.7	94.8	61.1	83.1

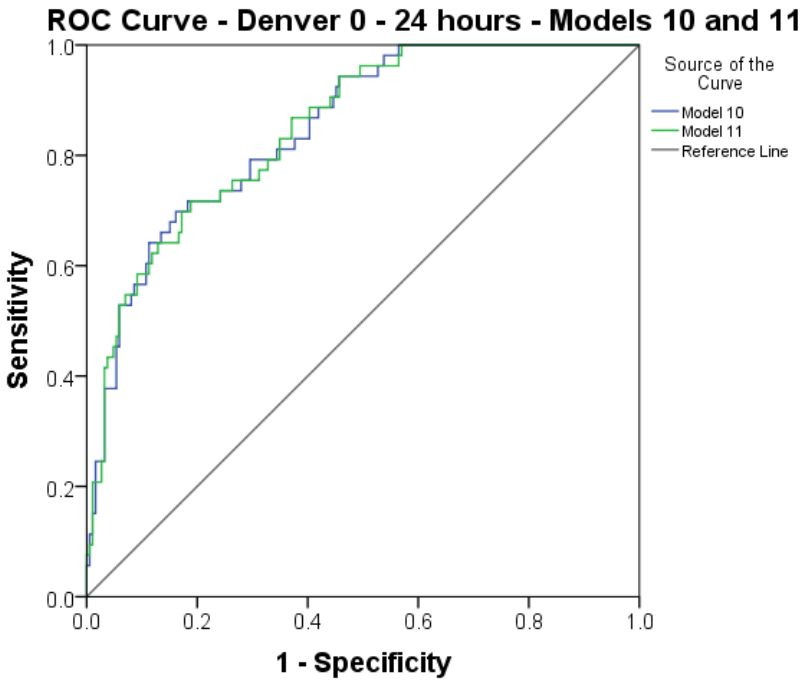
ROC CURVES

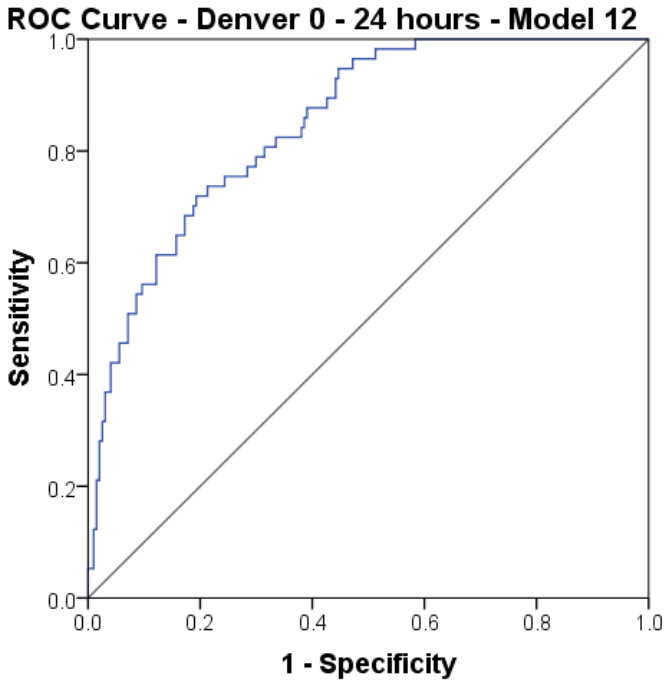


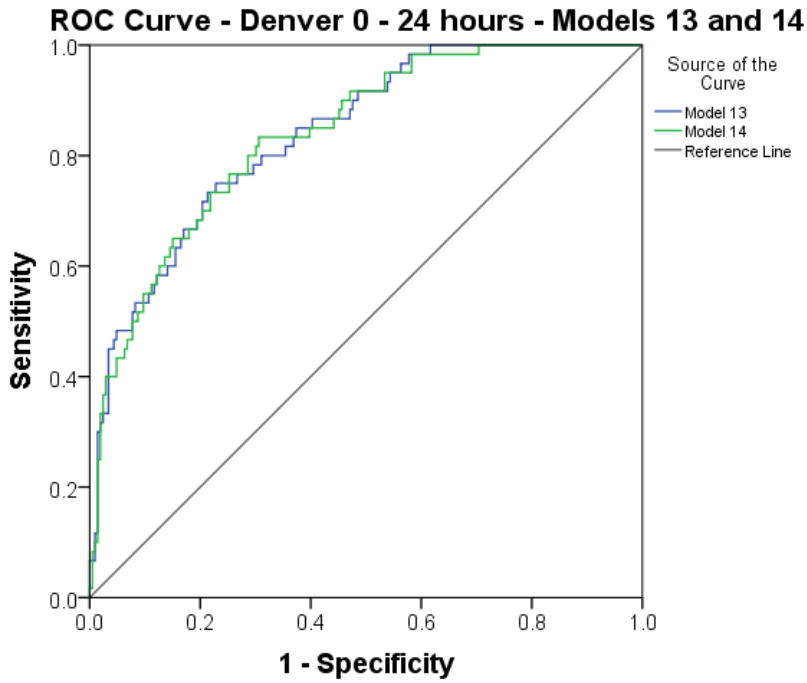

ROC Curve - Denver 0 - 24 hours - Models 4 and 5
Sensitivity
1 - Specificity
Source of the Curve
Model 4
Model 5
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0

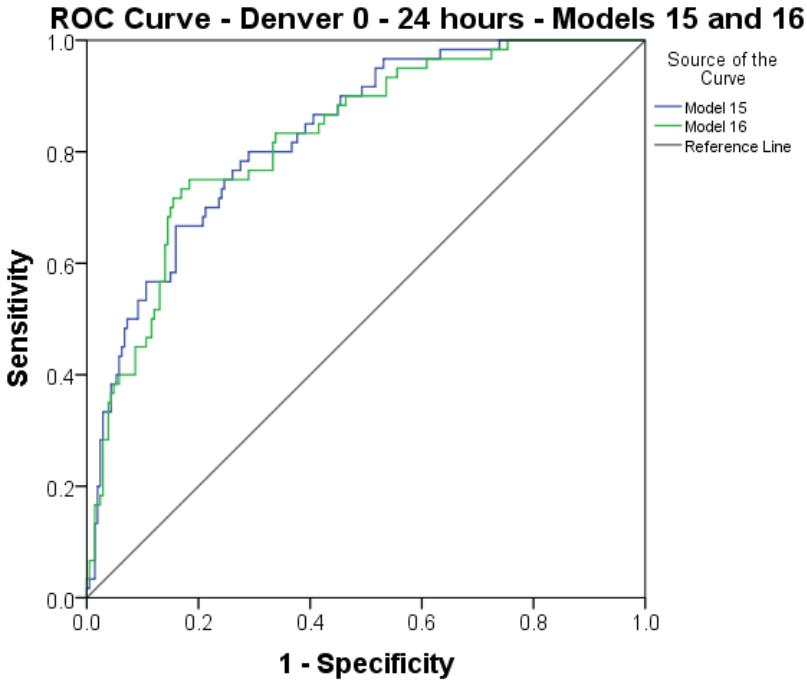

ROC Curve - Denver 0 - 24 hours - Models 6 and 7
Sensitivity
1 - Specificity
Source of the Curve
Model 6
Model 7
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0

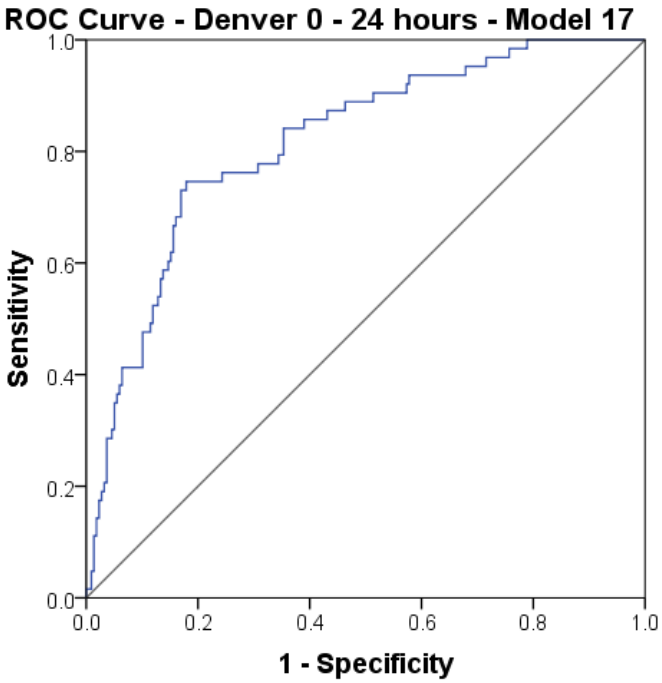

ROC Curve - Denver 0 - 24 hours - Models 8 and 9
Source of the Curve
Model 8
Model 9
Reference Line
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

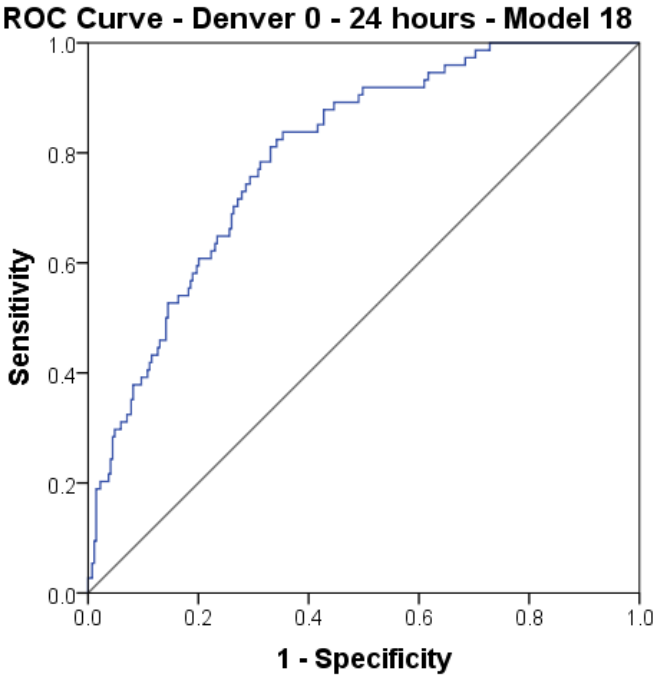

ROC Curve - Denver 0 - 24 hours - Models 10 and 11
Source of the Curve
Model 10
Model 11
Reference Line
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Denver 0 - 24 hours - Model 12
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Denver 0 - 24 hours - Models 13 and 14
Sensitivity
1 - Specificity
Source of the Curve
Model 13
Model 14
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Denver 0 - 24 hours - Models 15 and 16
Sensitivity
1 - Specificity
Source of the Curve
Model 15
Model 16
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Denver 0 - 24 hours - Model 17
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Denver 0 - 24 hours - Model 18
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

DENVER 0-24 hours	ROC AUC	95% CI
Model 1	0.883	0.833, 0.934
Model 2	0.883	0.833, 0.934
Model 3	0.883	0.832, 0.933
Model 4	0.870	0.817, 0.922
Model 5	0.870	0.817, 0.923
Model 6	0.871	0.819, 0.922
Model 7	0.871	0.819, 0.922
Model 8	0.871	0.819, 0.923
Model 9	0.872	0.821, 0.922
Model 10	0.848	0.793, 0.902
Model 11	0.849	0.795, 0.903
Model 12	0.849	0.797, 0.900
Model 13	0.840	0.786, 0.893
Model 14	0.839	0.785, 0.893
Model 15	0.831	0.776, 0.886
Model 16	0.826	0.769, 0.883
Model 17	0.816	0.758, 0.874
Model 18	0.798	0.745, 0.850

SELECTED MODEL STATISTICS

Model 13

Variable	Coefficient	Wald statistic p value	Adjusted OR (95% CI)
Constant	-4.659		
CV disease	1.817	0.047	6.15 (1.02, 37.00)
Head injury	1.653	0.001	5.23 (2.03, 13.47)
Abdominal injury	0.509	0.169	1.67 (0.81, 3.44)
Limb/pelvis injury	0.688	0.112	1.99 (0.85, 4.65)
HR	0.014	0.089	1.01 (1.00, 1.10)
RR max	0.053	0.008	1.05 (1.01, 1.10)
BD	-0.119	0.008	0.89 (0.81, 0.97)
Potassium max	-0.666	0.044	0.51 (0.27, 0.98)
IV fluids	0.001	0.090	1.00 (1.00, 1.00)
Vasopressors	1.566	<0.001	4.79 (2.28, 10.08)

14.1.6. DENVER 0 – 48 HOURS MODEL

MODEL VARIABLE LISTS

Model 1	Model 2	Model 3	Model 4
n = 155	**n = 155**	**n = 165**	**n = 165**
Age	Age	Age	Age
CV disease	CV disease	Head injury	Head injury
Head injury	Head injury	Chest injury	Chest injury
Chest injury	Chest injury	Abdominal injury	Abdominal injury
Abdominal injury	Abdominal injury	Limb/pelvic injury	Limb/pelvic injury
Limb/pelvic injury	Limb/pelvic injury	FiO2	FiO2
FiO2	FiO2	RR max	RR max
RR max	RR max	Temperature	Temperature
Temperature	Temperature	APTT	APTT
APTT	APTT	Haemoglobin	Haemoglobin
Haemoglobin	Haemoglobin	Platelet count	Platelet count
Platelet count	Platelet count	PT	PT
PT	PT	WCC	Albumin
WCC	WCC	Albumin	BD
Albumin	Albumin	BD	Glucose
BD	BD	Glucose	Creatinine
Glucose	Glucose	Creatinine	Lactate
Creatinine	Creatinine	Lactate	Potassium min
Lactate	Lactate	Potassium min	Sodium max
Potassium min	Potassium min	Sodium max	Transfusion level
Sodium max	Sodium max	Transfusion level	Intra-operative time
Transfusion level	Transfusion level	Intra-operative time	IV fluids
Intra-operative time	Intra-operative time	IV fluids	Vasopressors
Operation	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 5	**Model 6**	**Model 7**	**Model 8**
n = 166	**n = 166**	**n = 169**	**n = 169**
Age	Head injury	Head injury	Head injury
Head injury	Chest injury	Chest injury	Chest injury
Chest injury	Abdominal injury	Abdominal injury	Limb/pelvic injury
Abdominal injury	Limb/pelvic injury	Limb/pelvic injury	FiO2
Limb/pelvic injury	FiO2	FiO2	RR max
FiO2	RR max	RR max	Temperature
RR max	Temperature	Temperature	APTT
Temperature	APTT	APTT	Haemoglobin
APTT	Haemoglobin	Haemoglobin	Platelet count
Haemoglobin	Platelet count	Platelet count	PT
Platelet count	PT	PT	BD
PT	BD	BD	Creatinine
BD	Glucose	Creatinine	Lactate
Glucose	Creatinine	Lactate	Potassium min
Creatinine	Lactate	Potassium min	Sodium max
Lactate	Potassium min	Sodium max	Transfusion level
Potassium min	Sodium max	Transfusion level	Intra-operative time
Sodium max	Transfusion level	Intra-operative time	IV fluids
Transfusion level	Intra-operative time	IV fluids	Vasopressors
Intra-operative time	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 9	Model 10	Model 11	Model 12
n = 225	**n = 225**	**n = 312**	**n = 313**
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Chest injury
Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury
RR max	RR max	RR max	RR max
Temperature	Temperature	Temperature	Temperature
APTT	APTT	APTT	APTT
Haemoglobin	Haemoglobin	Haemoglobin	Haemoglobin
Platelet count	Platelet count	Platelet count	Platelet count
PT	PT	PT	PT
BD	BD	BD	BD
Creatinine	Creatinine	Creatinine	Creatinine
Lactate	Lactate	Lactate	Potassium min
Potassium min	Potassium min	Potassium min	Transfusion level
Sodium max	Transfusion level	Transfusion level	IV fluids
Transfusion level	Intra-operative time	IV fluids	Vasopressors
Intra-operative time	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 13	Model 14	Model 15	Model 16
n = 313	**n = 318**	**n = 318**	**n = 363**
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Limb/pelvic injury	Limb/pelvic injury
Limb/pelvic injury	Limb/pelvic injury	RR max	RR max
RR max	RR max	APTT	APTT
Temperature	APTT	Platelet count	Platelet count
APTT	Platelet count	PT	PT
Platelet count	PT	BD	BD
PT	BD	Creatinine	Creatinine
BD	Creatinine	Potassium min	Transfusion level
Creatinine	Potassium min	Transfusion level	IV fluids
Potassium min	Transfusion level	IV fluids	Vasopressors
Transfusion level	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 17	Model 18	Model 19	Model 20	Model 21
n = 371	**n = 371**	**n = 371**	**n = 371**	**n = 378**
Head injury	Head injury	Head injury	Head injury	Head injury
Limb/pelvic injury	Limb/pelvic injury	RR max	RR max	RR max
RR max	RR max	APTT	PT	BD
APTT	APTT	PT	BD	Creatinine
PT	PT	BD	Creatinine	IV fluids
BD	BD	Creatinine	IV fluids	Vasopressors
Creatinine	Creatinine	IV fluids	Vasopressors	
Transfusion level	IV fluids	Vasopressors		
IV fluids	Vasopressors			
Vasopressors				

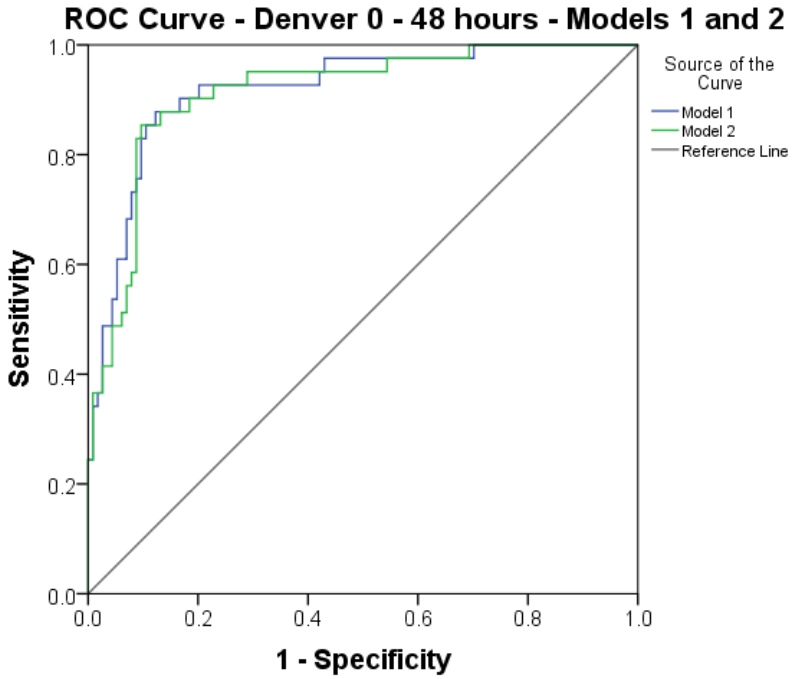
GOODNESS-OF-FIT MEASURES

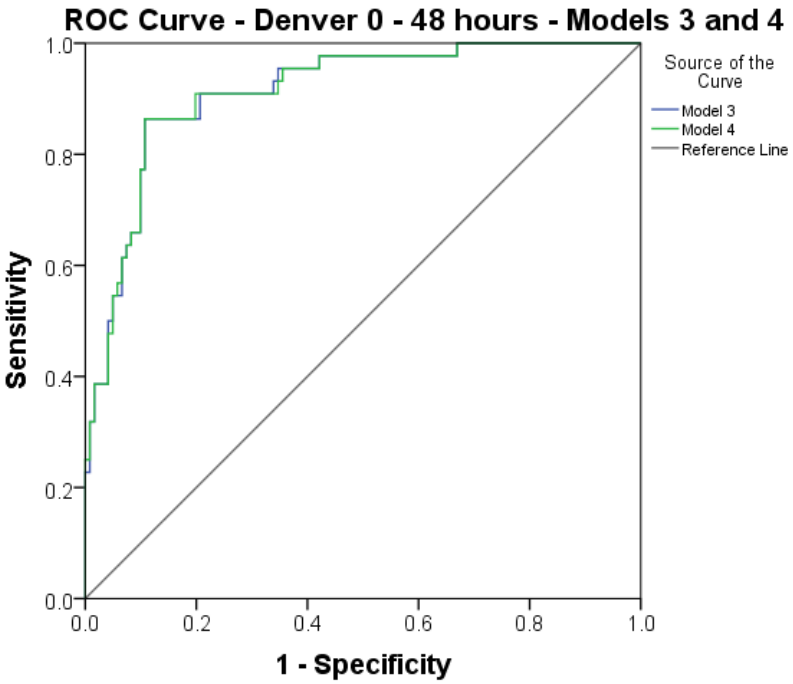
DENVER 0-48 hours	Model χ^2	Model χ^2 p value	-2 log likelihood	Nagelkerke R^2	Hosmer-Lemeshow χ^2	Hosmer-Lemeshow χ^2 p value
Model 1	83.669	<0.001	95.247	0.609	5.164	0.740
Model 2	82.585	<0.001	96.510	0.603	9.456	0.305
Model 3	85.208	<0.001	106.164	0.588	5.090	0.748
Model 4	85.197	<0.001	106.175	0.588	5.974	0.650
Model 5	85.601	<0.001	106.389	0.588	3.058	0.931
Model 6	85.549	<0.001	106.441	0.588	3.948	0.862
Model 7	87.608	<0.001	110.265	0.586	10.949	0.205
Model 8	87.374	<0.001	110.500	0.585	5.372	0.717
Model 9	71.954	<0.001	168.894	0.417	15.915	0.044
Model 10	71.951	<0.001	168.896	0.416	15.845	0.045
Model 11	107.647	<0.001	222.052	0.447	11.513	0.174
Model 12	107.985	<0.001	222.213	0.448	10.509	0.231
Model 13	107.712	<0.001	222.486	0.447	4.777	0.781
Model 14	111.172	<0.001	224.043	0.453	9.015	0.341
Model 15	110.848	<0.001	224.367	0.452	8.578	0.379
Model 16	120.526	<0.001	254.638	0.439	5.633	0.688
Model 17	124.178	<0.001	260.047	0.441	6.906	0.547
Model 18	121.451	<0.001	262.774	0.433	0.011	0.278
Model 19	119.396	<0.001	264.828	0.427	15.987	0.043
Model 20	115.556	<0.001	268.669	0.415	13.337	0.101
Model 21	108.604	<0.001	286.781	0.385	9.206	0.325

CATEGORY PREDICTORS

DENVER 0-48 hours	PAC (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Model 1	86.5	70.7	92.1	76.3	89.7
Model 2	86.5	73.2	91.2	75.0	90.4
Model 3	84.2	68.2	90.1	71.4	88.6
Model 4	84.2	68.2	90.1	71.4	88.0
Model 5	84.3	68.2	90.2	71.4	88.7
Model 6	84.9	70.5	90.2	72.1	89.4
Model 7	86.4	73.9	91.1	75.6	90.3
Model 8	84.6	67.4	91.1	73.8	88.2
Model 9	80.0	39.2	92.0	58.8	83.8
Model 10	80.0	39.2	92.0	58.8	83.8
Model 11	82.4	43.5	93.4	65.2	85.3
Model 12	83.1	46.4	93.4	66.7	86.0
Model 13	83.7	46.4	94.3	69.6	86.1
Model 14	83.6	45.7	94.4	69.6	86.0
Model 15	83.3	44.3	94.4	68.9	85.7
Model 16	82.6	42.9	93.4	63.5	85.9
Model 17	82.7	43.0	93.5	64.2	85.8
Model 18	84.1	44.3	94.9	70.0	86.8
Model 19	82.7	40.5	94.2	65.3	85.4
Model 20	83.0	39.2	94.9	67.4	85.2
Model 21	82.8	40.2	94.6	67.3	85.1

ROC CURVES


ROC Curve - Denver 0 - 48 hours - Models 1 and 2
Sensitivity
1 - Specificity
Source of the Curve
Model 1
Model 2
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Denver 0 - 48 hours - Models 3 and 4
Sensitivity
1 - Specificity
Source of the Curve
Model 3
Model 4
Reference Line
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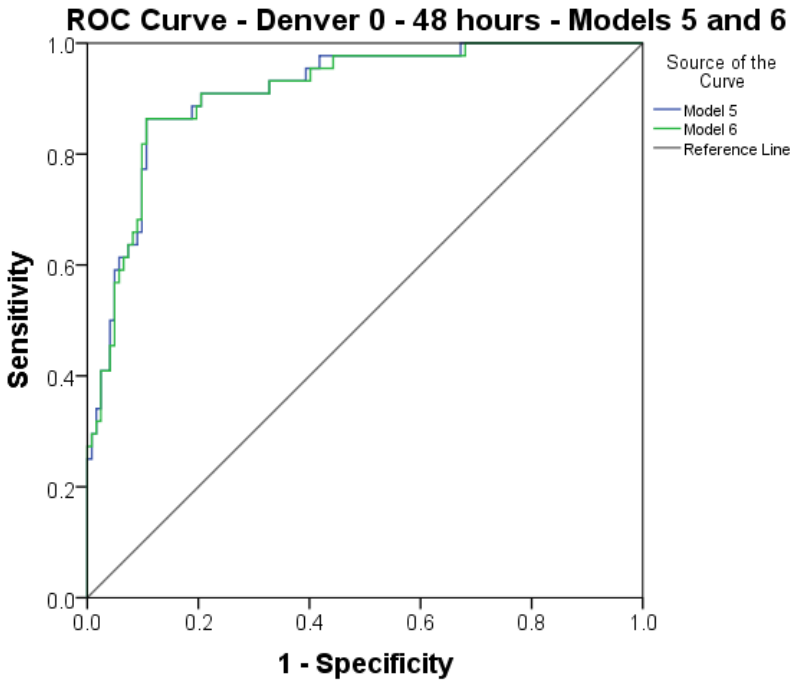
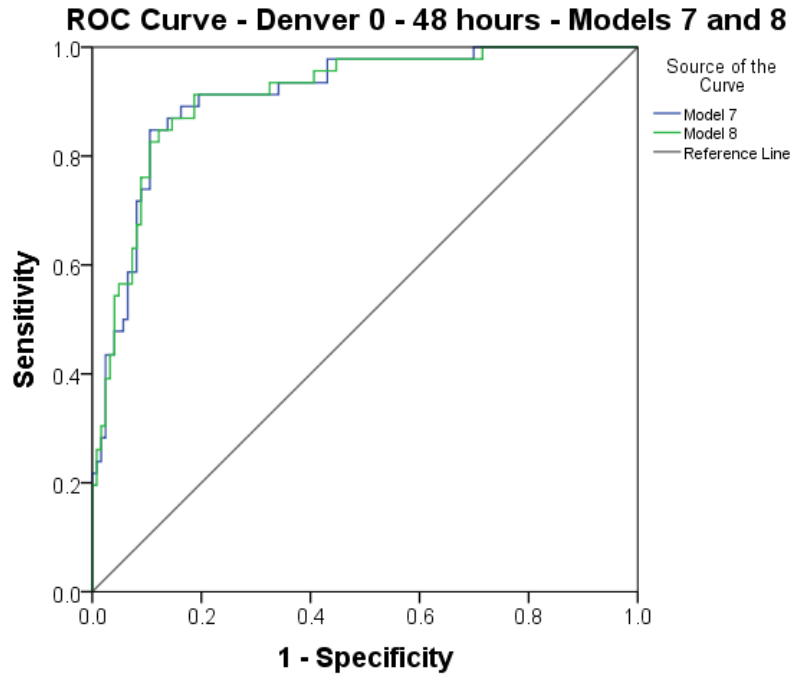
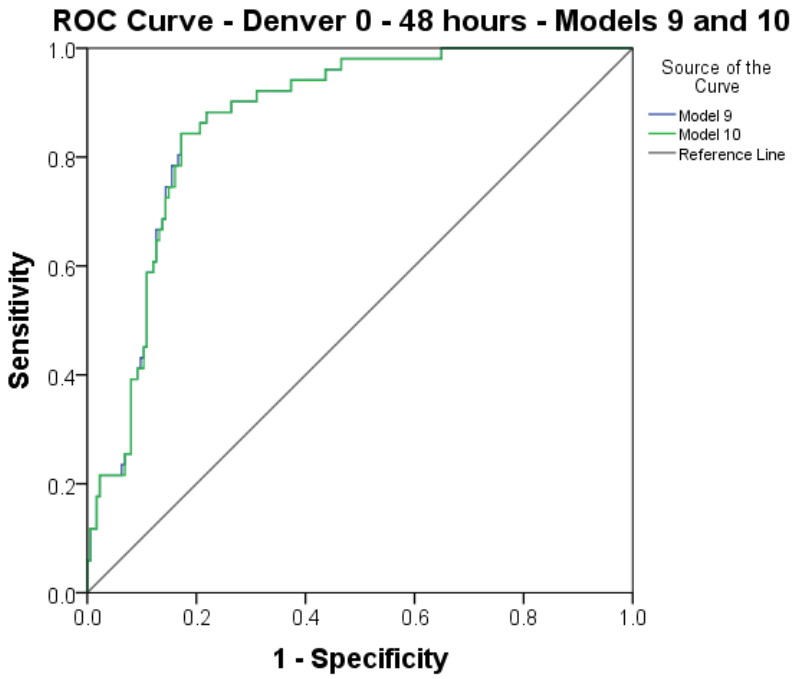
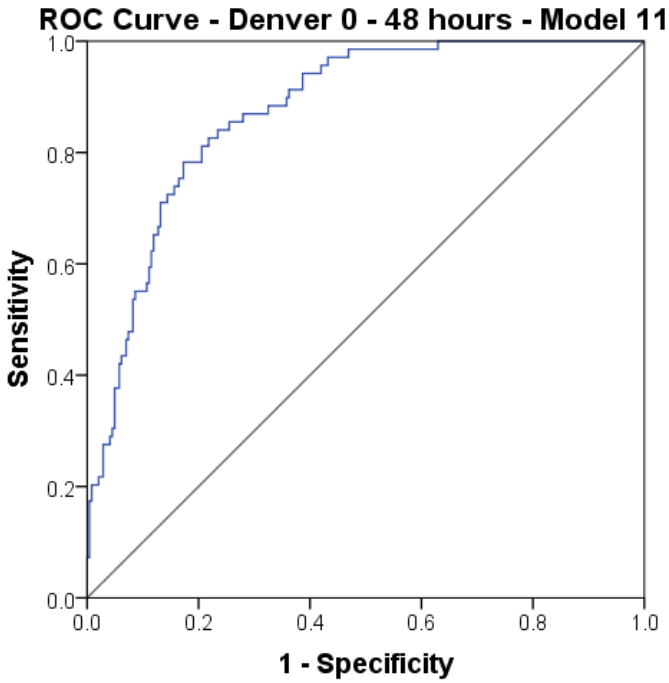
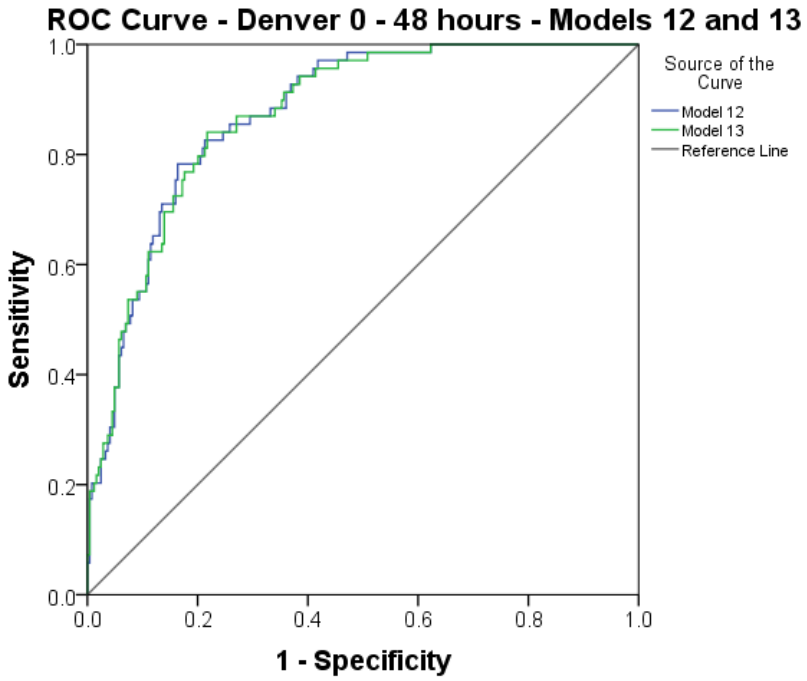
0.2
0.4
0.6
0.8
1.0

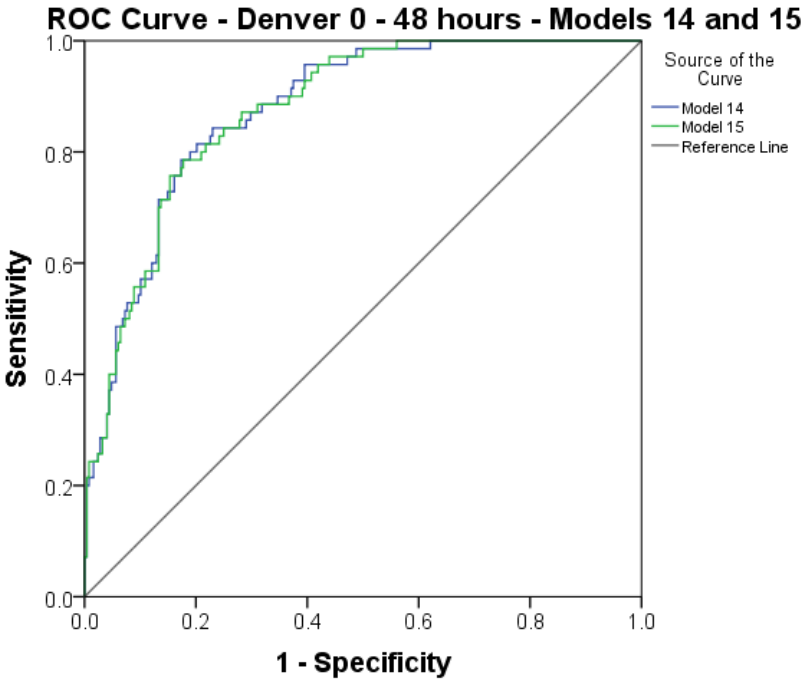

ROC Curve - Denver 0 - 48 hours - Models 5 and 6
Source of the Curve
Model 5
Model 6
Reference Line
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

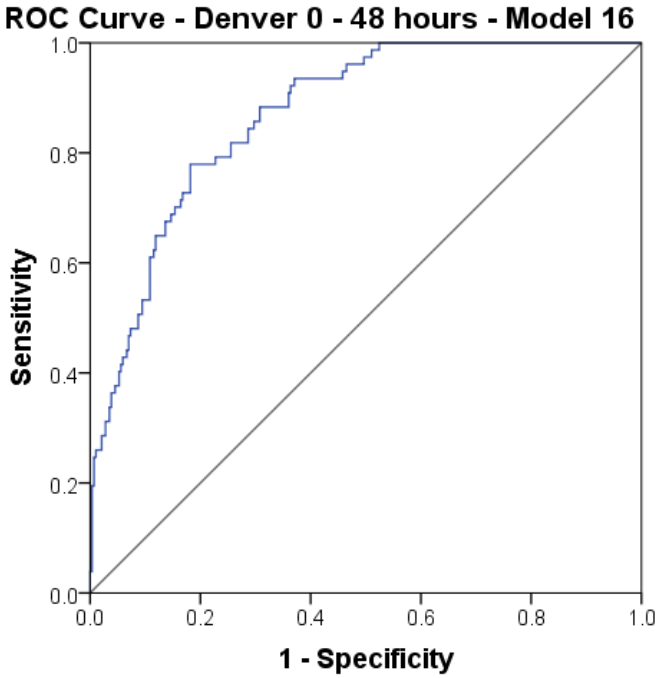

ROC Curve - Denver 0 - 48 hours - Models 7 and 8
Source of the Curve
Model 7
Model 8
Reference Line
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

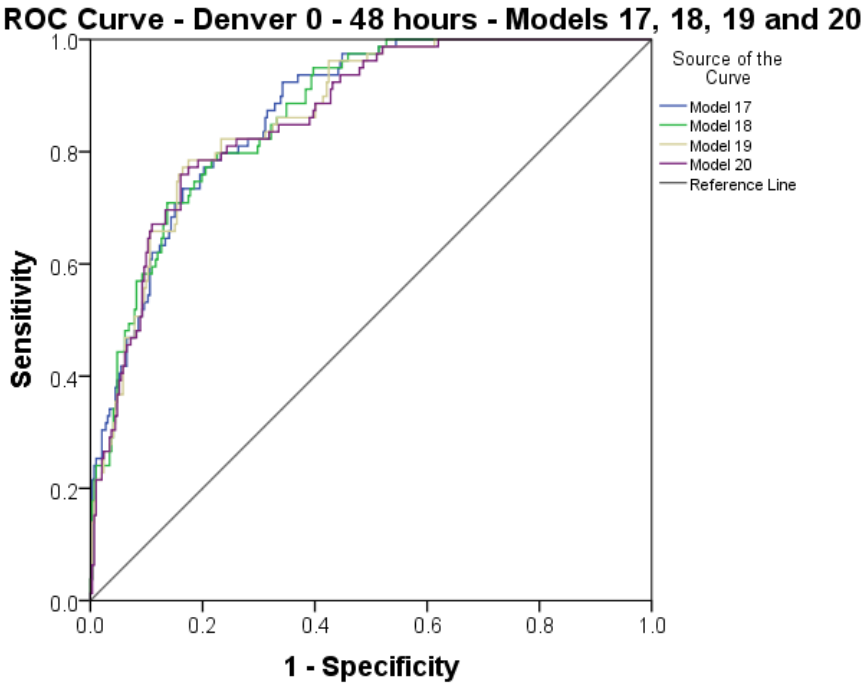

ROC Curve - Denver 0 - 48 hours - Models 9 and 10
Sensitivity
1 - Specificity
Source of the Curve
Model 9
Model 10
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0

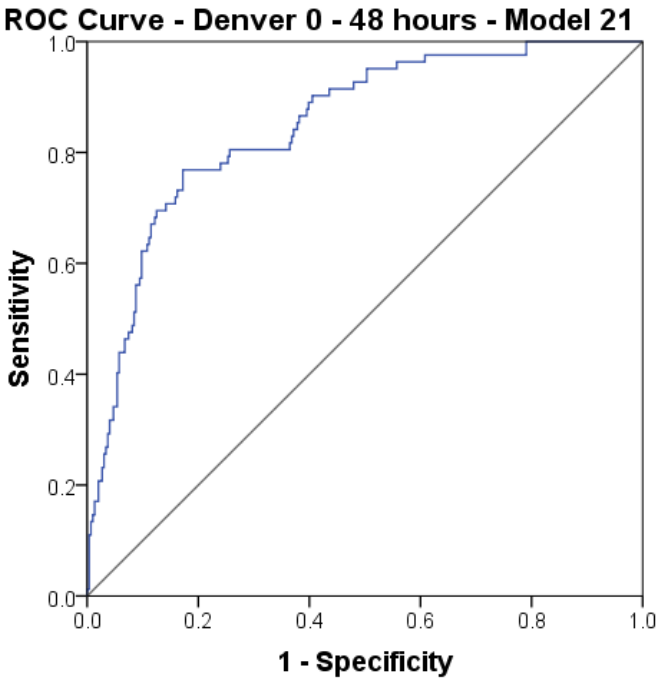

ROC Curve - Denver 0 - 48 hours - Model 11
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Denver 0 - 48 hours - Models 12 and 13
Source of the Curve
Model 12
Model 13
Reference Line
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Denver 0 - 48 hours - Models 14 and 15
Source of the Curve
Model 14
Model 15
Reference Line
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Denver 0 - 48 hours - Model 16
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Denver 0 - 48 hours - Models 17, 18, 19 and 20
Sensitivity
1 - Specificity
Source of the Curve
Model 17
Model 18
Model 19
Model 20
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0



DENVER 0-48 hours	ROC AUC	95% CI
Model 1	0.919	0.870, 0.968
Model 2	0.913	0.863, 0.964
Model 3	0.912	0.865, 0.960
Model 4	0.912	0.865, 0.960
Model 5	0.913	0.865, 0.961
Model 6	0.912	0.864, 0.960
Model 7	0.911	0.863, 0.959
Model 8	0.912	0.864, 0.960
Model 9	0.869	0.820, 0.918
Model 10	0.868	0.819, 0.917
Model 11	0.874	0.833, 0.915
Model 12	0.875	0.834, 0.916
Model 13	0.873	0.832, 0.915
Model 14	0.876	0.835, 0.916
Model 15	0.875	0.834, 0.915
Model 16	0.870	0.831, 0.909
Model 17	0.870	0.832, 0.909
Model 18	0.868	0.829, 0.909
Model 19	0.866	0.825, 0.906
Model 20	0.862	0.820, 0.903
Model 21	0.848	0.803, 0.894

SELECTED MODEL STATISTICS

Model 18

Variable	Coefficient	Wald statistic p value	Adjusted OR (95% CI)
Constant	-9.023		
Head injury	1.497	<0.001	4.47 (1.98, 10.09)
Limb/pelvic injury	0.525	0.158	1.69 (0.82, 3.50)
RR max	0.067	<0.001	1.07 (1.03, 1.12)
APTT	-0.012	0.053	0.99 (0.98, 1.00)
PT	0.114	0.039	1.12 (1.01, 1.25)
BD	-0.126	0.001	0.88 (0.82, 0.95)
Creatinine	0.011	0.027	1.01 (1.00, 1.02)
IV fluids	0.001	0.005	1.00 (1.00, 1.00)
Vasopressors	1.319	<0.001	3.74 (1.90, 7.36)

14.2. SOFA MOF MULTIVARIATE MODEL DEVELOPMENT

14.2.1. SOFA 0 - 2 HOURS MODEL

MODEL VARIABLE LISTS

Model 1	Model 2	Model 3	Model 4
n = 251	**n = 251**	**n = 251**	**n = 251**
Age	Age	Age	Age
Psychiatric	Respiratory disease	Respiratory disease	Respiratory disease
Respiratory disease	Head injury	Head injury	Head injury
Head injury	Face injury	Face injury	Abdominal injury
Face injury	Chest injury	Abdominal injury	Limb/pelvic injury
Chest injury	Abdominal injury	External injury	External injury
Abdominal injury	External injury	Limb/pelvic injury	Trapped
Limb/pelvic injury	Limb/pelvic injury	Trapped	SBP
External injury	Trapped	SBP	HR
Trapped	SBP	HR	RR Min
SBP	HR	RR Min	
HR	RR Min		
RR Min			

Model 5	Model 6	Model 7	Model 8
n = 251	**n = 251**	**n = 251**	**n = 255**
Age	Age	Age	Age
Respiratory disease	Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury	Head injury
Abdominal injury	External injury	Trapped	Trapped
External injury	Trapped	SBP	HR
Trapped	SBP	HR	RR Min
SBP	HR	RR Min	
HR	RR Min		
RR Min			

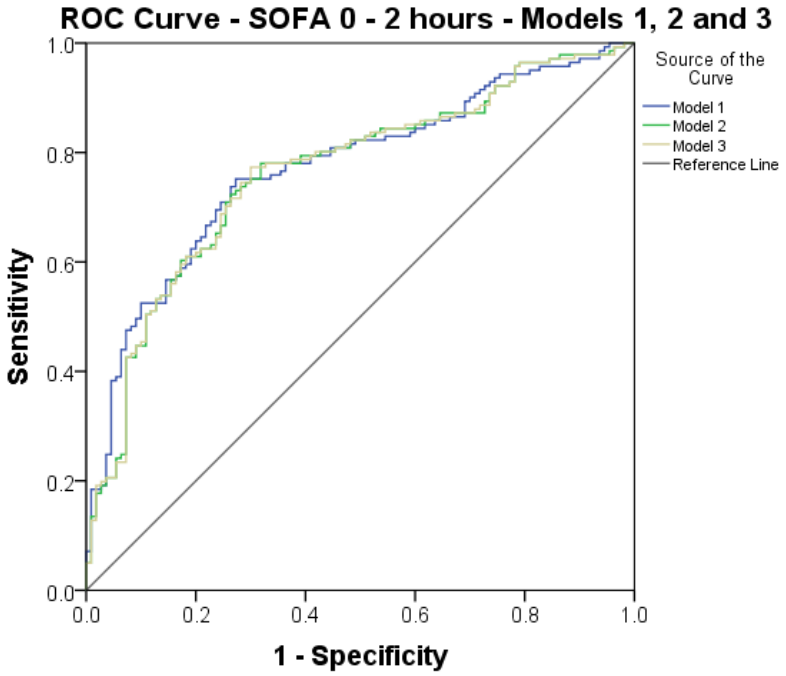
GOODNESS-OF-FIT MEASURES

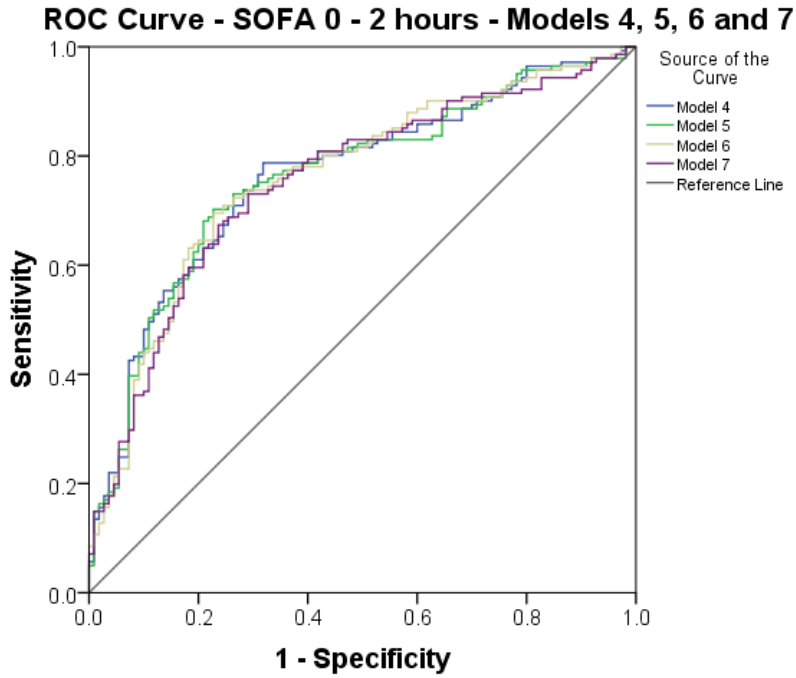
SOFA 0-2 hours	Model χ^2	Model χ^2 p value	-2 log likelihood	Nagelkerke R^2	Hosmer-Lemeshow χ^2	Hosmer-Lemeshow χ^2 p value
Model 1	58.918	<0.001	285.204	0.280	10.458	0.234
Model 2	54.240	<0.001	289.882	0.260	13.422	0.098
Model 3	54.230	<0.001	289.892	0.260	13.397	0.099
Model 4	54.143	<0.001	289.978	0.260	9.476	0.304
Model 5	53.225	<0.001	290.897	0.256	7.989	0.435
Model 6	51.895	<0.001	292.226	0.250	7.079	0.528
Model 7	29.368	<0.001	294.754	0.239	7.079	0.526
Model 8	46.990	<0.001	301.696	0.226	5.029	0.754

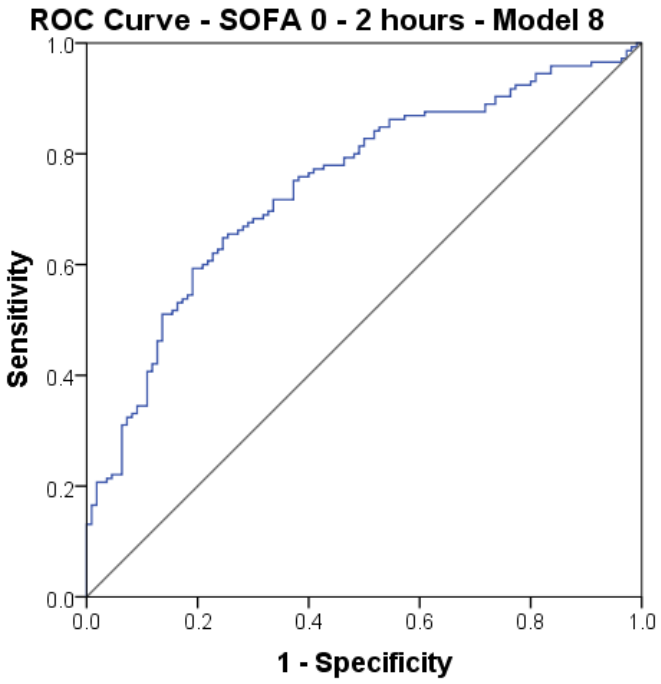
CATEGORY PREDICTORS

SOFA 0-2 hours	PAC (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Model 1	71.7	78.0	63.6	73.3	69.3
Model 2	71.3	78.0	62.7	72.8	69.0
Model 3	71.3	78.0	62.7	72.8	69.0
Model 4	71.7	78.7	62.7	78.2	69.7
Model 5	71.7	77.3	64.5	73.6	68.9
Model 6	71.3	76.6	64.5	73.5	68.3
Model 7	70.5	75.9	63.6	72.8	67.3
Model 8	69.0	75.9	60.0	71.4	65.3

ROC CURVES


ROC Curve - SOFA 0 - 2 hours - Models 1, 2 and 3
Sensitivity
1 - Specificity
Source of the Curve
Model 1
Model 2
Model 3
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 2 hours - Models 4, 5, 6 and 7
Sensitivity
1 - Specificity
Source of the Curve
Model 4
Model 5
Model 6
Model 7
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0



SOFA 0-2 hours	ROC AUC	95% CI
Model 1	0.771	0.713, 0.829
Model 2	0.763	0.704, 0.822
Model 3	0.763	0.704, 0.823
Model 4	0.762	0.703, 0.822
Model 5	0.761	0.702, 0.821
Model 6	0.760	0.700, 0.820
Model 7	0.752	0.691, 0.813
Model 8	0.743	0.682, 0.803

SELECTED MODEL STATISTICS

Model 6

Variable	Coefficient	Wald statistic p value	Adjusted OR (95% CI)
Constant	-4.077		
Age	0.030	<0.001	1.03 (1.01, 1.05)
Respiratory disease	1.110	0.035	3.03 (1.08, 8.53)
Head injury	1.019	0.001	2.77 (1.52, 5.04)
External injury	-0.497	0.115	0.61 (0.33, 1.13)
Trapped	0.705	0.025	2.02 (1.09, 3.75)
SBP	-0.009	0.040	0.99 (0.98, 1.00)
HR	0.020	<0.001	1.02 (1.01, 1.03)
RR min	0.062	0.004	1.06 (1.02, 1.11)

14.2.2. SOFA 0 - 4 HOURS MODEL

MODEL VARIABLE LISTS

Model 1	Model 2	Model 3	Model 4
n = 361	**n = 361**	**n = 361**	**n = 361**
Age	Age	Age	Age
Psychiatric	Psychiatric	Psychiatric	Psychiatric
Respiratory disease	Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury	Head injury
Face injury	Face injury	Face injury	Abdominal injury
Chest injury	Abdominal injury	Abdominal injury	Limb/pelvic injury
Abdominal injury	Limb/pelvic injury	Limb/pelvic injury	Trapped
Limb/pelvic injury	External injury	Trapped	SBP
External injury	Trapped	SBP	HR
Trapped	SBP	HR	
SBP	HR		
HR			

Model 5	Model 6	Model 7	Model 8
n = 364	**n = 364**	**n = 372**	**n = 385**
Age	Age	Age	Age
Psychiatric	Psychiatric	Psychiatric	Head injury
Respiratory disease	Head injury	Head injury	Abdominal injury
Head injury	Abdominal injury	Abdominal injury	Limb/pelvic injury
Abdominal injury	Limb/pelvic injury	Limb/pelvic injury	HR
Limb/pelvic injury	SBP	HR	
SBP	HR		
HR			

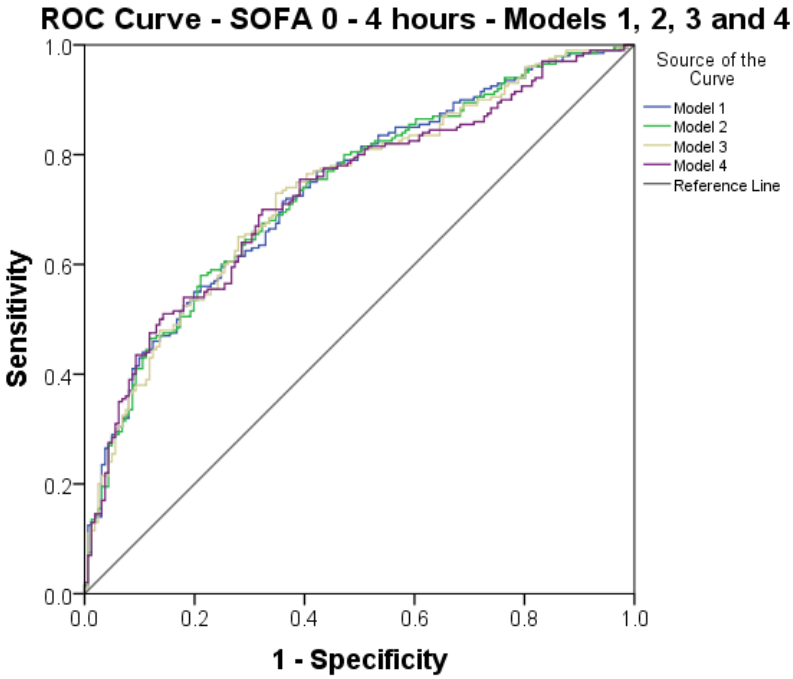
GOODNESS-OF-FIT MEASURES

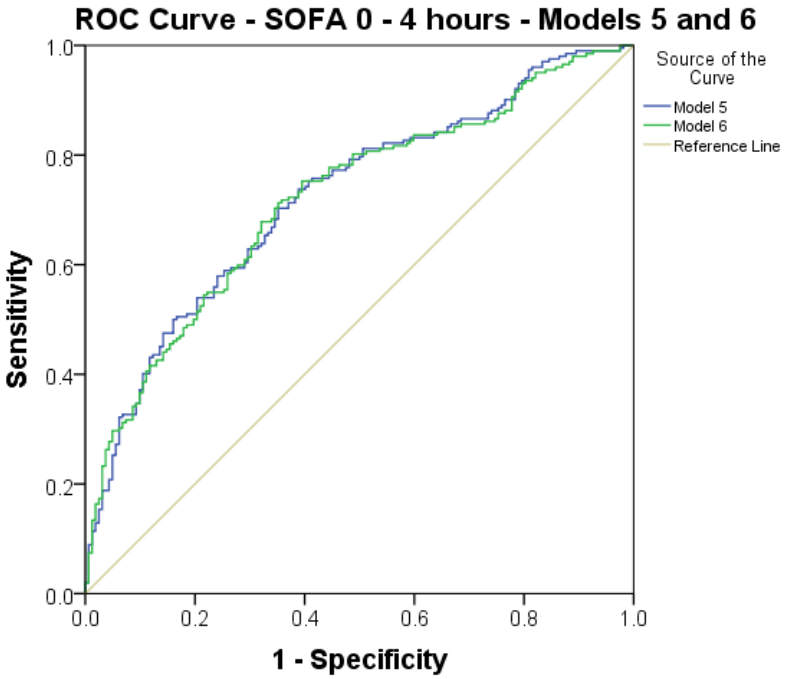
SOFA 0-4 hours	Model χ^2	Model χ^2 p value	-2 log likelihood	Nagelkerke R^2	Hosmer-Lemeshow χ^2	Hosmer-Lemeshow χ^2 p value
Model 1	63.865	<0.001	432.366	0.217	5.225	0.733
Model 2	63.508	<0.001	432.723	0.216	4.469	0.813
Model 3	62.349	<0.001	433.882	0.212	6.588	0.582
Model 4	60.562	<0.001	435.668	0.207	15.454	0.051
Model 5	57.656	<0.001	442.551	0.196	14.643	0.066
Model 6	55.783	<0.001	444.424.	0.190	11.001	0.202
Model 7	54.045	<0.001	455.953	0.181	12.355	0.136
Model 8	50.836	<0.001	474.417	0.166	5.970	0.651

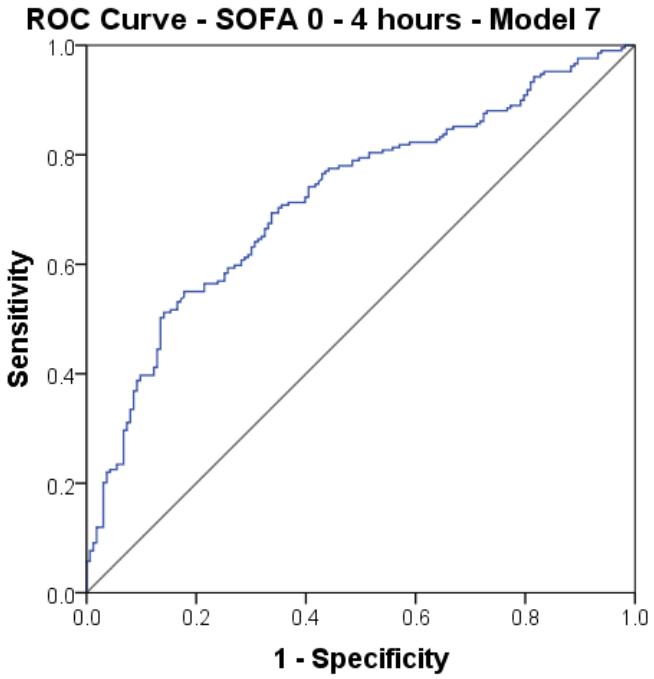
CATEGORY PREDICTORS

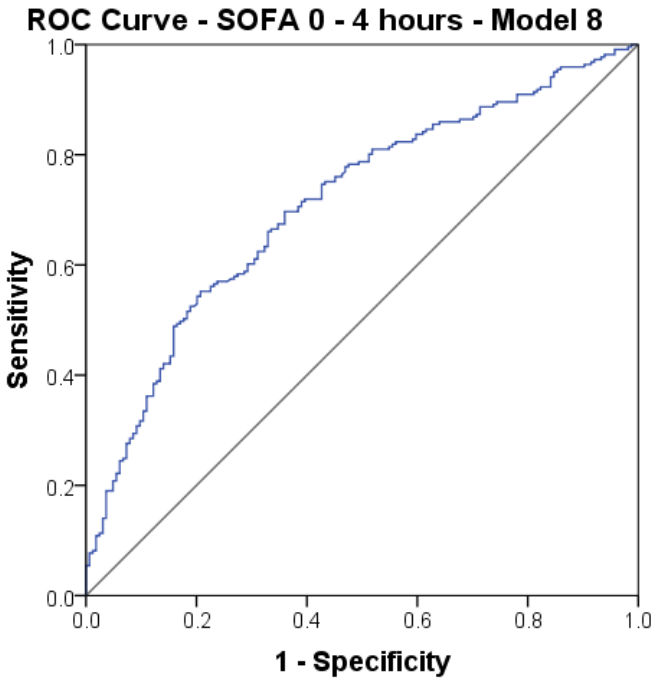
SOFA 0-4 hours	PAC (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Model 1	67.3	75.0	57.8	68.8	65.0
Model 2	66.8	75.5	55.9	68.0	64.7
Model 3	68.7	77.0	58.4	67.8	67.1
Model 4	69.0	75.5	60.9	70.6	66.7
Model 5	67.3	75.7	56.8	68.6	65.2
Model 6	67.0	75.2	56.8	68.5	64.8
Model 7	67.2	77.5	54.0	68.4	65.2
Model 8	66.5	78.7	50.0	68.0	63.6

ROC CURVES


ROC Curve - SOFA 0 - 4 hours - Models 1, 2, 3 and 4
Source of the Curve
Model 1
Model 2
Model 3
Model 4
Reference Line
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 4 hours - Models 5 and 6
Source of the Curve
Model 5
Model 6
Reference Line
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 4 hours - Model 7
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 4 hours - Model 8
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

SOFA 0-4 hours	ROC AUC	95% CI
Model 1	0.736	0.686, 0.787
Model 2	0.736	0.685, 0.787
Model 3	0.734	0.682, 0.785
Model 4	0.730	0.678, 0.781
Model 5	0.722	0.671, 0.774
Model 6	0.719	0.667, 0.771
Model 7	0.720	0.669, 0.772
Model 8	0.710	0.659, 0.762

SELECTED MODEL STATISTICS

Model 4

Variable	Coefficient	Wald statistic p value	Adjusted OR (95% CI)
Constant	-3.034		
Age	0.030	<0.001	1.03 (1.02, 1.04)
Psychiatric	-0.713	0.086	0.49 (0.22, 1.11)
Respiratory disease	0.636	0.135	1.89 (0.82, 4.40)
Head injury	0.943	<0.001	2.57 (1.54, 4.27)
Abdominal injury	0.626	0.018	1.87 (1.11, 3.14)
Limb/pelvis injury	0.548	0.046	1.73 (1.01, 2.96)
Trapped	0.356	0.172	1.43 (0.86, 2.38)
SBP	-0.006	0.139	1.00 (0.99, 1.00)
HR	0.014	0.006	1.01 (1.00, 1.02)

14.2.3. SOFA 0 – 6 HOURS MODEL

MODEL VARIABLE LISTS

Model 1	Model 2	Model 3	Model 4
n = 292	**n = 294**	**n = 294**	**n = 294**
Age	Age	Age	Age
Psychiatric	Psychiatric	Psychiatric	Psychiatric
Respiratory disease	Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury	Head injury
Face injury	Face injury	Face injury	Face injury
Chest injury	Chest injury	Chest injury	Abdominal injury
Abdominal injury	Abdominal injury	Abdominal injury	External injury
Limb/pelvic injury	Limb/pelvic injury	External injury	Trapped
External injury	External injury	Trapped	SBP
Trapped	Trapped	SBP	HR
TTH	SBP	HR	RR max
SBP	HR	RR max	Intubation
HR	RR max	Intubation	
RR max	Intubation		
Intubation			

Model 5	Model 6	Model 7	Model 8
n = 294	**n = 294**	**n = 372**	**n = 378**
Age	Age	Age	Age
Psychiatric	Psychiatric	Psychiatric	Psychiatric
Respiratory disease	Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury	Head injury
Abdominal injury	Abdominal injury	Abdominal injury	Abdominal injury
External injury	Trapped	Trapped	Trapped
Trapped	SBP	SBP	HR
SBP	HR	HR	Intubation
HR	RR max	Intubation	
RR max	Intubation		
Intubation			

Model 9	Model 10
n = 378	**n = 392**
Age Respiratory disease Head injury Abdominal injury Trapped HR Intubation	Age Head injury Abdominal injury Trapped HR Intubation

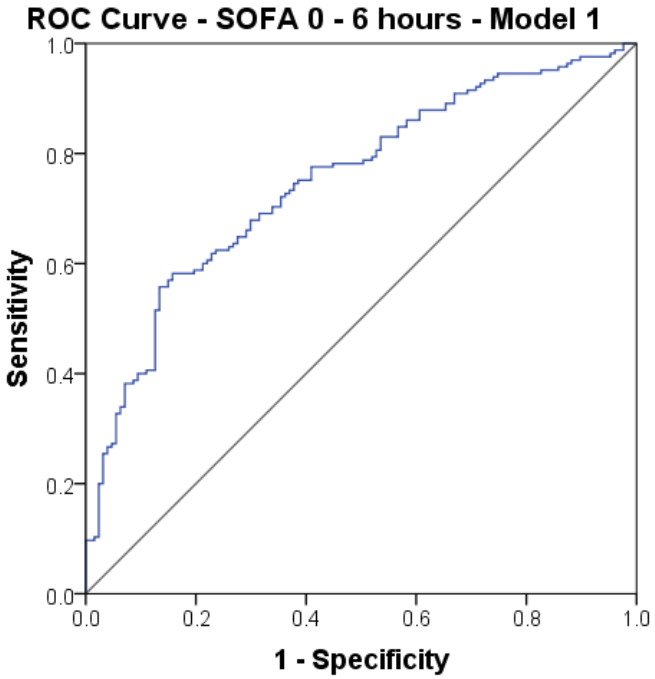
GOODNESS-OF-FIT MEASURES

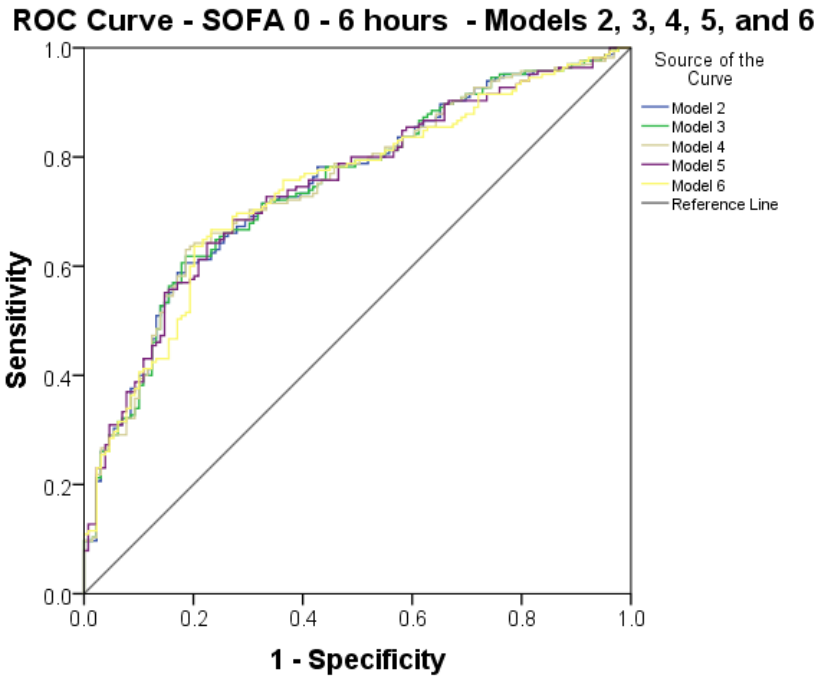
SOFA 0-6 hours	Model χ^2	Model χ^2 p value	-2 log likelihood	Nagelkerke R^2	Hosmer-Lemeshow χ^2	Hosmer-Lemeshow χ^2 p value
Model 1	57.360	<0.001	342.478	0.239	7.134	0.522
Model 2	57.073	<0.001	346.078	0.236	8.467	0.389
Model 3	57.024	<0.001	346.127	0.236	7.752	0.458
Model 4	56.922	<0.001	346.230	0.236	7.247	0.510
Model 5	55.953	<0.001	347.198	0.232	6.574	0.583
Model 6	54.355	<0.001	348.796	0.226	12.585	0.127
Model 7	63.433	<0.001	447.959	0.210	5.675	0.684
Model 8	63.135	<0.001	455.273	0.206	5.729	0.678
Model 9	59.849	<0.001	458.559	0.196	2.677	0.953
Model 10	54.148	<0.001	481.817	0.173	4.876	0.771

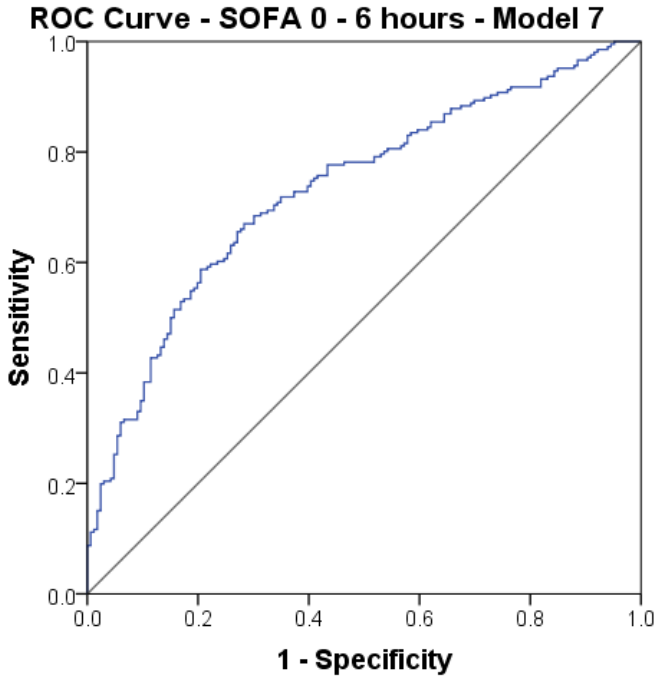
CATEGORY PREDICTORS

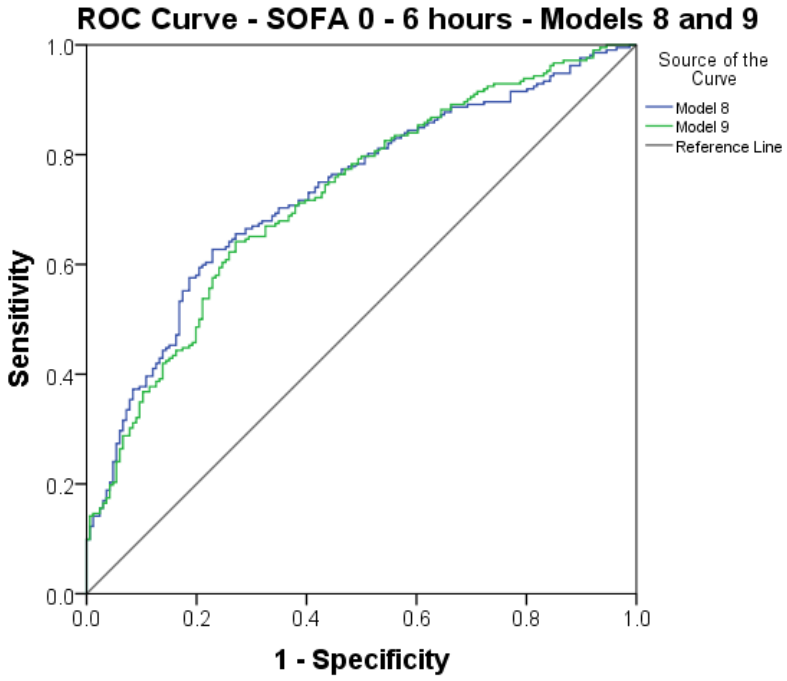
SOFA 0-6 hours	PAC (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Model 1	68.5	75.2	59.8	70.9	65.0
Model 2	67.7	73.3	60.5	70.3	63.9
Model 3	67.3	73.3	59.7	69.9	63.6
Model 4	66.3	73.3	57.4	68.8	62.7
Model 5	67.7	74.5	58.9	69.9	64.4
Model 6	69.4	77.0	59.7	70.9	67.0
Model 7	67.7	73.8	60.2	69.7	64.9
Model 8	67.2	74.1	58.4	69.5	63.8
Model 9	66.1	73.6	56.6	68.4	62.7
Model 10	66.1	74.9	54.5	68.4	63.9

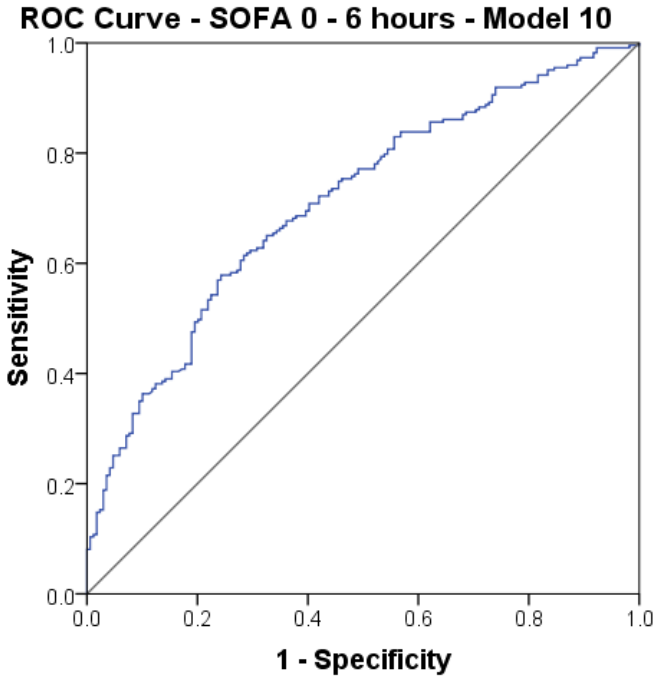
ROC CURVES


ROC Curve - SOFA 0 - 6 hours - Model 1
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 6 hours - Models 2, 3, 4, 5, and 6
Sensitivity
1 - Specificity
Source of the Curve
Model 2
Model 3
Model 4
Model 5
Model 6
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 6 hours - Model 7
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 6 hours - Models 8 and 9
Sensitivity
1 - Specificity
Source of the Curve
Model 8
Model 9
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0



SOFA 0-6 hours	ROC AUC	95% CI
Model 1	0.750	0.694, 0.805
Model 2	0.747	0.692, 0.803
Model 3	0.746	0.690, 0.802
Model 4	0.747	0.691, 0.803
Model 5	0.745	0.690, 0.801
Model 6	0.741	0.684, 0.797
Model 7	0.733	0.682, 0.783
Model 8	0.731	0.681, 0.782
Model 9	0.723	0.672, 0.774
Model 10	0.710	0.659, 0.761

SELECTED MODEL STATISTICS

Model 6

Variable	Coefficient	Wald statistic p value	Adjusted OR (95% CI)
Constant	-3.127	<0.001	
Age	0.026	0.069	1.03 (1.01, 1.04)
Psychiatric	-0.808	0.044	0.45 (0.19, 1.06)
Respiratory disease	1.040	<0.001	2.83 (1.03, 7.77)
Head injury	1.132	0.083	3.10 (1.73, 5.57)
Abdominal injury	0.502	0.120	1.65 (0.94, 2.92)
Trapped	0.440	0.049	1.55 (0.89, 2.70)
SBP	-0.009	0.002	1.00 (0.98, 1.00)
HR	0.019	0.138	1.02 (1.01, 1.03)
RR max	0.022	0.013	1.02 (1.00, 1.05)
Intubation	-0.766	0.002	0.47 (0.25, 0.85)

14.2.4. SOFA 0 – 12 HOURS MODEL

MODEL VARIABLE LISTS

Model 1	Model 2	Model 3	Model 4
n = 99	**n = 101**	**n = 101**	**n = 101**
Age	Age	Age	Age
Respiratory disease	Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury	Head injury
Face injury	Face injury	Face injury	Face injury
Chest injury	Chest injury	Chest injury	Chest injury
Abdominal injury	Abdominal injury	Abdominal injury	Limb/pelvic injury
Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury	External injury
External injury	External injury	External injury	Trapped
Trapped	Trapped	Trapped	SBP
SBP	SBP	SBP	FiO2
FiO2	FiO2	FiO2	HR
HR	HR	HR	RR Max
PO2	PO2	RR Max	Temperature
RR Max	RR Max	Temperature	Haemoglobin
Temperature	Temperature	Haemoglobin	PT
Haemoglobin	Haemoglobin	PT	Albumin
PT	PT	Albumin	BD
Albumin	Albumin	BD	Bilirubin
BD	BD	Bilirubin	Creatinine
Bilirubin	Bilirubin	Creatinine	Lactate
Creatinine	Creatinine	Lactate	Potassium Max
Glucose	Lactate	Potassium Max	IV fluids
Lactate	Potassium Max	IV fluids	Vasopressors
Potassium Max	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 5	Model 6	Model 7	Model 8
n = 101	**n = 101**	**n = 101**	**n = 101**
Age	Age	Age	Age
Respiratory disease	Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury	Head injury
Face injury	Chest injury	Chest injury	Chest injury
Chest injury	External injury	External injury	External injury
External injury	Trapped	SBP	SBP
Trapped	SBP	FiO2	FiO2
SBP	FiO2	HR	HR
FiO2	HR	RR Max	RR Max
HR	RR Max	Temperature	Temperature
RR Max	Temperature	Haemoglobin	PT
Temperature	Haemoglobin	PT	Albumin
Haemoglobin	PT	Albumin	BD
PT	Albumin	BD	Bilirubin
Albumin	BD	Bilirubin	Creatinine
BD	Bilirubin	Creatinine	Lactate
Bilirubin	Creatinine	Lactate	Potassium Max
Creatinine	Lactate	Potassium Max	IV fluids
Lactate	Potassium Max	IV fluids	Vasopressors
Potassium Max	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 9	Model 10	Model 11	Model 12
n = 101	**n = 101**	**n = 103**	**n = 106**
Respiratory disease	Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Chest injury
External injury	External injury	External injury	External injury
SBP	FiO2	FiO2	FiO2
FiO2	HR	HR	HR
HR	RR Max	RR Max	RR Max
RR Max	Temperature	Temperature	Temperature
Temperature	PT	PT	PT
PT	Albumin	Albumin	Albumin
Albumin	BD	BD	BD
BD	Bilirubin	Creatinine	Creatinine
Bilirubin	Creatinine	Lactate	Lactate
Creatinine	Lactate	Potassium Max	Potassium Max
Lactate	Potassium Max	IV fluids	Vasopressors
Potassium Max	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 13	Model 14	Model 15	Model 16
n = 106	**n = 117**	**n = 158**	**n = 167**
Respiratory disease	Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Chest injury
External injury	External injury	External injury	External injury
FiO2	FiO2	FiO2	FiO2
HR	HR	HR	HR
RR Max	RR Max	RR Max	RR Max
Temperature	Temperature	Temperature	Albumin
PT	Albumin	Albumin	BD
Albumin	BD	BD	Creatinine
BD	Creatinine	Creatinine	Lactate
Creatinine	Lactate	Lactate	
Lactate	Potassium Max		
Potassium Max			

Model 17	Model 18	Model 19
n = 167	**n = 168**	**n = 168**
Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury
FiO2	FiO2	FiO2
HR	HR	RR Max
RR Max	RR Max	Albumin
Albumin	Albumin	BD
BD	BD	Lactate
Creatinine	Lactate	
Lactate		

Model 20	Model 21	Model 22
n = 179	**n = 229**	**n = 229**
Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury
FiO2	Albumin	Albumin
Albumin	BD	Lactate
BD	Lactate	
Lactate		

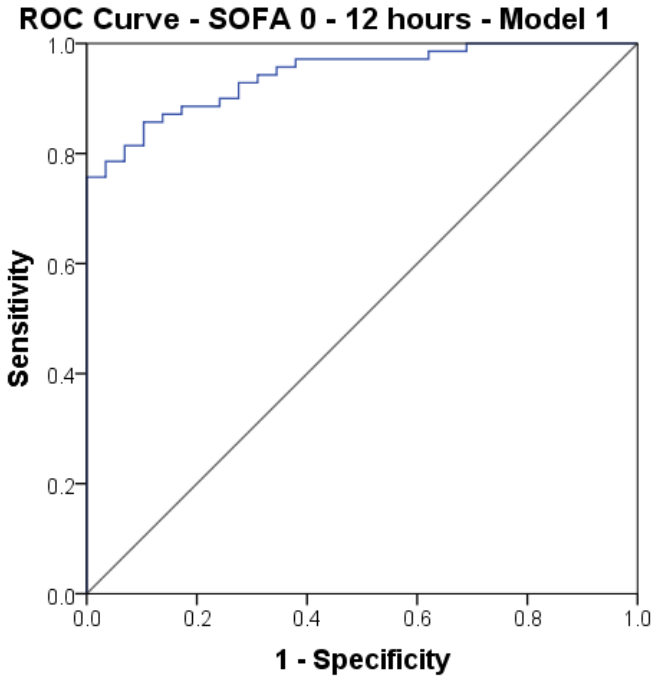
GOODNESS-OF-FIT MEASURES

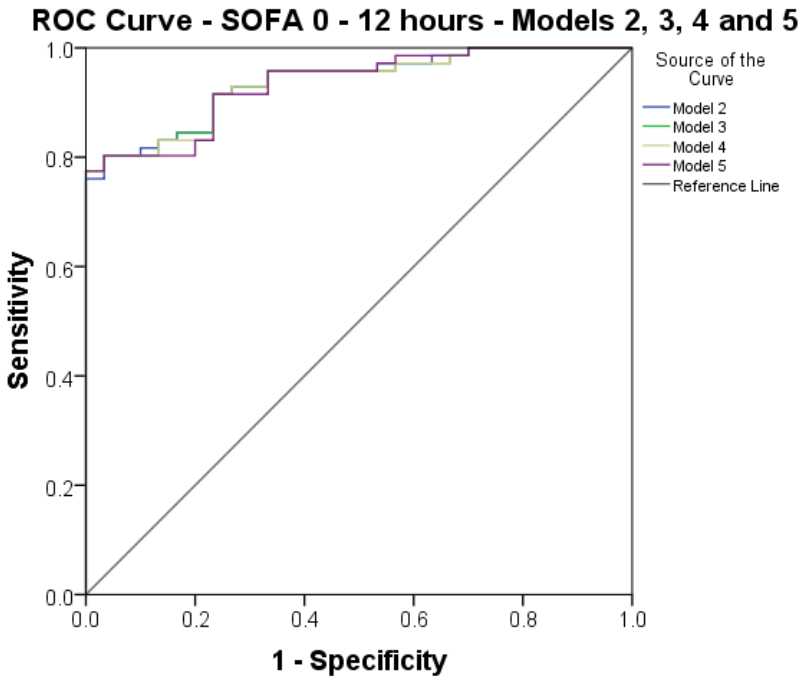
SOFA 0-12 hours	Model χ^2	Model χ^2 p value	-2 log likelihood	Nagelkerke R^2	Hosmer-Lemeshow χ^2	Hosmer-Lemeshow χ^2 p value
Model 1	66.076	<0.001	53.665	0.694	6.010	0.646
Model 2	65.148	<0.001	57.734	0.675	2.669	0.953
Model 3	65.147	<0.001	57.735	0.675	4.029	0.854
Model 4	65.139	<0.001	57.743	0.675	4.075	0.850
Model 5	65.061	<0.001	57.821	0.675	4.189	0.840
Model 6	64.753	<0.001	58.129	0.673	2.876	0.942
Model 7	64.658	<0.001	58.224	0.672	2.885	0.941
Model 8	64.158	<0.001	58.724	0.668	3.124	0.926
Model 9	63.965	<0.001	58.917	0.667	4.747	0.784
Model 10	63.420	<0.001	59.462	0.663	1.400	0.994
Model 11	67.311	<0.001	60.335	0.675	4.255	0.833
Model 12	67.838	<0.001	65.179	0.661	3.143	0.925
Model 13	67.031	<0.001	65.986	0.656	4.988	0.759
Model 14	51.080	<0.001	96.439	0.494	27.494	0.001
Model 15	54.719	<0.001	154.078	0.399	9.294	0.318
Model 16	60.123	<0.001	162.196	0.411	7.263	0.509
Model 17	60.105	<0.001	162.214	0.411	7.016	0.535
Model 18	57.567	<0.001	165.715	0.395	11.270	0.187
Model 19	56.935	<0.001	166.347	0.391	7.262	0.509
Model 20	54.065	<0.001	182.647	0.355	11.208	0.190
Model 21	51.084	<0.001	262.168	0.268	6.821	0.556
Model 22	47.448	<0.001	265.804	0.251	4.916	0.766

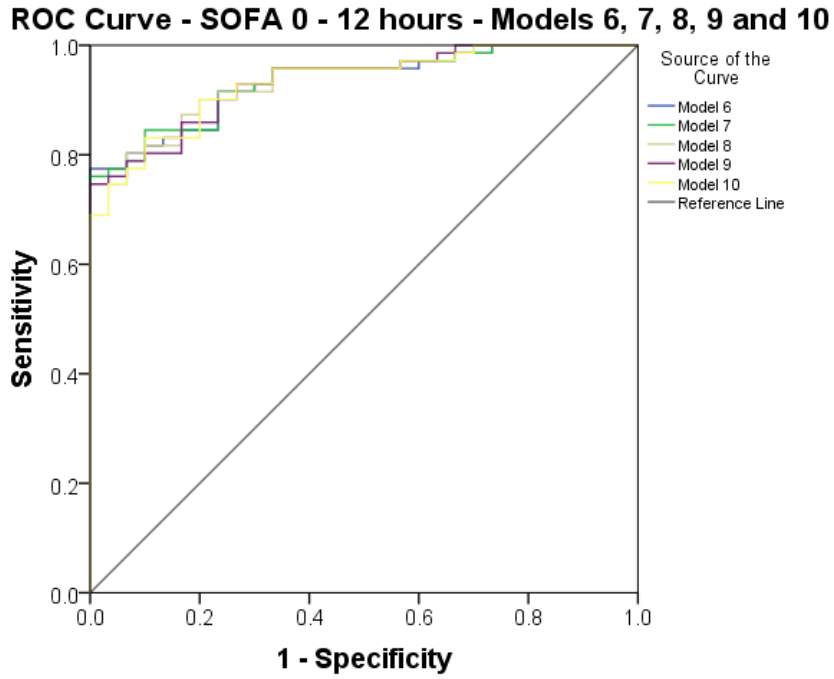
CATEGORY PREDICTORS

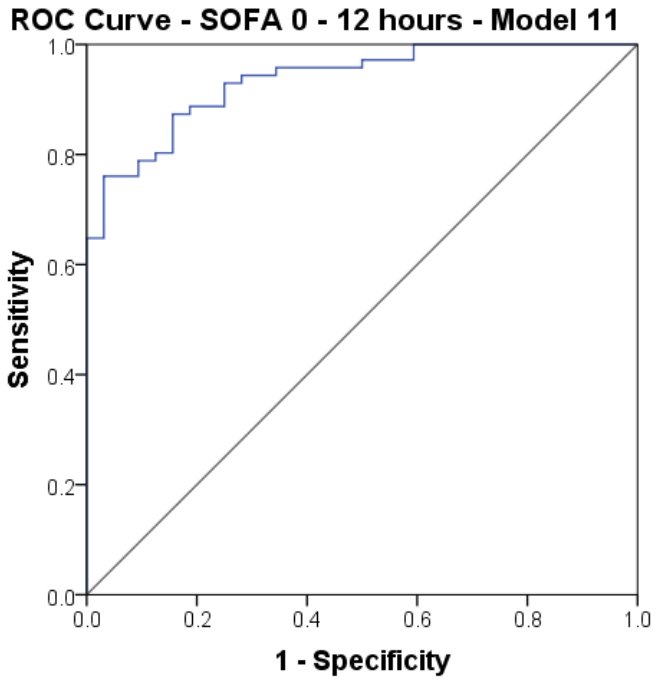
SOFA 0-12 hours	PAC (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Model 1	85.9	91.4	72.4	88.9	77.8
Model 2	87.1	91.5	76.7	90.3	79.3
Model 3	87.1	91.5	76.7	90.3	79.3
Model 4	87.1	91.5	76.7	90.3	79.3
Model 5	87.1	91.5	76.7	90.3	79.3
Model 6	87.1	91.5	76.7	90.3	79.3
Model 7	87.1	91.5	76.7	90.3	79.3
Model 8	87.1	91.5	76.7	90.3	79.3
Model 9	86.1	91.5	73.3	89.0	78.6
Model 10	86.1	91.5	73.3	89.0	78.6
Model 11	87.4	93.0	75.0	89.2	82.3
Model 12	86.8	91.7	76.5	89.2	81.3
Model 13	86.8	93.1	73.5	88.2	83.3
Model 14	81.2	91.1	60.5	82.3	76.7
Model 15	77.2	85.9	62.7	79.4	72.5
Model 16	77.2	83.5	67.2	80.4	71.7
Model 17	77.2	84.5	65.6	79.8	72.4
Model 18	77.4	84.6	65.6	80.0	72.4
Model 19	76.8	84.6	64.1	79.3	71.9
Model 20	76.0	84.8	61.2	78.5	70.7
Model 21	68.6	73.8	61.6	71.6	64.2
Model 22	68.1	76.2	57.6	70.2	64.8

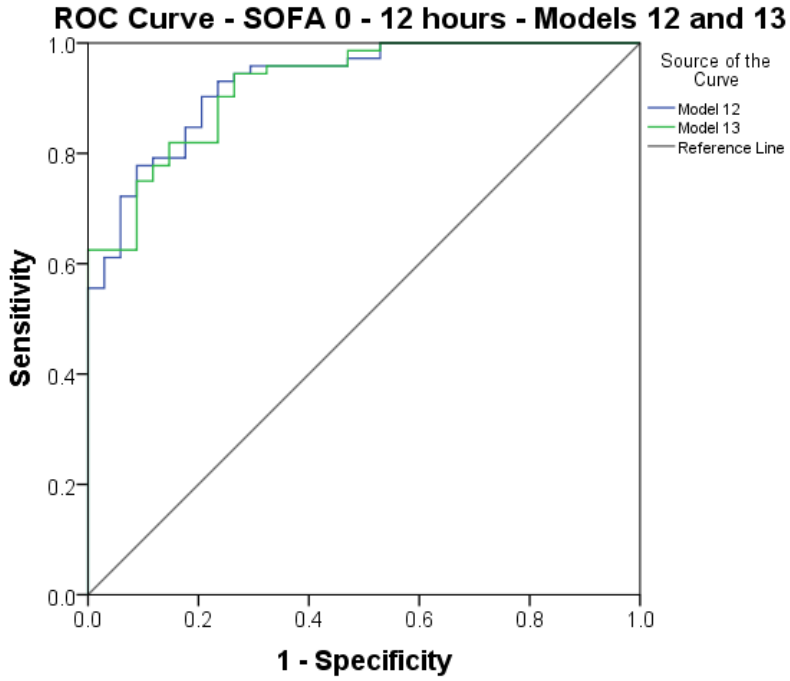
ROC CURVES

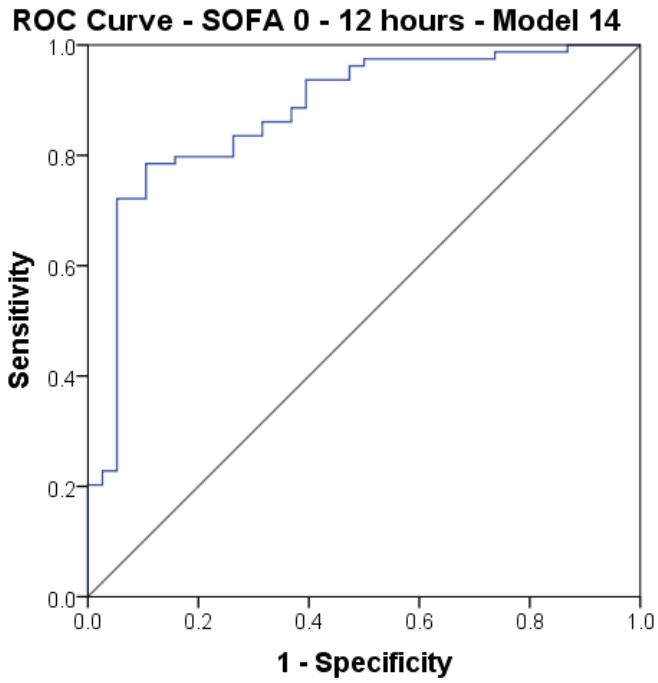

ROC Curve - SOFA 0 - 12 hours - Model 1
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

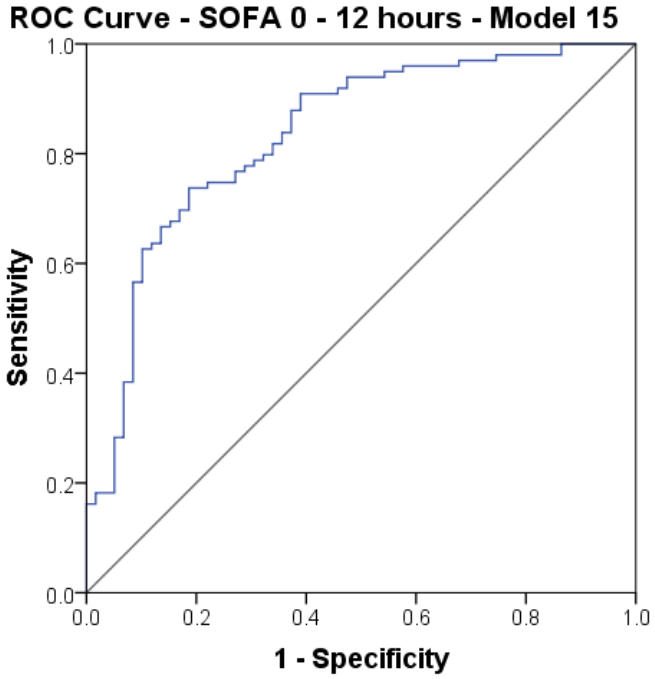

ROC Curve - SOFA 0 - 12 hours - Models 2, 3, 4 and 5
Sensitivity
1 - Specificity
Source of the Curve
Model 2
Model 3
Model 4
Model 5
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0

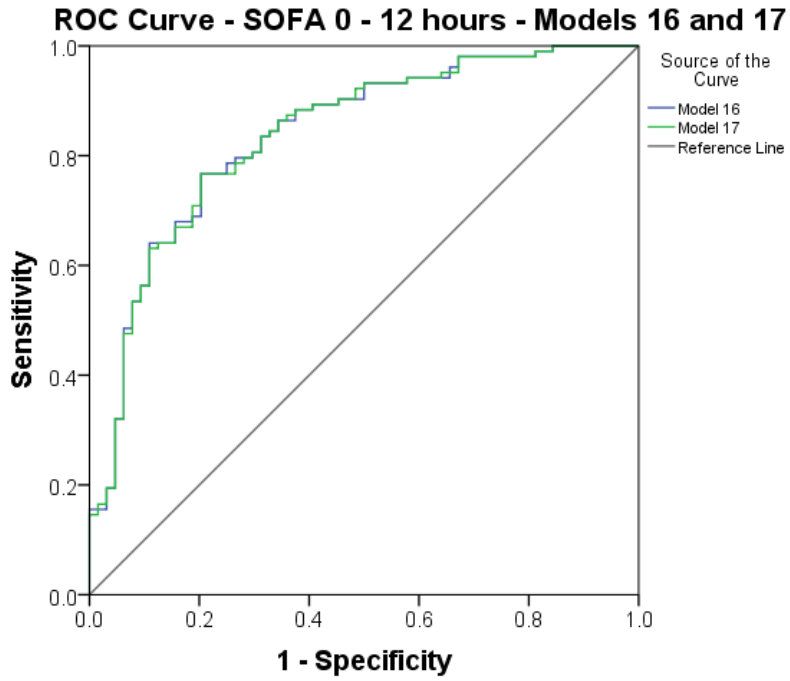

ROC Curve - SOFA 0 - 12 hours - Models 6, 7, 8, 9 and 10
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0
Source of the Curve
Model 6
Model 7
Model 8
Model 9
Model 10
Reference Line

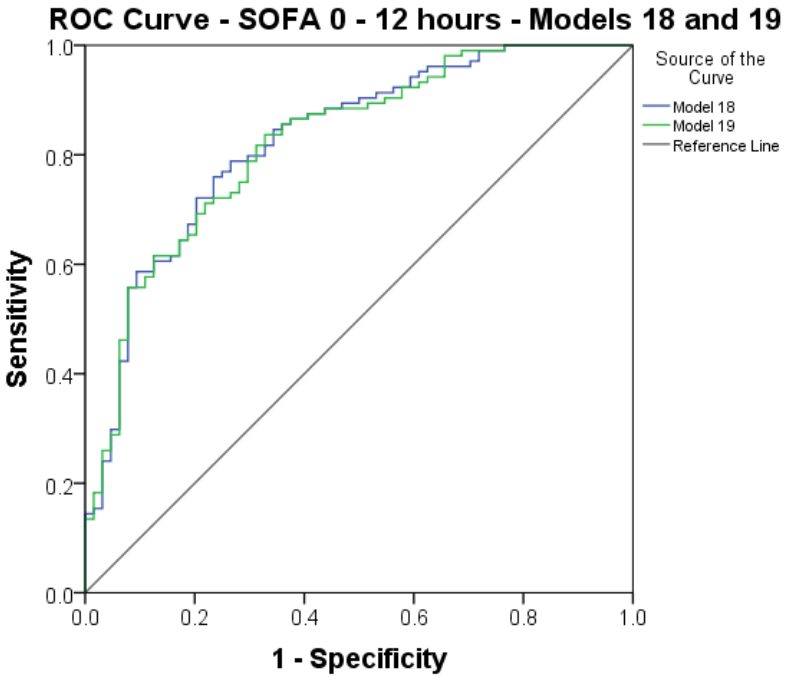

ROC Curve - SOFA 0 - 12 hours - Model 11
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

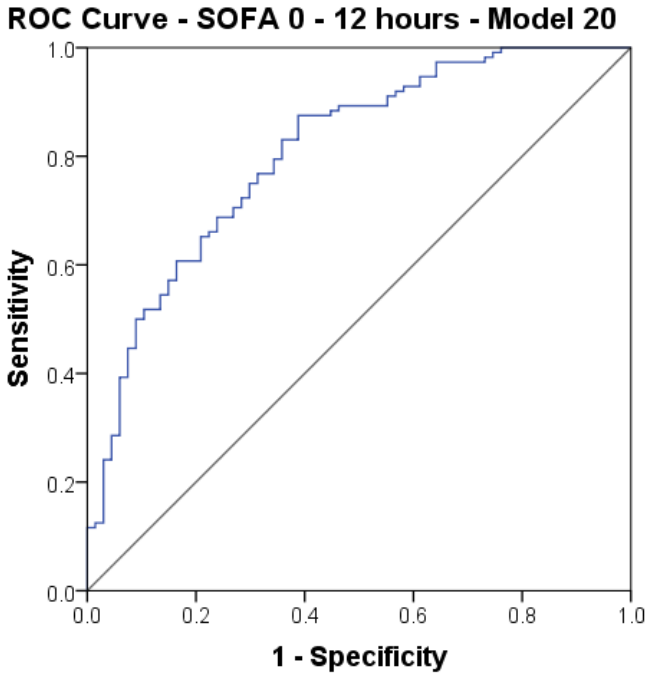

ROC Curve - SOFA 0 - 12 hours - Models 12 and 13
Sensitivity
1 - Specificity
Source of the Curve
Model 12
Model 13
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0

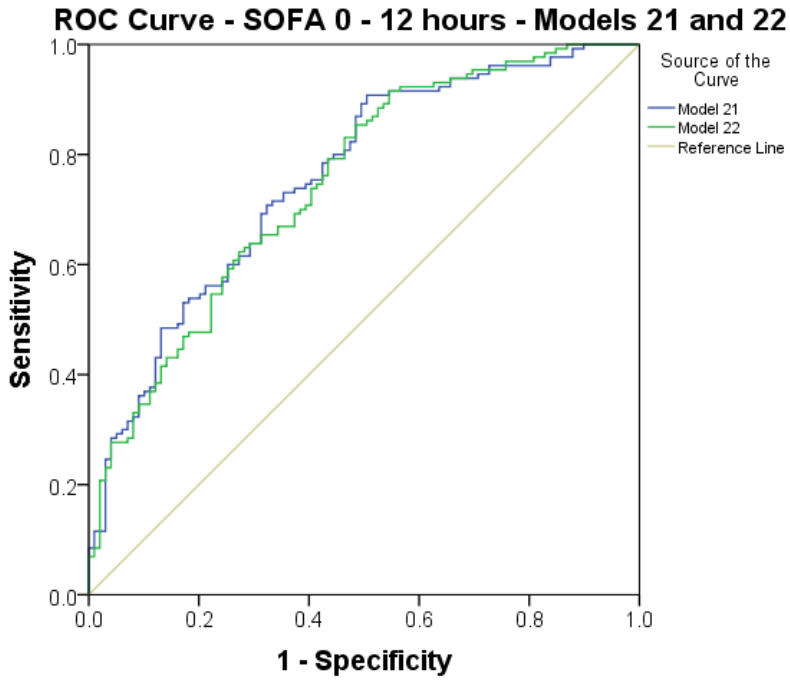

ROC Curve - SOFA 0 - 12 hours - Model 14
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 12 hours - Model 15
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 12 hours - Models 16 and 17
Sensitivity
1 - Specificity
Source of the Curve
Model 16
Model 17
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 12 hours - Models 18 and 19
Sensitivity
1 - Specificity
Source of the Curve
Model 18
Model 19
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 12 hours - Model 20
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0



SOFA 0-12 hours	ROC AUC	95% CI
Model 1	0.943	0.902, 0.985
Model 2	0.937	0.894, 0.981
Model 3	0.936	0.892, 0.980
Model 4	0.935	0.891, 0.980
Model 5	0.934	0.890, 0.979
Model 6	0.934	0.889, 0.979
Model 7	0.935	0.891, 0.980
Model 8	0.936	0.891, 0.980
Model 9	0.934	0.889, 0.979
Model 10	0.932	0.886, 0.978
Model 11	0.935	0.891, 0.979
Model 12	0.929	0.880, 0.977
Model 13	0.924	0.875, 0.973
Model 14	0.879	0.810, 0.947
Model 15	0.833	0.766, 0.900
Model 16	0.837	0.774, 0.900
Model 17	0.837	0.773, 0.900
Model 18	0.828	0.763, 0,892
Model 19	0.823	0.759, 0.888
Model 20	0.807	0.741, 0.873
Model 21	0.758	0.696, 0.820
Model 22	0.747	0.684, 0.810

SELECTED MODEL STATISTICS

Model 19

Variable	Coefficient	Wald statistic p value	Adjusted OR (95% CI)
Constant	-1.160		
Respiratory disease	1.103	0.145	3.01 (0.68, 13.28)
Head injury	1.777	0.001	5.91 (2.16, 16.17)
Chest injury	1.131	0.007	3.10 (1.37, 7.00)
FiO2		0.040	
41-60%	-0.166	0.784	0.85 (0.26, 2.78)
61-80%	1.454	0.105	4.28 (0.74, 24.87)
>80%	0.878	0.148	2.41 (0.73, 7.89)
RR max	0.053	0.019	1.06 (1.01, 1.10)
Albumin	-0.086	0.002	0.92 (0.87, 0.97)
BD	0.173	0.027	1.19 (1.02, 1.39)
Lactate	0.544	0.001	1.72 (1.26, 2.36)

14.2.5. SOFA 0 – 24 HOURS MODEL

MODEL VARIABLE LISTS

Model 1	Model 2	Model 3	Model 4
n = 149	**n = 151**	**n = 151**	**n = 154**
Age	Age	Age	Age
Psychiatric	Psychiatric	Respiratory disease	Respiratory disease
Respiratory disease	Respiratory disease	Head injury	Head injury
Head injury	Head injury	Face injury	Face injury
Face injury	Face injury	Chest injury	Chest injury
Chest injury	Chest injury	Abdominal injury	Abdominal injury
Abdominal injury	Abdominal injury	Limb/pelvic injury	Limb/pelvic injury
Limb/pelvic injury	Limb/pelvic injury	External injury	External injury
External injury	External injury	Trapped	Trapped
Trapped	Trapped	SBP	SBP
SBP	SBP	FiO2	FiO2
FiO2	FiO2	HR	HR
HR	HR	RR Max	RR Max
RR Max	RR Max	Temperature	Temperature
Temperature	Temperature	APTT	APTT
APTT	APTT	Haemoglobin	Haemoglobin
Haemoglobin	Haemoglobin	Platelet count	Platelet count
Platelet count	Platelet count	PT	PT
PT	PT	Albumin	Albumin
Albumin	Albumin	BD	BD
BD	BD	Bilirubin	Creatinine
Bilirubin	Bilirubin	Creatinine	Lactate
Creatinine	Creatinine	Lactate	Potassium Max
Glucose	Lactate	Potassium Max	Sodium Max
Lactate	Potassium Max	Sodium Max	Transfusion level
Potassium Max	Sodium Max	Transfusion level	IV fluids
Sodium Max	Transfusion level	IV fluids	Vasopressors
Transfusion level	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 5	Model 6	Model 7	Model 8
n = 159	**n = 160**	**n = 196**	**n = 196**
Age	Age	Age	Age
Respiratory disease	Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury	Head injury
Face injury	Face injury	Face injury	Face injury
Chest injury	Chest injury	Chest injury	Chest injury
Abdominal injury	Abdominal injury	Abdominal injury	Abdominal injury
Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury
External injury	External injury	External injury	External injury
Trapped	Trapped	Trapped	Trapped
SBP	SBP	SBP	SBP
FiO2	FiO2	FiO2	FiO2
HR	HR	HR	HR
RR Max	RR Max	RR Max	RR Max
Temperature	Temperature	Temperature	Temperature
APTT	APTT	APTT	APTT
Haemoglobin	Haemoglobin	Haemoglobin	Haemoglobin
Platelet count	Platelet count	Platelet count	Platelet count
Albumin	Albumin	Albumin	Albumin
BD	BD	BD	BD
Creatinine	Creatinine	Creatinine	Creatinine
Lactate	Lactate	Lactate	Sodium Max
Potassium Max	Potassium Max	Sodium Max	Transfusion level
Sodium Max	Sodium Max	Transfusion level	Vasopressors
Transfusion level	Transfusion level	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 9	Model 10	Model 11	Model 12
n = 201	**n = 201**	**n = 206**	**n = 206**
Age	Age	Age	Age
Respiratory disease	Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury	Head injury
Face injury	Face injury	Face injury	Face injury
Chest injury	Chest injury	Chest injury	Chest injury
Abdominal injury	Abdominal injury	Abdominal injury	Abdominal injury
Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury
External injury	External injury	External injury	External injury
Trapped	SBP	SBP	SBP
SBP	FiO2	FiO2	FiO2
FiO2	HR	HR	HR
HR	RR Max	RR Max	RR Max
RR Max	APTT	APTT	APTT
APTT	Haemoglobin	Haemoglobin	Haemoglobin
Haemoglobin	Platelet count	Platelet count	Platelet count
Platelet count	Albumin	Albumin	Albumin
Albumin	BD	Creatinine	Creatinine
BD	Creatinine	Sodium Max	Transfusion level
Creatinine	Sodium Max	Transfusion level	Vasopressors
Sodium Max	Transfusion level	Vasopressors	
Transfusion level	Vasopressors		
Vasopressors			

Model 13	Model 14	Model 15	Model 16
n = 206	**n = 207**	**n = 218**	**n = 218**
Respiratory disease	Respiratory disease	Head injury	Head injury
Head injury	Head injury	Face injury	Chest injury
Face injury	Face injury	Chest injury	Abdominal injury
Chest injury	Chest injury	Abdominal injury	Limb/pelvic injury
Abdominal injury	Abdominal injury	Limb/pelvic injury	External injury
Limb/pelvic injury	Limb/pelvic injury	External injury	FiO2
External injury	External injury	FiO2	HR
SBP	FiO2	HR	RR Max
FiO2	HR	RR Max	APTT
HR	RR Max	APTT	Haemoglobin
RR Max	APTT	Haemoglobin	Platelet count
APTT	Haemoglobin	Platelet count	Albumin
Haemoglobin	Platelet count	Albumin	Creatinine
Platelet count	Albumin	Creatinine	Transfusion level
Albumin	Creatinine	Transfusion level	Vasopressors
Creatinine	Transfusion level	Vasopressors	
Transfusion level	Vasopressors		
Vasopressors			

Model 17	Model 18	Model 19	Model 20
n = 218	**n = 218**	**n = 218**	**n = 234**
Head injury	Head injury	Head injury	Head injury
Chest injury	Abdominal injury	Limb/pelvic injury	Limb/pelvic injury
Abdominal injury	Limb/pelvic injury	External injury	External injury
Limb/pelvic injury	External injury	FiO2	FiO2
External injury	FiO2	HR	HR
FiO2	HR	RR Max	APTT
HR	RR Max	APTT	Platelet count
RR Max	APTT	Platelet count	Albumin
APTT	Platelet count	Albumin	Creatinine
Platelet count	Albumin	Creatinine	Transfusion level
Albumin	Creatinine	Transfusion level	Vasopressors
Creatinine	Transfusion level	Vasopressors	
Transfusion level	Vasopressors		
Vasopressors			

Model 21	Model 22	Model 23	Model 24	Model 25
n = 234	**n = 240**	**n = 240**	**n = 240**	**n = 240**
Head injury	Head injury	Head injury	Head injury	Head injury
External injury	External injury	External injury	FiO2	FiO2
FiO2	FiO2	FiO2	HR	HR
HR	HR	HR	Platelet count	Platelet count
APTT	Platelet count	Platelet count	Albumin	Albumin
Platelet count	Albumin	Albumin	Transfusion level	Vasopressors
Albumin	Creatinine	Transfusion level	Vasopressors	
Creatinine	Transfusion level	Vasopressors		
Transfusion level	Vasopressors			
Vasopressors				

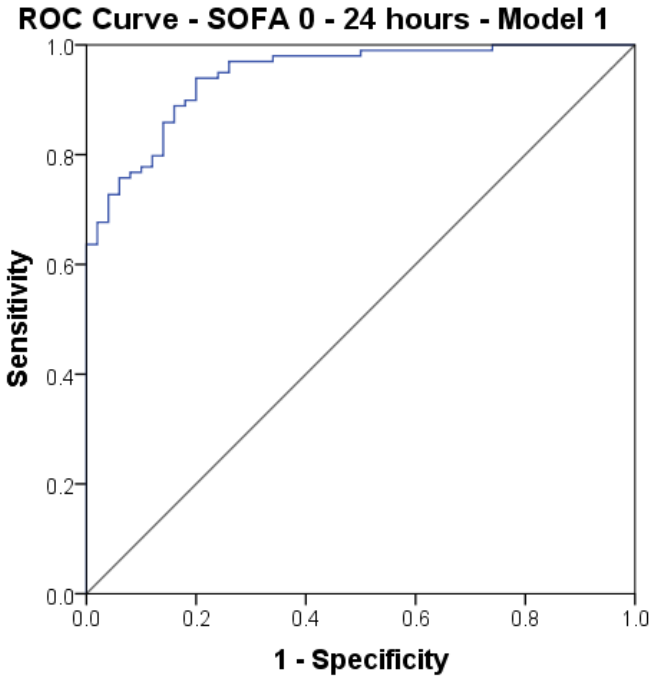
GOODNESS-OF-FIT MEASURES

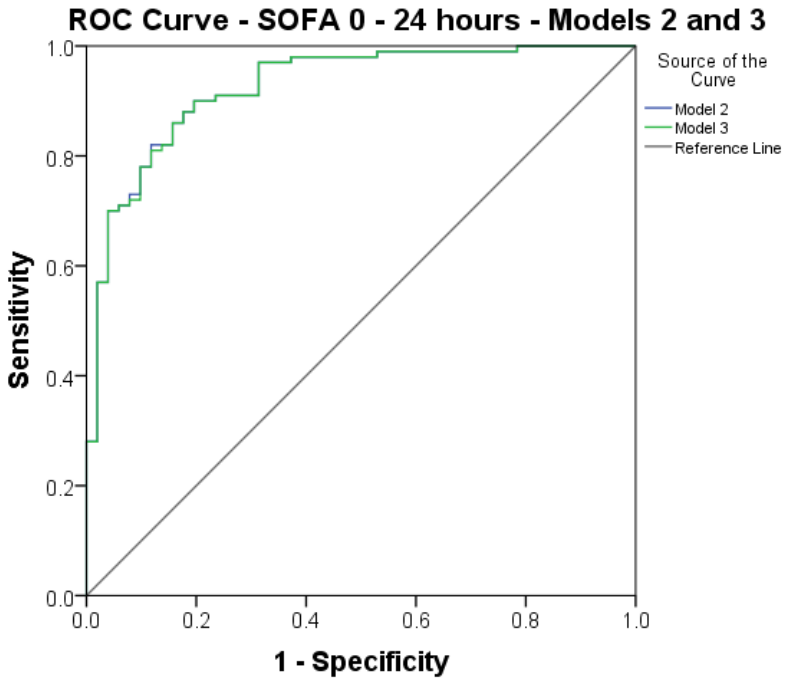
SOFA 0-24 hours	Model χ^2	Model χ^2 p value	-2 log likelihood	Nagelkerke R^2	Hosmer-Lemeshow χ^2	Hosmer-Lemeshow χ^2 p value
Model 1	103.742	<0.001	86.398	0.696	9.730	0.284
Model 2	93.814	<0.001	99.324	0.641	13.454	0.097
Model 3	93.809	<0.001	99.329	0.641	13.472	0.097
Model 4	98.170	<0.001	100.106	0.651	9.372	0.312
Model 5	84.580	<0.001	120.492	0.569	15.761	0.046
Model 6	85.418	<0.001	121.765	0.570	17.221	0.028
Model 7	104.132	<0.001	158.512	0.558	12.970	0.113
Model 8	104.132	<0.001	158.512	0.558	12.970	0.113
Model 9	108.355	<0.001	161.020	0.565	10.496	0.232
Model 10	108.304	<0.001	161.071	0.564	13.947	0.083
Model 11	109.779	<0.001	167.981	0.558	13.264	0.103
Model 12	109.738	<0.001	168.022	0.558	20.169	0.010
Model 13	109.348	<0.001	168.413	0.556	18.673	0.017
Model 14	110.261	<0.001	169.310	0.557	16.149	0.040
Model 15	107.309	<0.001	185.961	0.526	11.630	0.169
Model 16	106.671	<0.001	186.600	0.523	14.215	0.076
Model 17	105.530	<0.001	187.740	0.519	12.484	0.131
Model 18	104.075	<0.001	189.195	0.513	8.508	0.386
Model 19	102.101	<0.001	191.169	0.506	11.412	0.179
Model 20	94.984	<0.001	219.493	0.451	3.190	0.922
Model 21	93.849	<0.001	220.628	0.447	1.373	0.995
Model 22	89.053	<0.001	233.164	0.420	1.481	0.993
Model 23	87.346	<0.001	234.871	0.413	1.011	0.998
Model 24	84.586	<0.001	237.631	0.402	7.982	0.435
Model 25	79.720	<0.001	242.497	0.383	5.584	0.694

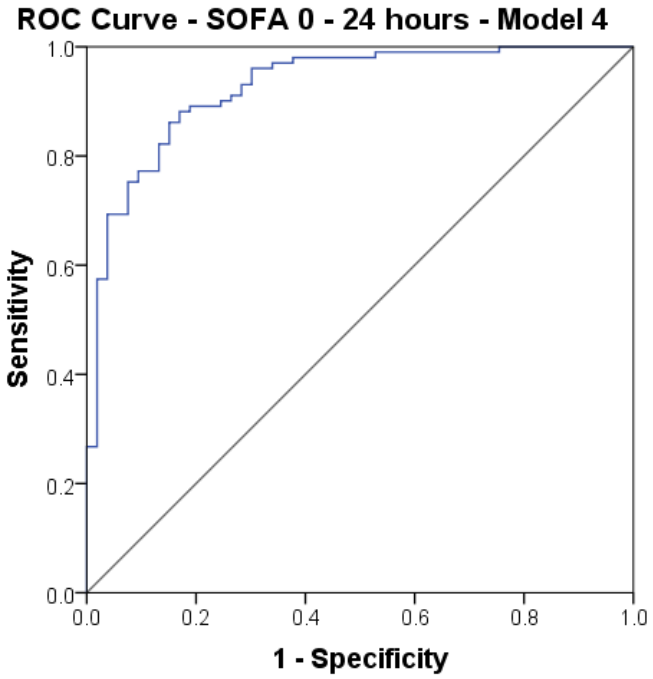
CATEGORY PREDICTORS

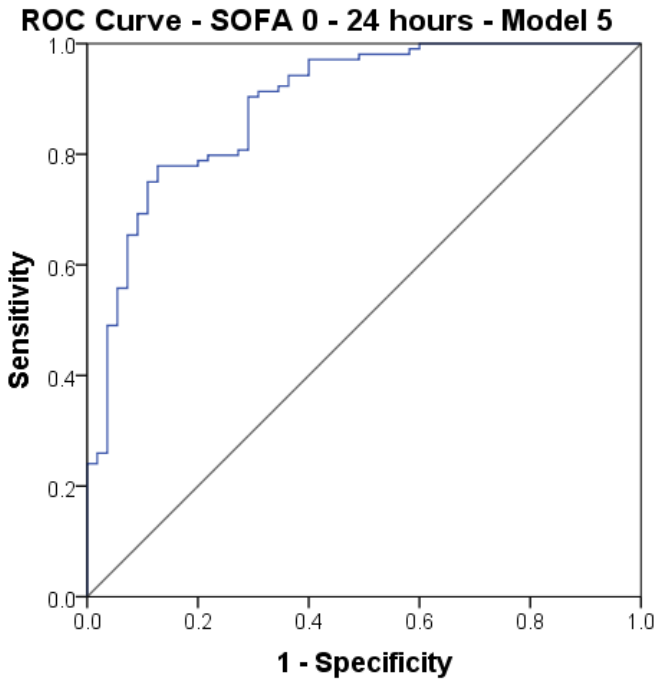
SOFA 0-24 hours	PAC (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Model 1	87.9	91.9	80.0	90.1	83.3
Model 2	86.1	91.0	76.5	88.3	81.3
Model 3	86.1	91.0	76.5	88.3	81.3
Model 4	85.1	89.1	77.4	88.2	78.8
Model 5	83.6	90.4	70.9	85.5	79.6
Model 6	83.1	91.3	67.9	84.1	80.9
Model 7	77.6	81.5	71.4	80.2	71.4
Model 8	77.6	81.5	71.4	80.2	71.4
Model 9	77.6	82.8	69.6	80.8	72.4
Model 10	78.6	84.4	69.6	81.1	74.3
Model 11	76.2	78.9	72.3	80.8	69.8
Model 12	76.2	78.9	72.3	80.8	69.8
Model 13	76.7	80.5	71.1	80.5	71.1
Model 14	76.8	79.7	72.6	81.0	70.9
Model 15	76.1	80.2	70.1	80.2	70.9
Model 16	76.6	80.9	70.1	80.3	70.9
Model 17	77.5	80.9	72.4	81.5	71.6
Model 18	78.0	81.7	72.4	81.7	72.4
Model 19	76.6	81.7	69.0	79.9	71.4
Model 20	76.1	82.3	66.7	78.9	71.3
Model 21	76.1	81.6	67.7	79.3	70.8
Model 22	75.8	82.1	66.3	78.8	70.8
Model 23	75.8	83.4	64.2	78.1	71.8
Model 24	73.8	80.0	64.2	77.3	67.8
Model 25	73.8	81.4	62.1	76.7	67.8

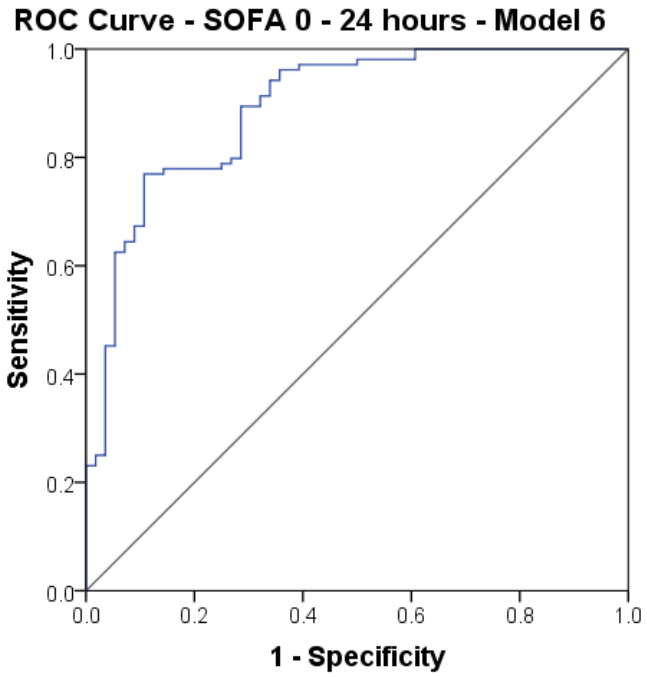
ROC CURVES

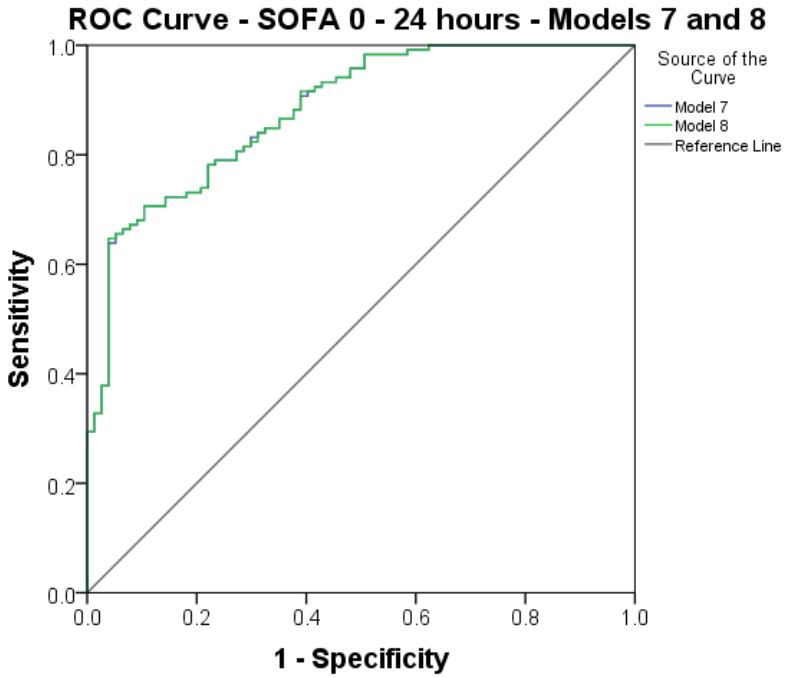

ROC Curve - SOFA 0 - 24 hours - Model 1
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

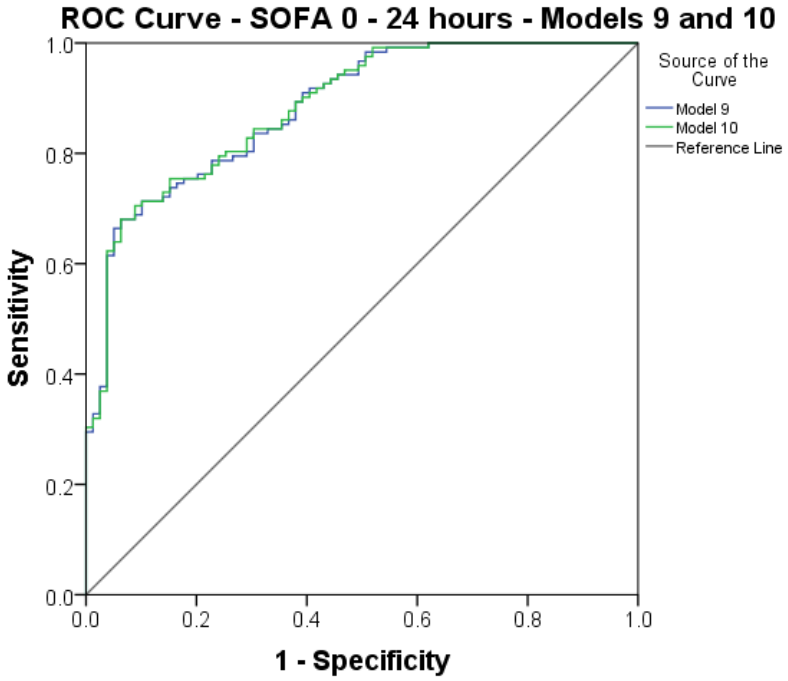

ROC Curve - SOFA 0 - 24 hours - Models 2 and 3
Sensitivity
1 - Specificity
Source of the Curve
Model 2
Model 3
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0

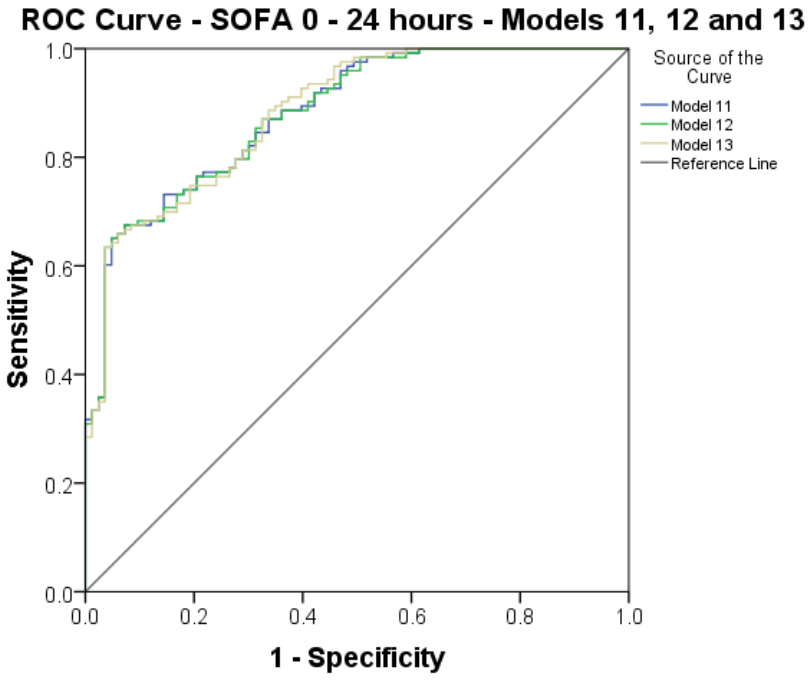

ROC Curve - SOFA 0 - 24 hours - Model 4
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

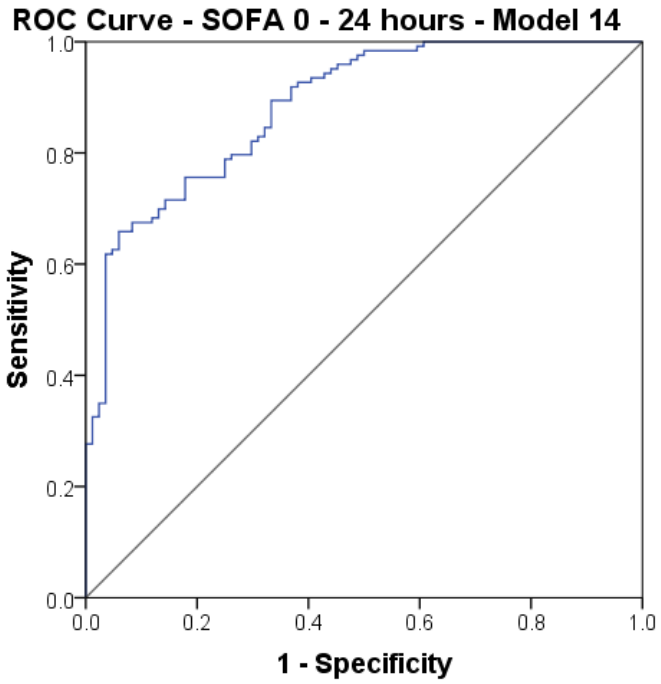

ROC Curve - SOFA 0 - 24 hours - Model 5
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

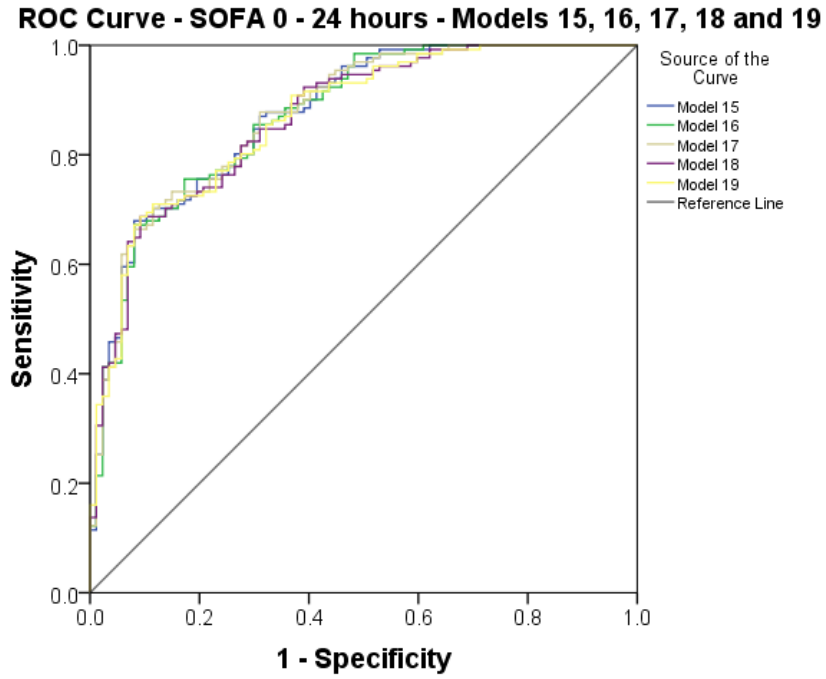

ROC Curve - SOFA 0 - 24 hours - Model 6
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

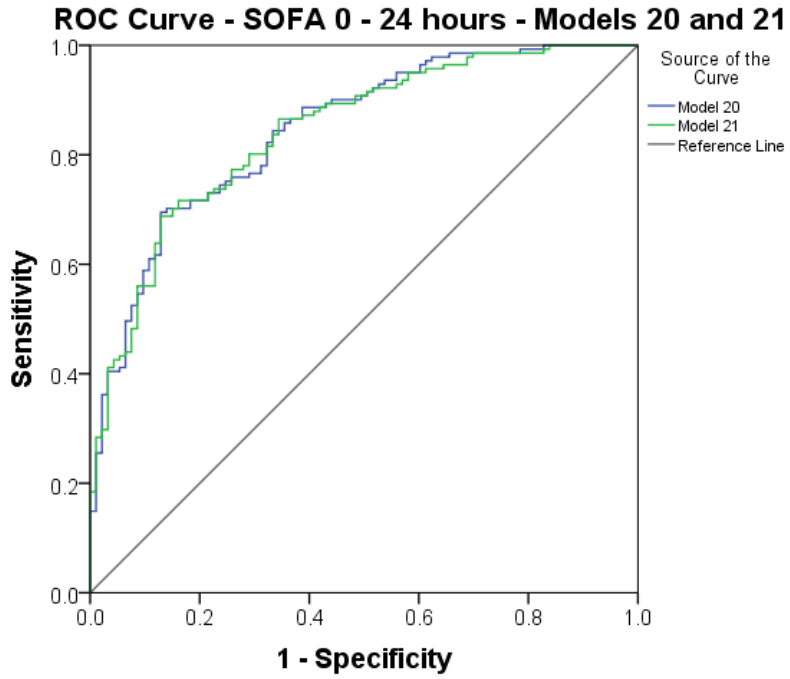

ROC Curve - SOFA 0 - 24 hours - Models 7 and 8
Sensitivity
1 - Specificity
Source of the Curve
Model 7
Model 8
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0

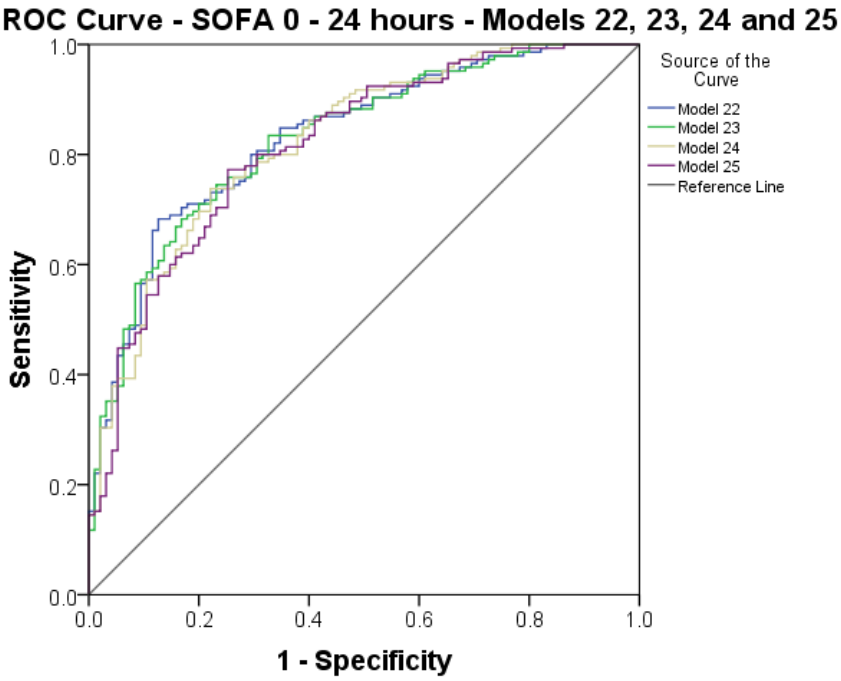

ROC Curve - SOFA 0 - 24 hours - Models 9 and 10
Sensitivity
1 - Specificity
Source of the Curve
Model 9
Model 10
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 24 hours - Models 11, 12 and 13
Sensitivity
1 - Specificity
Source of the Curve
Model 11
Model 12
Model 13
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 24 hours - Model 14
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 24 hours - Models 15, 16, 17, 18 and 19
Sensitivity
1 - Specificity
Source of the Curve
Model 15
Model 16
Model 17
Model 18
Model 19
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 24 hours - Models 20 and 21
Sensitivity
1 - Specificity
Source of the Curve
Model 20
Model 21
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 24 hours - Models 22, 23, 24 and 25
Sensitivity
1 - Specificity
Source of the Curve
Model 22
Model 23
Model 24
Model 25
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0

SOFA 0-24 hours	ROC AUC	95% CI
Model 1	0.944	0.910, 0.978
Model 2	0.926	0.882, 0.969
Model 3	0.925	0.882, 0.969
Model 4	0.926	0.883, 0.969
Model 5	0.892	0.838, 0.945
Model 6	0.892	0.839, 0.945
Model 7	0.881	0.835, 0.927
Model 8	0.881	0.835, 0.927
Model 9	0.883	0.837, 0.928
Model 10	0.884	0.839, 0.929
Model 11	0.880	0.836, 0.925
Model 12	0.800	0.835, 0.925
Model 13	0.882	0.837, 0.927
Model 14	0.884	0.839, 0.928
Model 15	0.875	0.828, 0.921
Model 16	0.873	0.826, 0.919
Model 17	0.875	0.828, 0.921
Model 18	0.869	0.822, 0.916
Model 19	0.869	0.822, 0.916
Model 20	0.845	0.796, 0.895
Model 21	0.843	0.793, 0.893
Model 22	0.832	0.781, 0.883
Model 23	0.829	0.778, 0.881
Model 24	0.824	0.771, 0.877
Model 25	0.817	0.763, 0.871

SELECTED MODEL STATISTICS

Model 18

Variable	Coefficient	Wald statistic p value	Adjusted OR (95% CI)
Constant	-5.314		
Head injury	1.488	0.002	4.43 (1.75, 11.22)
Abdominal injury	-0.637	0.163	0.53 (0.22, 1.30)
Limb/pelvic injury	0.808	0.079	2.24 (0.91, 5.52)
External injury	-0.807	0.052	0.45 (0.20, 1.01)
FiO2		0.031	
41 - 60%	-0.466	0.463	0.63 (0.18, 2.18)
61 - 80%	-0.178	0.842	0.84 (0.15, 4.80)
>80%	0.84	0.177	2.32 (0.68, 7.85)
HR	0.021	0.051	1.02 (1.00, 1.04)
RR max	0.031	0.128	1.03 (1.00, 1.07)
APTT	0.016	0.088	1.02 (1.00, 1.04)
Platelet count	0.015	<0.001	1.02 (1.01, 1.04)
Albumin	-0.129	<0.001	0.88 (0.83, 0.94)
Creatinine	0.018	0.031	1.02 (1.00, 1.04)
Transfusion level		0.013	
Transfusion	-0.996	0.033	0.37 (0.15, 0.92)
Massive transfusion	1.682	0.074	5.38 (0.85, 34.05)
Vasopressors	1.599	<0.001	4.95 (2.12, 11.54)

14.2.6. SOFA 0 – 48 HOURS MODEL

MODEL VARIABLE LISTS

Model 1	Model 2	Model 3	Model 4
n = 216	**n = 216**	**n = 216**	**n = 219**
Age	Age	Age	Age
Psychiatric	Respiratory disease	Respiratory disease	Respiratory disease
Respiratory disease	Head injury	Head injury	Head injury
Head injury	Face injury	Face injury	Face injury
Face injury	Chest injury	Chest injury	Chest injury
Chest injury	Abdominal injury	Abdominal injury	Abdominal injury
Abdominal injury	Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury
Limb/pelvic injury	External injury	Trapped	Trapped
External injury	Trapped	SBP	SBP
Trapped	SBP	FiO2	FiO2
SBP	FiO2	HR	HR
FiO2	HR	PO2	PO2
HR	PO2	RR Max	RR Max
PO2	RR Max	Temperature	Temperature
RR Max	Temperature	APTT	APTT
Temperature	APTT	Haemoglobin	Haemoglobin
APTT	Haemoglobin	Platelet count	Platelet count
Haemoglobin	Platelet count	PT	PT
Platelet count	PT	Albumin	Albumin
PT	Albumin	BD	BD
Albumin	BD	Bilirubin	Bilirubin
BD	Bilirubin	Creatinine	Creatinine
Bilirubin	Creatinine	Glucose	Glucose
Creatinine	Glucose	Lactate	Lactate
Glucose	Lactate	pH	Potassium Max
Lactate	pH	Potassium Max	Sodium Max
pH	Potassium Max	Sodium Max	Transfusion level
Potassium Max	Sodium Max	Transfusion level	IV fluids
Sodium Max	Transfusion level	IV fluids	Vasopressors
Transfusion level	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 5	Model 6	Model 7	Model 8
n = 220	**n = 222**	**n = 235**	**n = 236**
Age	Age	Age	Age
Respiratory disease	Respiratory disease	Head injury	Head injury
Head injury	Head injury	Face injury	Face injury
Face injury	Face injury	Chest injury	Chest injury
Chest injury	Chest injury	Abdominal injury	Abdominal injury
Abdominal injury	Abdominal injury	Limb/pelvic injury	Limb/pelvic injury
Limb/pelvic injury	Limb/pelvic injury	Trapped	Trapped
Trapped	Trapped	SBP	SBP
SBP	SBP	FiO2	FiO2
FiO2	FiO2	HR	HR
HR	HR	PO2	PO2
PO2	PO2	RR Max	RR Max
RR Max	RR Max	Temperature	Temperature
Temperature	Temperature	APTT	Haemoglobin
APTT	APTT	Haemoglobin	Platelet count
Haemoglobin	Haemoglobin	Platelet count	Albumin
Platelet count	Platelet count	Albumin	BD
PT	Albumin	BD	Bilirubin
Albumin	BD	Bilirubin	Creatinine
BD	Bilirubin	Creatinine	Glucose
Bilirubin	Creatinine	Glucose	Potassium Max
Creatinine	Glucose	Potassium Max	Sodium Max
Glucose	Potassium Max	Sodium Max	Transfusion level
Potassium Max	Sodium Max	Transfusion level	IV fluids
Sodium Max	Transfusion level	IV fluids	Vasopressors
Transfusion level	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 9	**Model 10**	**Model 11**	**Model 12**
n = 240	**n = 244**	**n = 245**	**n = 245**
Age	Age	Age	Age
Head injury	Head injury	Head injury	Head injury
Face injury	Face injury	Face injury	Face injury
Chest injury	Chest injury	Chest injury	Chest injury
Abdominal injury	Abdominal injury	Abdominal injury	Abdominal injury
Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury
Trapped	Trapped	Trapped	Trapped
SBP	SBP	SBP	FiO2
FiO2	FiO2	FiO2	HR
HR	HR	HR	PO2
PO2	PO2	PO2	RR Max
RR Max	RR Max	RR Max	Temperature
Temperature	Temperature	Temperature	Haemoglobin
Haemoglobin	Haemoglobin	Haemoglobin	Albumin
Albumin	Albumin	Albumin	BD
BD	BD	BD	Bilirubin
Bilirubin	Bilirubin	Bilirubin	Potassium Max
Creatinine	Creatinine	Potassium Max	Sodium Max
Glucose	Potassium Max	Sodium Max	Transfusion level
Potassium Max	Sodium Max	Transfusion level	IV fluids
Sodium Max	Transfusion level	IV fluids	Vasopressors
Transfusion level	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 13	Model 14	Model 15	Model 16
n = 245	**n = 249**	**n = 249**	**n = 249**
Age	Age	Age	Age
Head injury	Head injury	Head injury	Head injury
Face injury	Face injury	Face injury	Face injury
Chest injury	Chest injury	Chest injury	Chest injury
Abdominal injury	Abdominal injury	Limb/pelvic injury	Limb/pelvic injury
Limb/pelvic injury	Limb/pelvic injury	Trapped	Trapped
Trapped	Trapped	FiO2	FiO2
FiO2	FiO2	HR	HR
HR	HR	RR Max	RR Max
RR Max	RR Max	Temperature	Temperature
Temperature	Temperature	Haemoglobin	Haemoglobin
Haemoglobin	Haemoglobin	Albumin	Albumin
Albumin	Albumin	Bilirubin	Bilirubin
BD	Bilirubin	Potassium Max	Potassium Max
Bilirubin	Potassium Max	Sodium Max	Transfusion level
Potassium Max	Sodium Max	Transfusion level	IV fluids
Sodium Max	Transfusion level	IV fluids	Vasopressors
Transfusion level	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 17	Model 18	Model 19	Model 20
n = 249	**n = 282**	**n = 282**	**n = 286**
Head injury	Head injury	Head injury	Head injury
Face injury	Face injury	Chest injury	Chest injury
Chest injury	Chest injury	Limb/pelvic injury	Limb/pelvic injury
Limb/pelvic injury	Limb/pelvic injury	Trapped	Trapped
Trapped	Trapped	FiO2	FiO2
FiO2	FiO2	HR	HR
HR	HR	RR Max	RR Max
RR Max	RR Max	Temperature	Temperature
Temperature	Temperature	Haemoglobin	Haemoglobin
Haemoglobin	Haemoglobin	Albumin	Albumin
Albumin	Albumin	Bilirubin	Transfusion level
Bilirubin	Bilirubin	Transfusion level	IV fluids
Potassium Max	Transfusion level	IV fluids	Vasopressors
Transfusion level	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 21	Model 22	Model 23	Model 24
n = 287	**n = 294**	**n = 294**	**n = 294**
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Chest injury
Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury
Trapped	Trapped	Trapped	Trapped
FiO2	FiO2	FiO2	FiO2
HR	HR	HR	RR Max
RR Max	RR Max	RR Max	Albumin
Temperature	Albumin	Albumin	IV fluids
Albumin	Transfusion level	IV fluids	Vasopressors
Transfusion level	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 25	Model 26	Model 27	Model 28	Model 29
n = 296	**n = 296**	**n = 305**	**n = 305**	**n = 398**
Head injury	Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	FiO2	Albumin
Limb/pelvic injury	FiO2	FiO2	Albumin	IV fluids
FiO2	RR Max	Albumin	IV fluids	Vasopressors
RR Max	Albumin	IV fluids	Vasopressors	
Albumin	IV fluids	Vasopressors		
IV fluids	Vasopressors			
Vasopressors				

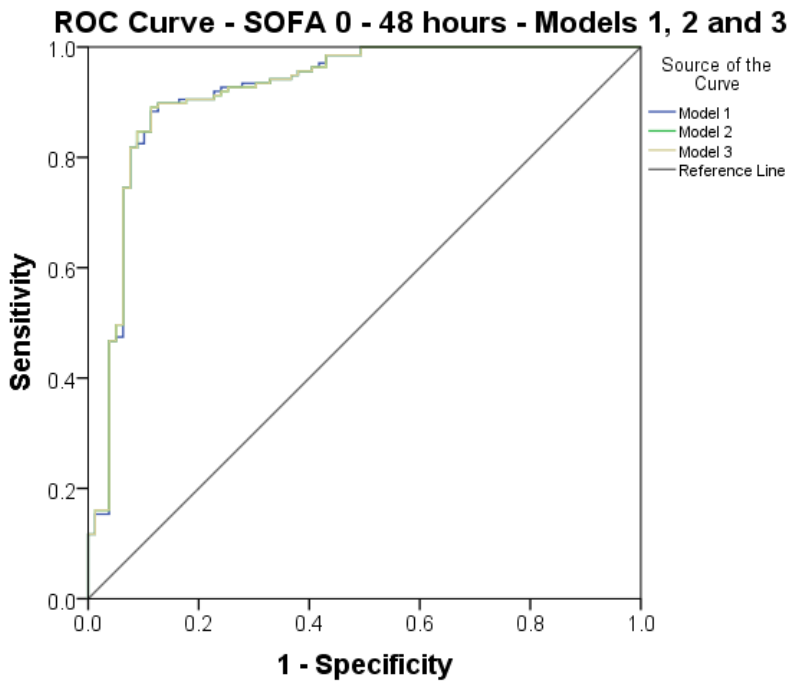
GOODNESS-OF-FIT MEASURES

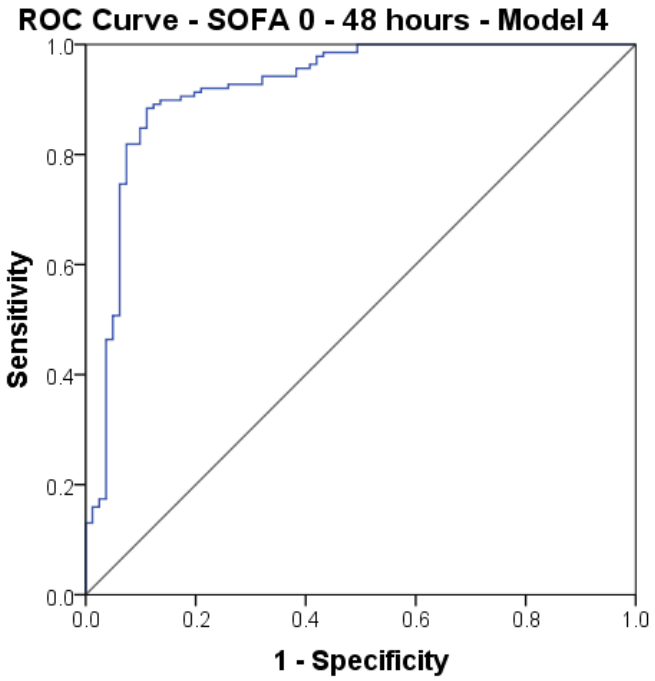
SOFA 0-48 hours	Model χ^2	Model χ^2 p value	-2 log likelihood	Nagelkerke R^2	Hosmer-Lemeshow χ^2	Hosmer-Lemeshow χ^2 p value
Model 1	135.140	<0.001	148.533	0.636	48.208	<0.001
Model 2	135.009	<0.001	148.664	0.636	48.345	<0.001
Model 3	135.009	<0.001	148.664	0.636	48.356	<0.001
Model 4	138.920	<0.001	149.671	0.641	41.166	<0.001
Model 5	139.621	<0.001	149.890	0.642	39.869	<0.001
Model 6	138.244	<0.001	153.094	0.634	73.706	<0.001
Model 7	140.557	<0.001	166.852	0.618	43.107	<0.001
Model 8	140.969	<0.001	166.323	0.618	39.936	<0.001
Model 9	138.865	<0.001	171.909	0.605	58.447	<0.001
Model 10	139.266	<0.001	177.425	0.598	35.748	<0.001
Model 11	137.228	<0.001	180.329	0.590	25.459	0.001
Model 12	137.197	<0.001	180.360	0.590	24.426	0.002
Model 13	137.125	<0.001	180.422	0.590	24.007	0.002
Model 14	139.479	<0.001	186.336	0.588	42.836	<0.001
Model 15	139.420	<0.001	186.394	0.588	41.322	<0.001
Model 16	139.268	<0.001	185.546	0.587	42.750	<0.001
Model 17	138.890	<0.001	186.925	0.586	42.199	<0.001
Model 18	147.674	<0.001	226.702	0.555	9.600	0.294
Model 19	147.573	<0.001	226.802	0.554	9.241	0.322
Model 20	152.269	<0.001	227.888	0.561	14.657	0.066
Model 21	154.086	<0.001	227.994	0.565	9.289	0.319
Model 22	158.944	<0.001	232.755	0.567	11.009	0.201
Model 23	158.013	<0.001	233.686	0.565	8.924	0.349
Model 24	157.683	<0.001	234.016	0.564	13.511	0.095
Model 25	158.337	<0.001	235.294	0.563	9.204	0.325
Model 26	157.572	<0.001	236.059	0.561	6.389	0.604
Model 27	161.624	<0.001	244.516	0.559	6.605	0.580
Model 28	160.749	<0.001	245.391	0.557	8.574	0.380
Model 29	159.800	<0.001	384.039	0.444	9.552	0.298

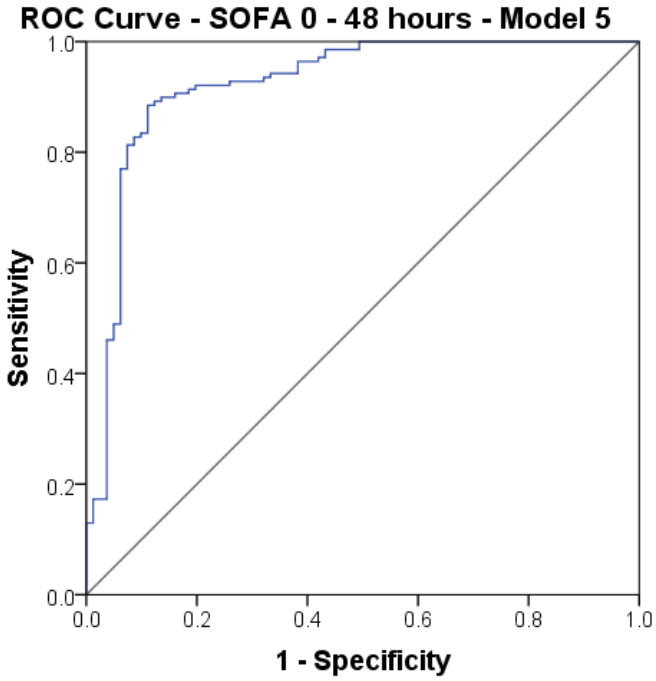
CATEGORY PREDICTORS

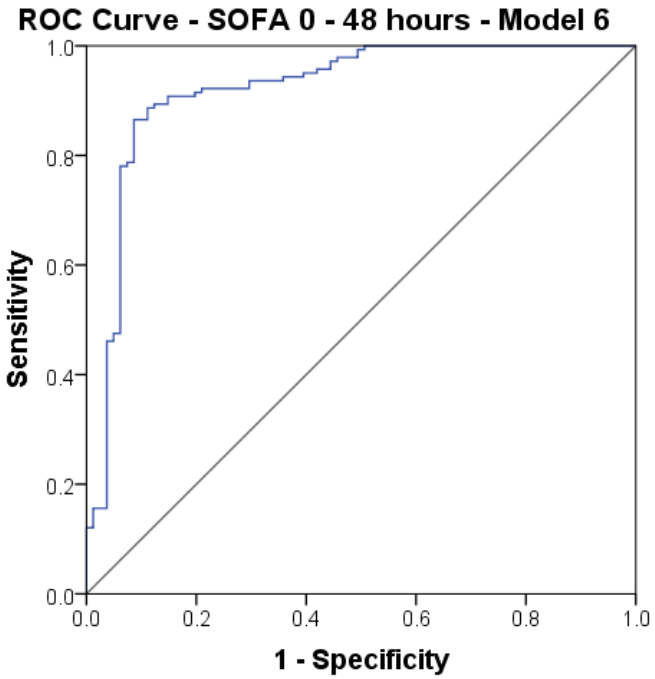
SOFA 0-48 hours	PAC (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Model 1	87.5	89.8	83.5	90.4	82.5
Model 2	87.5	89.8	83.5	90.4	82.5
Model 3	87.5	89.8	83.5	90.4	82.5
Model 4	87.2	89.9	82.7	89.9	82.7
Model 5	87.7	90.6	82.7	90.0	83.4
Model 6	88.7	90.8	85.2	91.4	84.1
Model 7	85.5	90.7	76.2	87.3	82.1
Model 8	85.6	90.8	76.2	87.3	82.1
Model 9	84.6	90.4	73.8	86.5	80.5
Model 10	85.2	90.5	75.6	87.2	81.3
Model 11	84.1	89.3	74.4	86.6	79.0
Model 12	84.1	89.3	74.4	86.6	79.0
Model 13	84.5	89.3	75.6	87.1	79.3
Model 14	83.1	88.1	74.4	85.9	77.9
Model 15	83.5	88.7	74.4	86.0	78.8
Model 16	83.5	88.7	74.4	86.0	78.8
Model 17	83.9	89.3	74.4	86.1	79.8
Model 18	81.6	86.3	73.8	84.4	76.7
Model 19	80.9	85.7	72.9	83.8	75.7
Model 20	81.5	85.9	74.3	84.4	76.4
Model 21	81.5	85.9	74.5	84.4	76.6
Model 22	81.3	86.2	73.5	83.9	76.9
Model 23	81.0	86.2	72.6	83.4	76.6
Model 24	79.9	85.1	71.7	82.8	75.0
Model 25	80.7	86.3	71.7	83.2	76.4
Model 26	80.4	85.2	72.6	83.4	75.2
Model 27	80.0	85.6	70.9	82.6	75.5
Model 28	79.7	85.1	70.9	82.5	74.8
Model 29	76.4	82.8	67.8	77.4	74.8

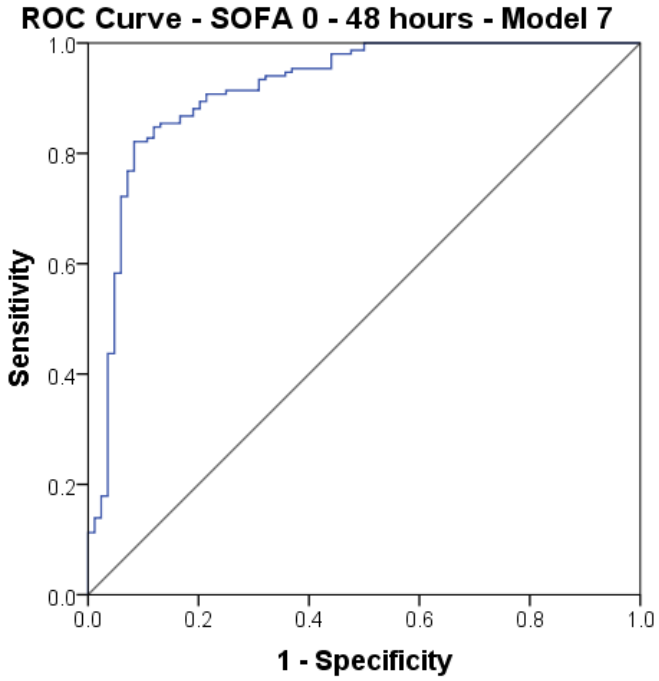
ROC CURVES

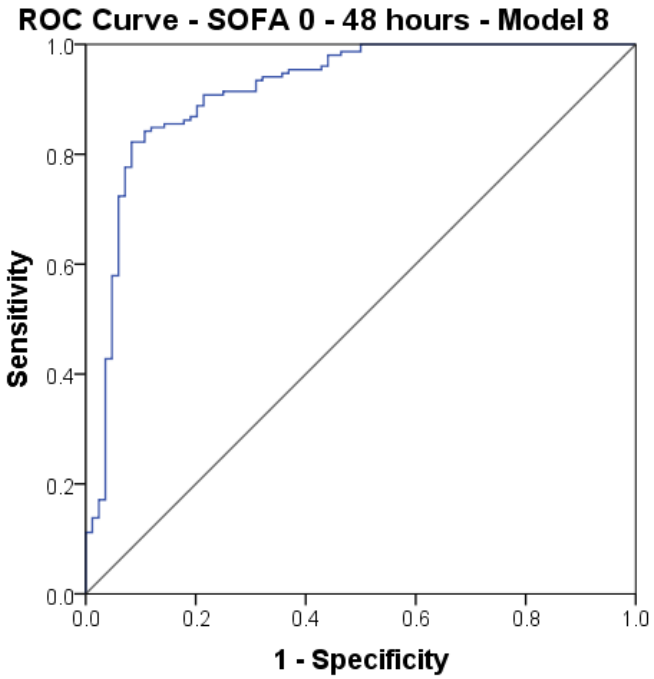

ROC Curve - SOFA 0 - 48 hours - Models 1, 2 and 3
Source of the Curve
Model 1
Model 2
Model 3
Reference Line
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

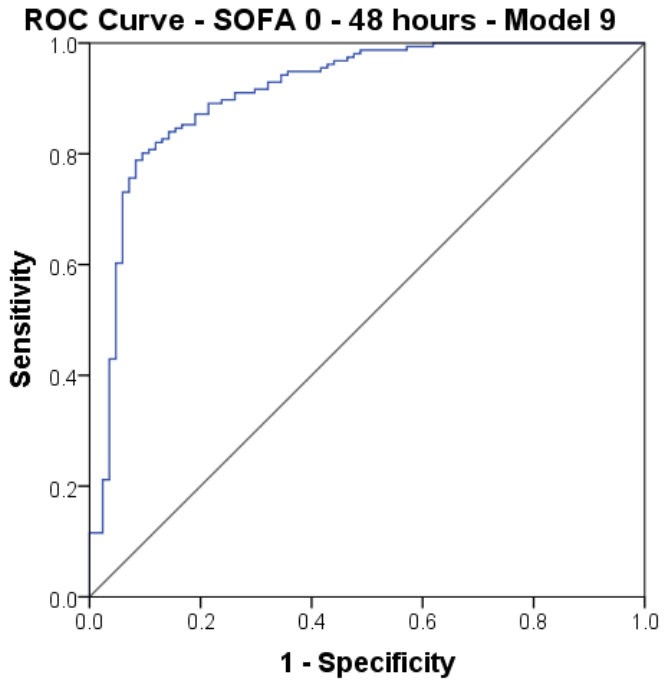

ROC Curve - SOFA 0 - 48 hours - Model 4
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

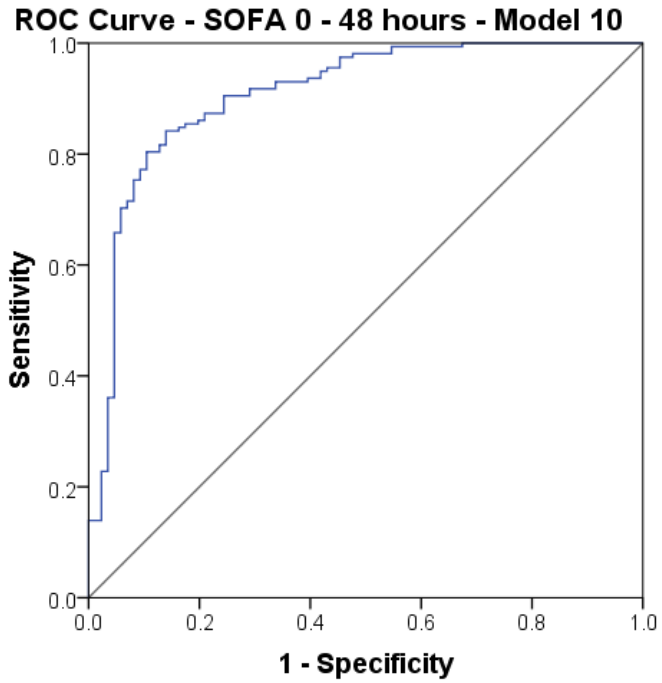

ROC Curve - SOFA 0 - 48 hours - Model 5
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

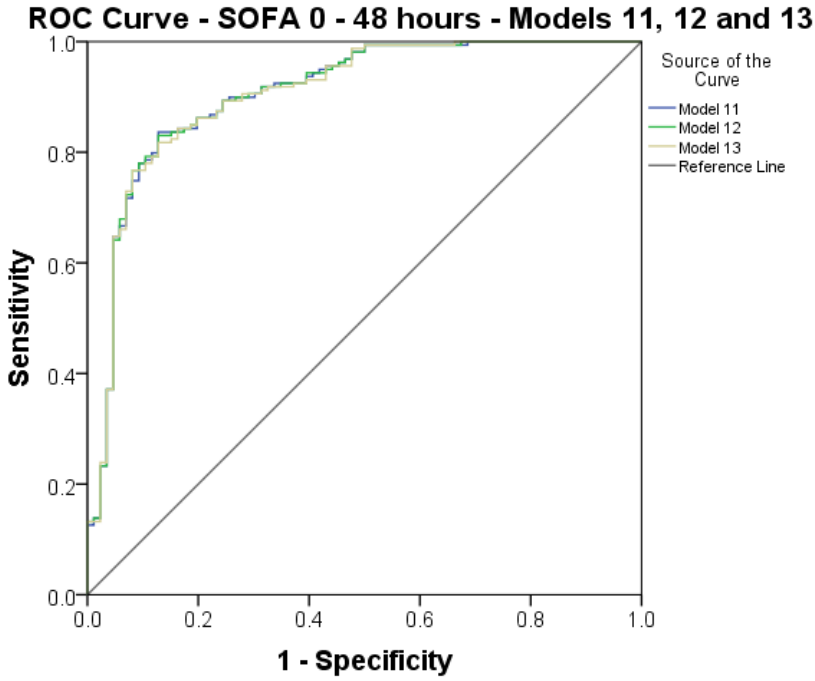

ROC Curve - SOFA 0 - 48 hours - Model 6
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

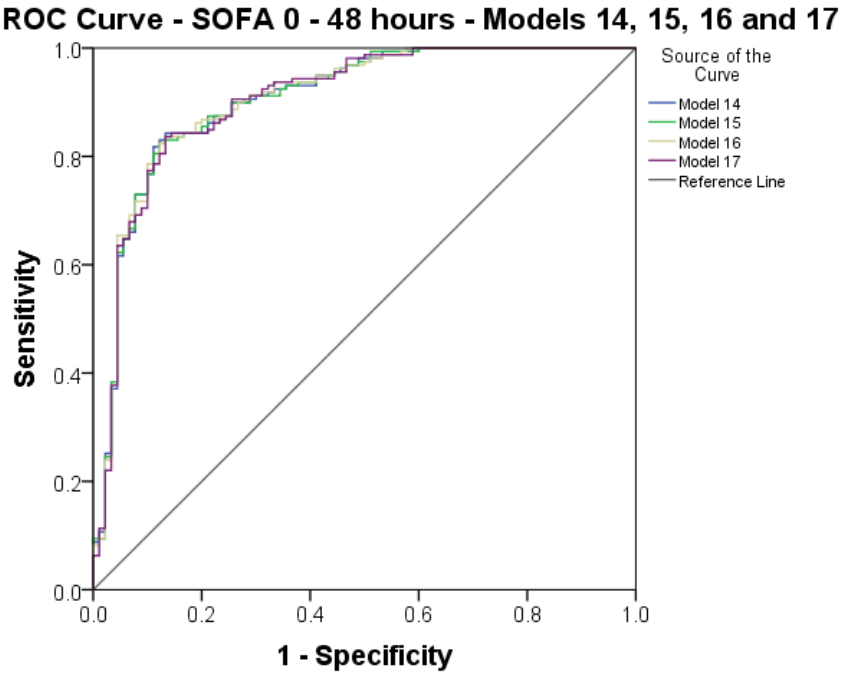

ROC Curve - SOFA 0 - 48 hours - Model 7
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

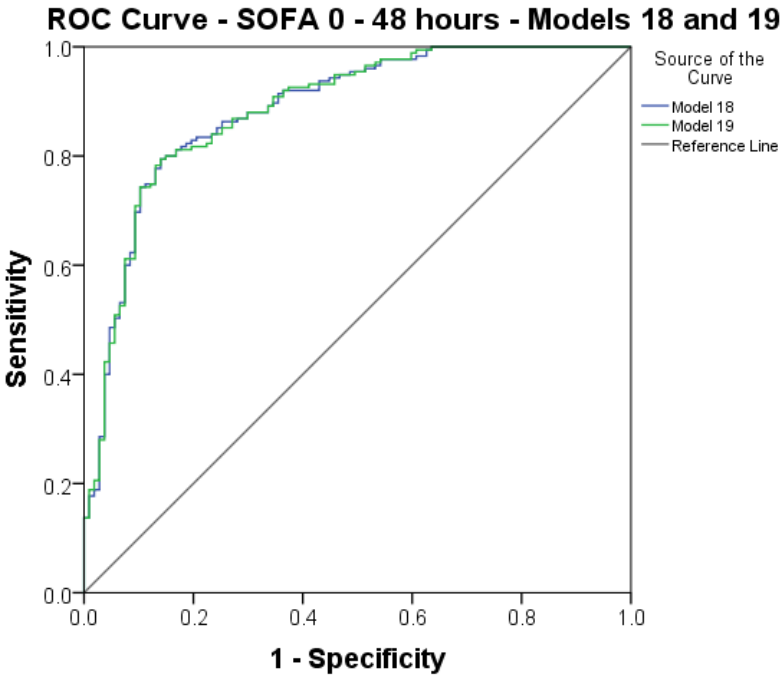

ROC Curve - SOFA 0 - 48 hours - Model 8
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

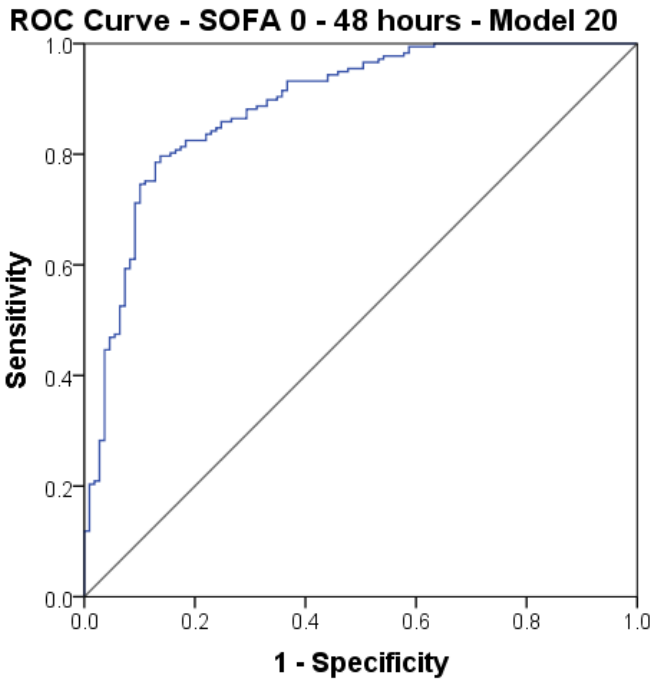

ROC Curve - SOFA 0 - 48 hours - Model 9
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

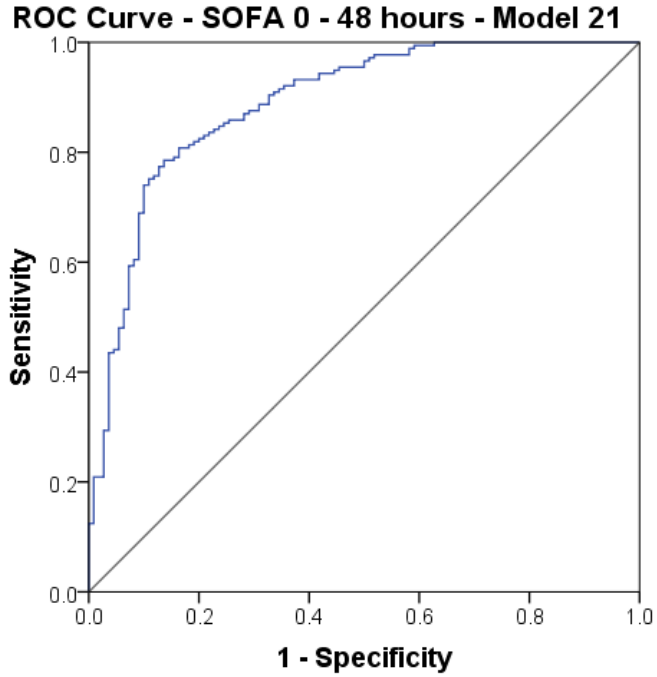

ROC Curve - SOFA 0 - 48 hours - Model 10
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

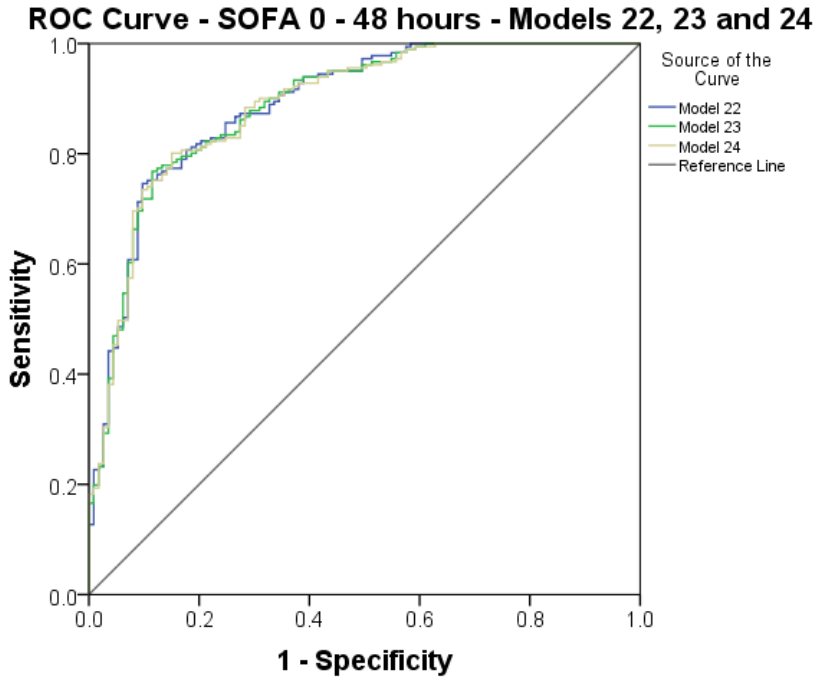

ROC Curve - SOFA 0 - 48 hours - Models 11, 12 and 13
Sensitivity
1 - Specificity
Source of the Curve
Model 11
Model 12
Model 13
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0

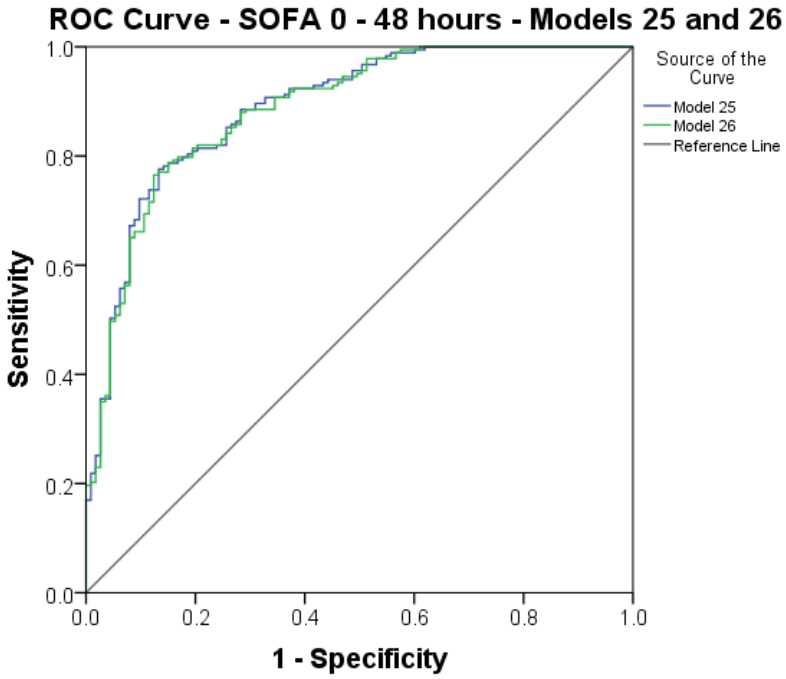

ROC Curve - SOFA 0 - 48 hours - Models 14, 15, 16 and 17
Sensitivity
1 - Specificity
Source of the Curve
Model 14
Model 15
Model 16
Model 17
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0

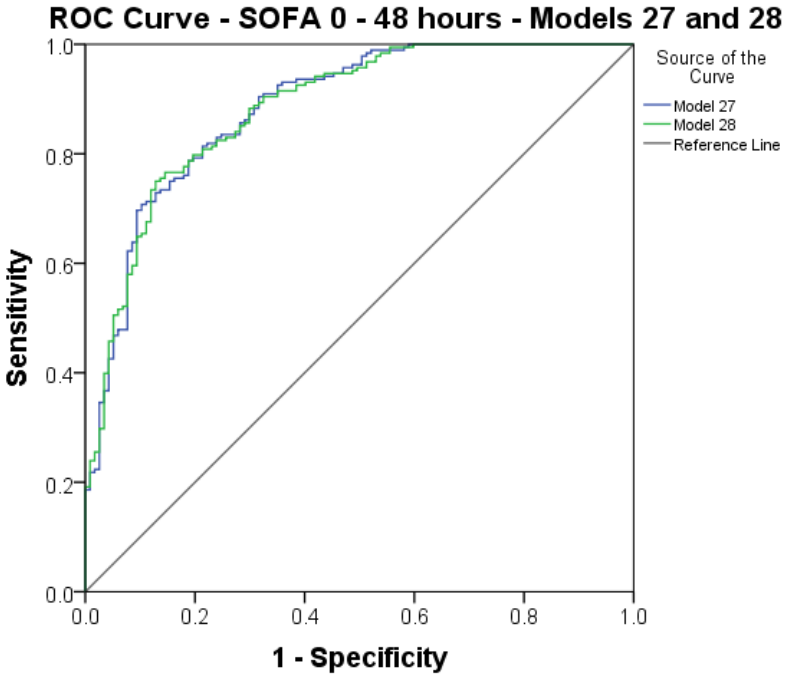

ROC Curve - SOFA 0 - 48 hours - Models 18 and 19
Source of the Curve
Model 18
Model 19
Reference Line
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

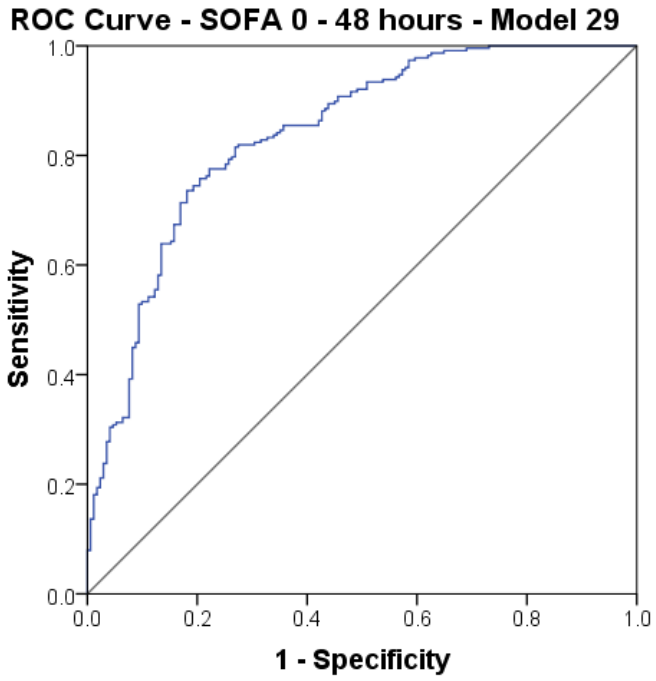

ROC Curve - SOFA 0 - 48 hours - Model 20
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 48 hours - Model 21
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 48 hours - Models 22, 23 and 24
Sensitivity
1 - Specificity
Source of the Curve
Model 22
Model 23
Model 24
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 48 hours - Models 25 and 26
Sensitivity
1 - Specificity
Source of the Curve
Model 25
Model 26
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 48 hours - Models 27 and 28
Sensitivity
1 - Specificity
Source of the Curve
Model 27
Model 28
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - SOFA 0 - 48 hours - Model 29
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

SOFA 0-48 hours	ROC AUC	95% CI
Model 1	0.920	0.877, 0.963
Model 2	0.920	0.877, 0.963
Model 3	0.920	0.877, 0.963
Model 4	0.922	0.880, 0.964
Model 5	0.922	0.881, 0.964
Model 6	0.921	0.878, 0.963
Model 7	0.916	0.875, 0.958
Model 8	0.916	0.875, 0.958
Model 9	0.911	0.869, 0.953
Model 10	0.908	0.866, 0.949
Model 11	0.906	0.864, 0.948
Model 12	0.906	0.864, 0.948
Model 13	0.905	0.863, 0.947
Model 14	0.905	0.864, 0.946
Model 15	0.905	0.863, 0.946
Model 16	0.906	0.864, 0.947
Model 17	0.905	0.863, 0.946
Model 18	0.885	0.844, 0.926
Model 19	0.885	0.844, 0.926
Model 20	0.888	0.848, 0.928
Model 21	0.889	0.849, 0.928
Model 22	0.889	0.851, 0.928
Model 23	0.888	0.850, 0.928
Model 24	0.880	0.849, 0.927
Model 25	0.888	0.850, 0.927
Model 26	0.885	0.846, 0.924
Model 27	0.884	0.845, 0.923
Model 28	0.883	0.845, 0.922
Model 29	0.839	0.799, 0.878

SELECTED MODEL STATISTICS

Model 23

Variable	Coefficient	Wald statistic p value	Adjusted OR (95% CI)
Constant	-24.162		
Head injury	1.035	0.009	2.81 (1.29, 6.13)
Chest injury	0.413	0.263	1.51 (0.73, 3.12)
Limb/pelvic injury	-0.502	0.243	0.61 (0.26, 1.41)
Trapped	0.355	0.368	1.43 (0.66, 3.08)
FiO2		0.145	
41-60%	-0.694	0.228	0.50 (0.16, 1.55)
61-80%	-0.222	0.758	0.80 (0.20, 3.29)
> 80%	0.219	0.673	1.25 (0.45, 3.44)
HR	0.005	0.566	1.01 (0.99, 1.02)
RR max	0.020	0.307	1.02 (0.98, 1.06)
Albumin	-0.039	0.148	0.96 (0.91, 1.01)
IV fluids	2.616	<0.001	13.68 (5.45, 34.36)
Vasopressors	1.126	0.003	3.08 (1.46, 6.53)

14.3. MARSHALL MOF MULTIVARIATE MODEL DEVELOPMENT

14.3.1. MARSHALL 0 – 2 HOURS MODEL

MODEL VARIABLE LISTS

Model 1	Model 2	Model 3	Model 4
n = 253	**n = 253**	**n = 257**	**n = 257**
Age	Age	Age	Age
Sex	Sex	Sex	Sex
CV disease	CV disease	CV disease	CV disease
Drugs/alcohol	Drugs/alcohol	Drugs/alcohol	Drugs/alcohol
Respiratory disease	Head injury	Head injury	Head injury
Head injury	Chest injury	Chest injury	Abdominal injury
Chest injury	Abdominal injury	Abdominal injury	Limb/pelvic injury
Abdominal injury	Limb/pelvic injury	Limb/pelvic injury	External injury
Limb/pelvic injury	External injury	External injury	HR
External injury	SBP	HR	RR min
SBP	HR	RR min	
HR	RR min		
RR min			

Model 5	Model 6	Model 7	Model 8
n = 257	**n = 257**	**n = 257**	**n = 266**
Age	Age	Age	Age
Sex	CV disease	CV disease	Head injury
CV disease	Head injury	Head injury	Abdominal injury
Head injury	Abdominal injury	Abdominal injury	Limb/pelvic injury
Abdominal injury	Limb/pelvic injury	Limb/pelvic injury	HR
Limb/pelvic injury	External injury	HR	RR min
External injury	HR	RR min	
HR	RR min		
RR min			

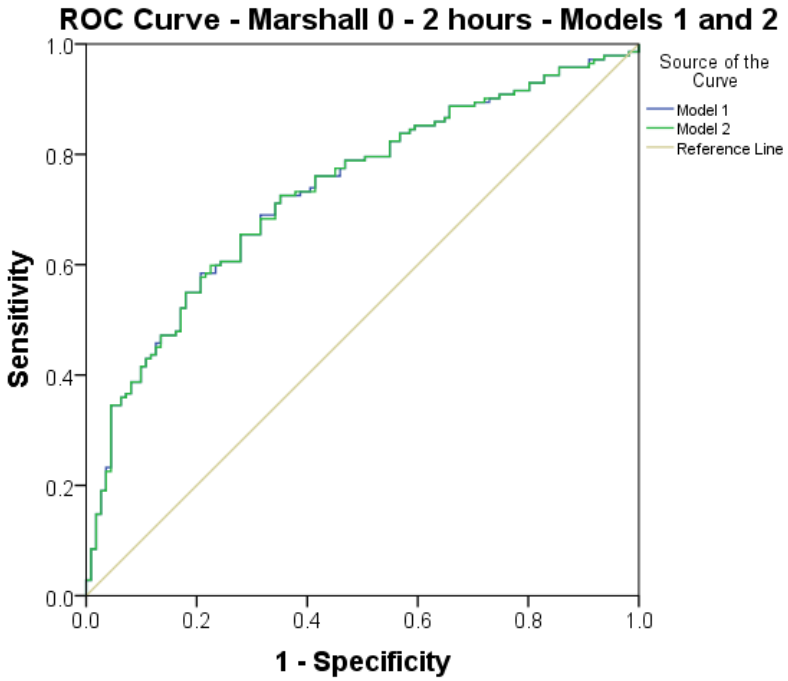
GOODNESS-OF-FIT MEASURES

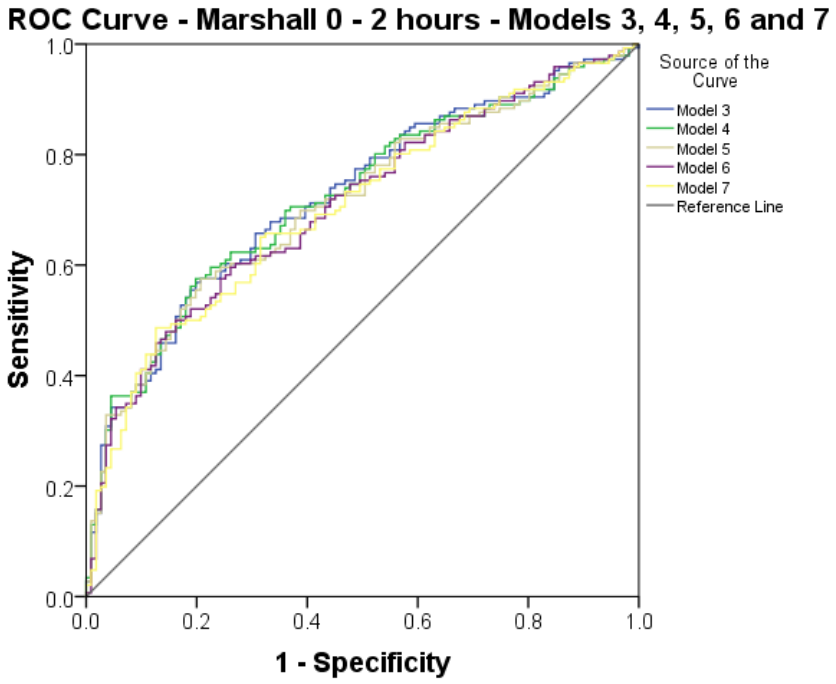
Marshall 0-2 hours	Model χ^2	Model χ^2 p value	-2 log likelihood	Nagelkerke R^2	Hosmer-Lemeshow χ^2	Hosmer-Lemeshow χ^2 p value
Model 1	55.672	<0.001	280.207	0.269	5.213	0.735
Model 2	55.669	<0.001	280.210	0.269	5.184	0.738
Model 3	56.373	<0.001	284.303	0.268	4.259	0.833
Model 4	55.583	<0.001	285.092	0.265	5.548	0.698
Model 5	54.617	<0.001	286.059	0.261	14.021	0.081
Model 6	53.384	<0.001	287.291	0.255	6.952	0.581
Model 7	51.271	<0.001	289.405	0.246	4.910	0.767
Model 8	48.209	<0.001	306.894	0.225	7.433	0.491

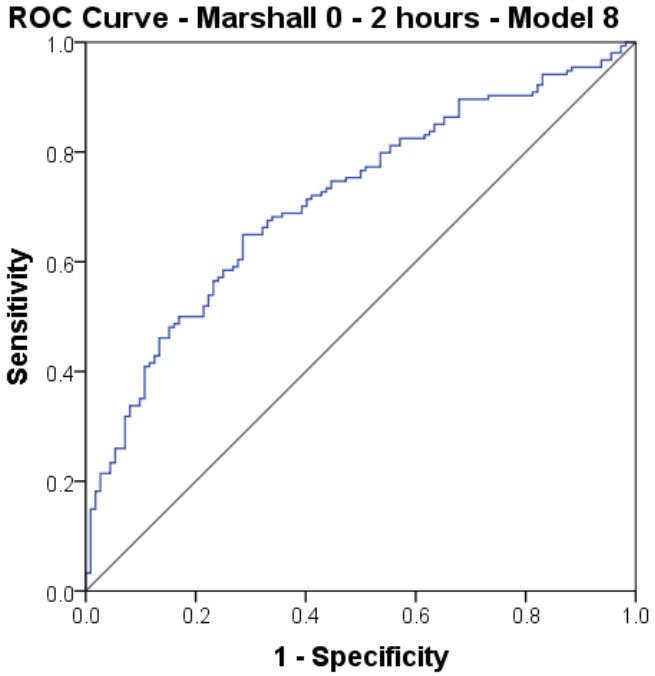
CATEGORY PREDICTORS

Marshall 0-2 hours	PAC (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Model 1	75.5	59.4	85.4	71.3	74.5
Model 2	75.1	58.3	85.4	70.9	77.0
Model 3	75.1	58.8	85.0	70.4	77.3
Model 4	73.5	55.7	84.4	68.4	75.8
Model 5	73.9	54.6	85.6	69.7	75.7
Model 6	72.4	51.5	85.0	67.6	74.3
Model 7	73.5	52.6	86.3	69.9	75.0
Model 8	72.9	52.4	85.9	70.1	74.1

ROC CURVES


ROC Curve - Marshall 0 - 2 hours - Models 1 and 2
Sensitivity
1 - Specificity
Source of the Curve
Model 1
Model 2
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Marshall 0 - 2 hours - Models 3, 4, 5, 6 and 7
Sensitivity
1 - Specificity
Source of the Curve
Model 3
Model 4
Model 5
Model 6
Model 7
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0



Marshall 0-2 hours	ROC AUC	95% CI
Model 1	0.733	0.672, 0.794
Model 2	0.733	0.672, 0.794
Model 3	0.723	0.662, 0.785
Model 4	0.721	0.660, 0.783
Model 5	0.713	0.651, 0.775
Model 6	0.708	0.646, 0.771
Model 7	0.704	0.641, 0.767
Model 8	0.714	0.652, 0.775

SELECTED MODEL STATISTICS

Model 4

Variable	Coefficient	Wald statistic p value	Adjusted OR (95% CI)
Constant	-6.305		
Age	0.019	0.021	1.02 (1.00, 1.04)
Sex	0.333	0.335	1.40 (0.71, 2.74)
CV disease	1.074	0.072	2.93 (0.91, 9.44)
Drugs/alcohol	0.568	0.323	1.76 (0.57, 5.44)
Head injury	1.463	<0.001	4.32 (2.18, 8.55)
Abdominal injury	1.013	0.002	2.76 (1.44, 5.28)
Limb/pelvic injury	0.836	0.019	2.31 (1.15, 4.63)
External injury	-0.474	0.144	0.62 (0.33, 1.18)
HR	0.016	0.006	1.02 (1.01, 1.03)
RR min	0.062	0.003	1.06 (1.02, 1.11)

14.3.2. MARSHALL 0 – 4 HOURS MODEL

MODEL VARIABLE LISTS

Model 1	Model 2	Model 3	Model 4
n = 273	**n = 273**	**n = 275**	**n = 280**
Age	Age	Age	Age
Sex	Sex	Sex	Sex
CV disease	CV disease	CV disease	CV disease
Drugs/alcohol	Drugs/alcohol	Drugs/alcohol	Drugs/alcohol
Respiratory disease	Head injury	Head injury	Head injury
Head injury	Chest injury	Chest injury	Chest injury
Chest injury	Abdominal injury	Abdominal injury	Abdominal injury
Abdominal injury	Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury
Limb/pelvic injury	External injury	External injury	External injury
External injury	Time to hospital	SBP	HR
Time to hospital	SBP	HR	RR min
SBP	HR	RR min	
HR	RR min		
RR min			

Model 5	Model 6	Model 7	Model 8	Model 9
n = 280	**n = 372**	**n = 372**	**n = 372**	**n = 372**
Age	Age	Age	Age	Age
Sex	Sex	Sex	Sex	CV disease
CV disease	CV disease	CV disease	CV disease	Head injury
Head injury	Head injury	Head injury	Head injury	Abdominal injury
Chest injury	Chest injury	Abdominal injury	Abdominal injury	Limb/pelvic injury
Abdominal injury	Abdominal injury	Limb/pelvic injury	Limb/pelvic injury	HR
Limb/pelvic injury	Limb/pelvic injury	External injury	HR	
External injury	External injury	HR		
HR	HR			
RR min				

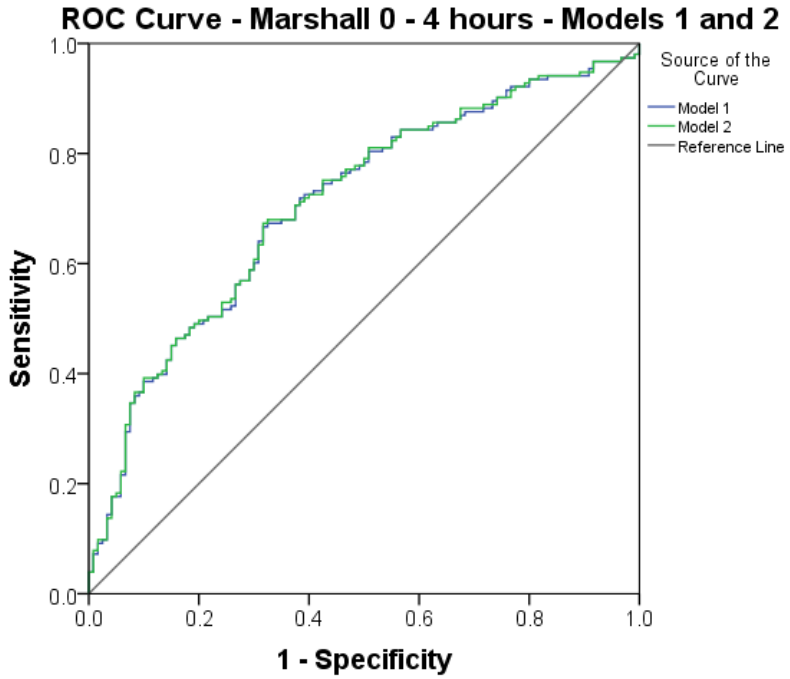
GOODNESS-OF-FIT MEASURES

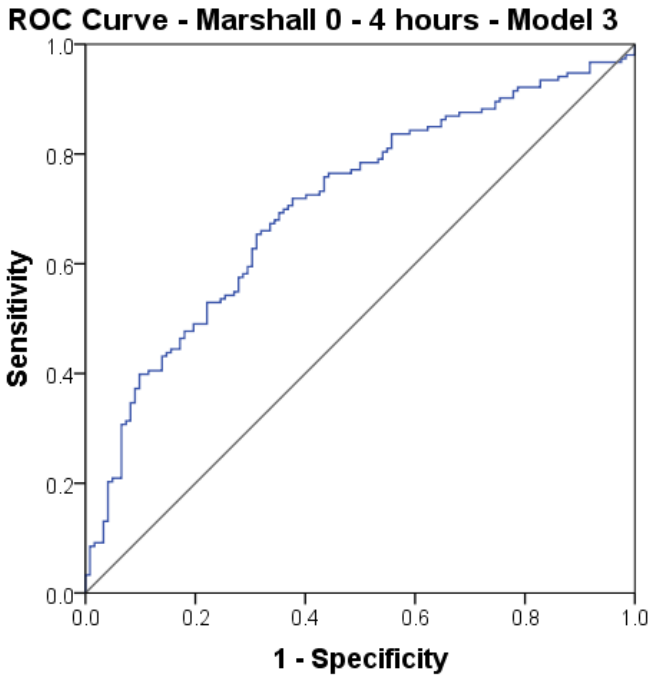
Marshall 0-4 hours	Model χ^2	Model χ^2 p value	-2 log likelihood	Nagelkerke R^2	Hosmer-Lemeshow χ^2	Hosmer-Lemeshow χ^2 p value
Model 1	51.257	<0.001	311.305	0.234	11.474	0.176
Model 2	51.511	<0.001	311.321	0.234	11.414	0.179
Model 3	51.926	<0.001	312.816	0.234	10.328	0.243
Model 4	52.477	<0.001	317.998	0.233	22.430	0.004
Model 5	52.033	<0.001	318.442	0.231	16.389	0.037
Model 6	57.800	<0.001	436.885	0.196	7.980	0.435
Model 7	57.278	<0.001	437.408	0.194	9.626	0.292
Model 8	55.039	<0.001	439.647	0.187	16.238	0.039
Model 9	52.426	<0.001	442.260	0.179	11.031	0.200

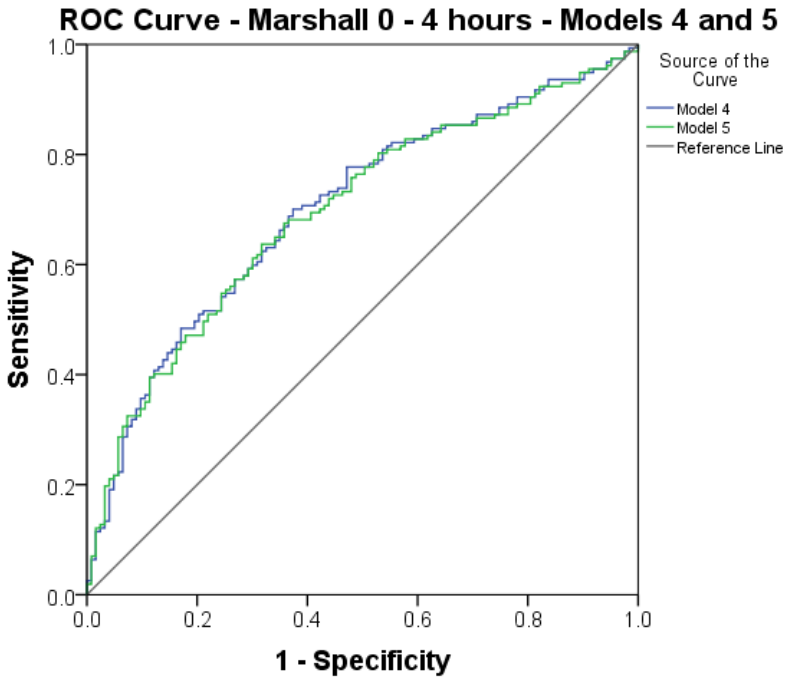
CATEGORY PREDICTORS

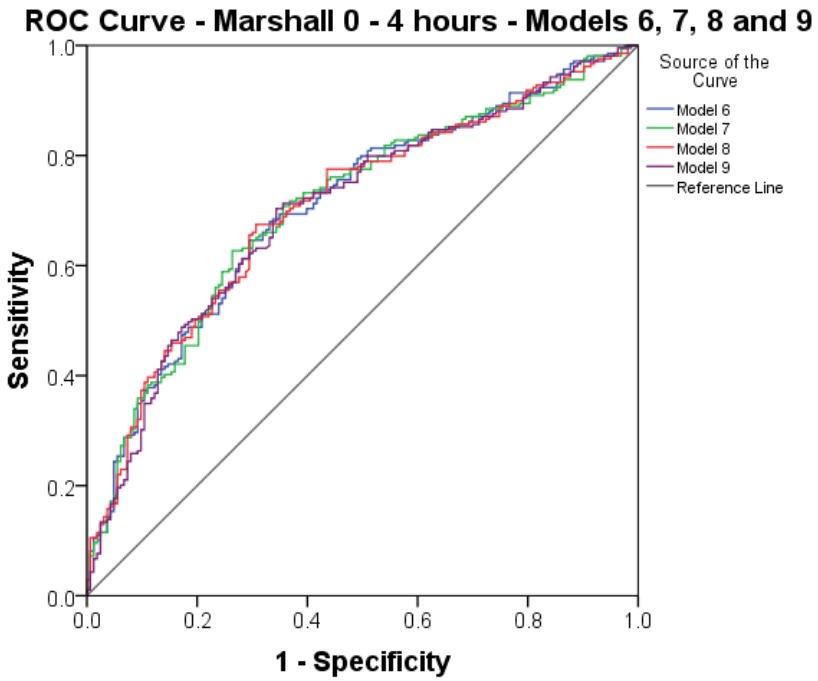
Marshall 0-4 hours	PAC (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Model 1	72.5	52.9	84.6	67.9	74.5
Model 2	72.9	52.9	85.2	68.8	74.6
Model 3	73.8	52.9	86.5	70.5	75.1
Model 4	74.6	52.4	88.0	72.4	75.5
Model 5	75.7	53.3	89.1	74.7	76.1
Model 6	71.2	45.1	87.4	68.8	72.0
Model 7	71.0	45.8	86.5	67.7	72.1
Model 8	72.3	46.5	88.3	71.0	72.8
Model 9	70.4	42.3	87.8	68.2	71.1

ROC CURVES


ROC Curve - Marshall 0 - 4 hours - Models 1 and 2
Source of the Curve
Model 1
Model 2
Reference Line
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Marshall 0 - 4 hours - Model 3
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Marshall 0 - 4 hours - Models 4 and 5
Sensitivity
1 - Specificity
Source of the Curve
Model 4
Model 5
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Marshall 0 - 4 hours - Models 6, 7, 8 and 9
Sensitivity
1 - Specificity
Source of the Curve
Model 6
Model 7
Model 8
Model 9
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0

Marshall 0-4 hours	ROC AUC	95% CI
Model 1	0.708	0.646, 0.749
Model 2	0.709	0.648, 0.771
Model 3	0.707	0.646, 0.769
Model 4	0.700	0.639, 0.761
Model 5	0.696	0.635, 0.757
Model 6	0.707	0.655, 0.760
Model 7	0.707	0.655, 0.760
Model 8	0.707	0.654, 0.760
Model 9	0.703	0.650, 0.756

SELECTED MODEL STATISTICS

Model 6

Variable	Coefficient	Wald statistic p value	Adjusted OR (95% CI)
Constant	-4.378		
Age	0.019	0.003	1.02 (1.01, 1.03)
Sex	0.431	0.112	1.54 (0.91, 2.62)
CV disease	1.091	0.028	2.98 (1.12, 7.89)
Head injury	1.281	<0.001	3.60 (2.10, 6.17)
Chest injury	0.191	0.470	1.21 (0.72, 2.03)
Abdominal injury	0.993	<0.001	2.70 (1.59, 4.57)
Limb/pelvic injury	0.815	0.004	2.26 (1.29, 3.95)
External injury	-0.369	0.139	0.69 (0.43, 1.13)
HR	0.009	0.053	1.01 (1.00, 1.02)

14.3.3. MARSHALL 0 – 6 HOURS MODEL

MODEL VARIABLE LISTS

Model 1	Model 2	Model 3	Model 4
n = 374	**n = 374**	**n = 380**	**n = 380**
Age	Age	Age	Age
Sex	Sex	Sex	Sex
CV disease	CV disease	CV disease	CV disease
Drugs/alcohol	Drugs/alcohol	Drugs/alcohol	Respiratory disease
Respiratory disease	Respiratory disease	Respiratory disease	Head injury
Head injury	Head injury	Head injury	Abdominal injury
Chest injury	Abdominal injury	Abdominal injury	Limb/pelvic injury
Abdominal injury	Limb/pelvic injury	Limb/pelvic injury	External injury
Limb/pelvic injury	External injury	External injury	Time to hospital
External injury	Time to hospital	Time to hospital	HR
Time to hospital	SBP	HR	Vasopressors
SBP	HR	Vasopressors	
HR	Vasopressors		
Vasopressors			

Model 5	Model 6	Model 7	Model 8
n = 380	**n = 448**	**n = 468**	**n = 468**
Age	Age	Age	Age
Sex	Sex	Sex	Sex
CV disease	CV disease	Head injury	Head injury
Head injury	Head injury	Abdominal injury	Abdominal injury
Abdominal injury	Abdominal injury	Limb/pelvic injury	Limb/pelvic injury
Limb/pelvic injury	Limb/pelvic injury	External injury	External injury
External injury	External injury	Time to hospital	Vasopressors
Time to hospital	Time to hospital	Vasopressors	
HR	Vasopressors		
Vasopressors			

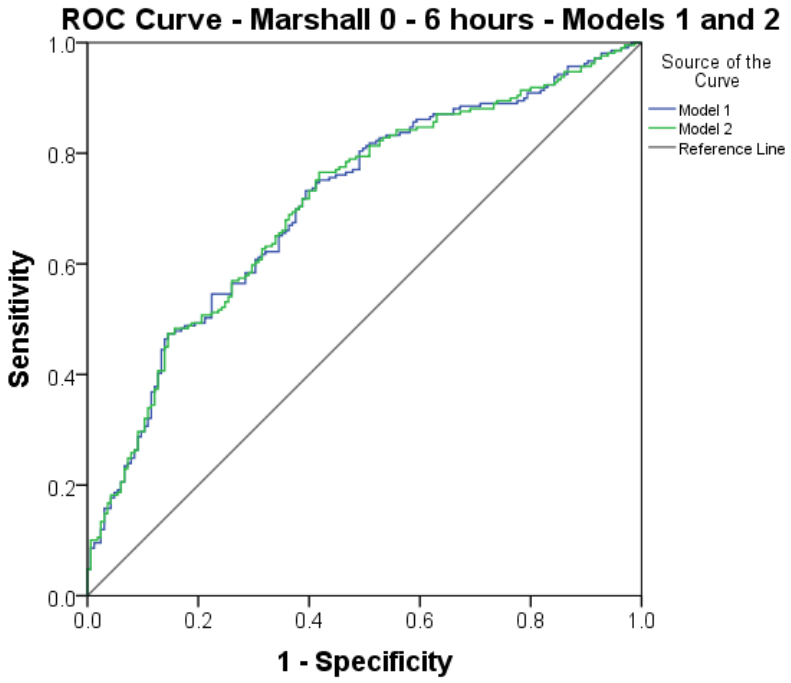
GOODNESS-OF-FIT MEASURES

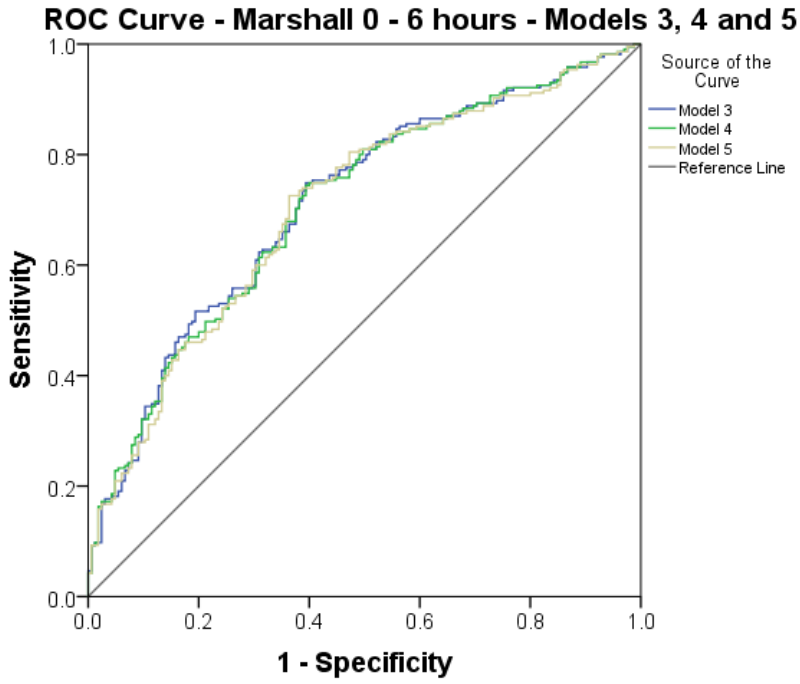
Marshall 0-6 hours	Model χ^2	Model χ^2 p value	-2 log likelihood	Nagelkerke R^2	Hosmer-Lemeshow χ^2	Hosmer-Lemeshow χ^2 p value
Model 1	76.689	<0.001	422.757	0.252	3.864	0.869
Model 2	76.433	<0.001	423.013	0.251	5.399	0.714
Model 3	76.572	<0.001	431.497	0.248	5.054	0.752
Model 4	75.742	<0.001	432.327	0.245	5.505	0.703
Model 5	74.585	<0.001	433.484	0.242	1.472	0.993
Model 6	70.323	<0.001	532.533	0.196	18.045	0.021
Model 7	62.474	<0.001	568.896	0.169	2.980	0.936
Model 8	58.352	<0.001	597.090	0.153	4.886	0.770

CATEGORY PREDICTORS

Marshall 0-6 hours	PAC (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Model 1	72.5	53.1	84.7	68.8	73.5
Model 2	73.0	53.8	85.2	69.6	74.4
Model 3	71.3	51.4	84.1	67.3	73.0
Model 4	71.6	51.4	84.5	67.8	73.1
Model 5	71.3	50.7	84.5	67.6	72.9
Model 6	67.0	41.9	83.6	63.0	68.4
Model 7	66.9	43.4	82.8	63.1	68.3
Model 8	64.6	37.2	83.1	59.8	66.2

ROC CURVES


ROC Curve - Marshall 0 - 6 hours - Models 1 and 2
Sensitivity
1 - Specificity
Source of the Curve
Model 1
Model 2
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Marshall 0 - 6 hours - Models 3, 4 and 5
Sensitivity
1 - Specificity
Source of the Curve
Model 3
Model 4
Model 5
Reference Line
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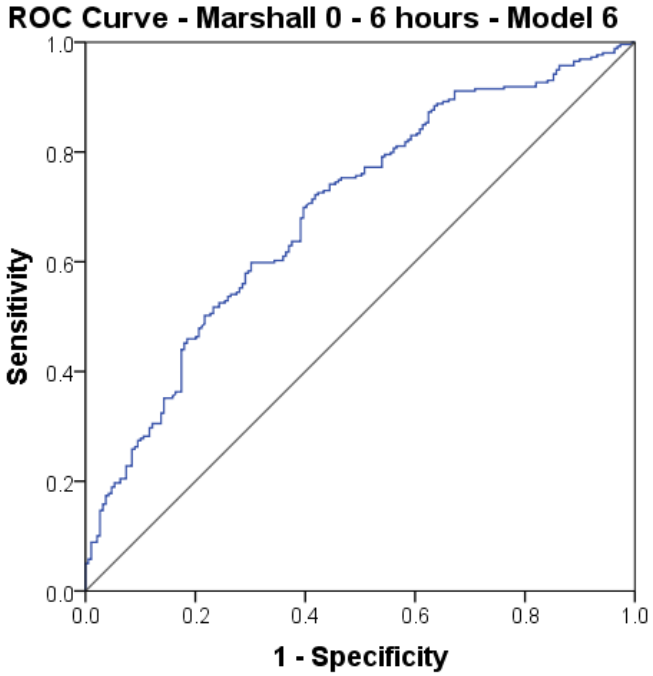
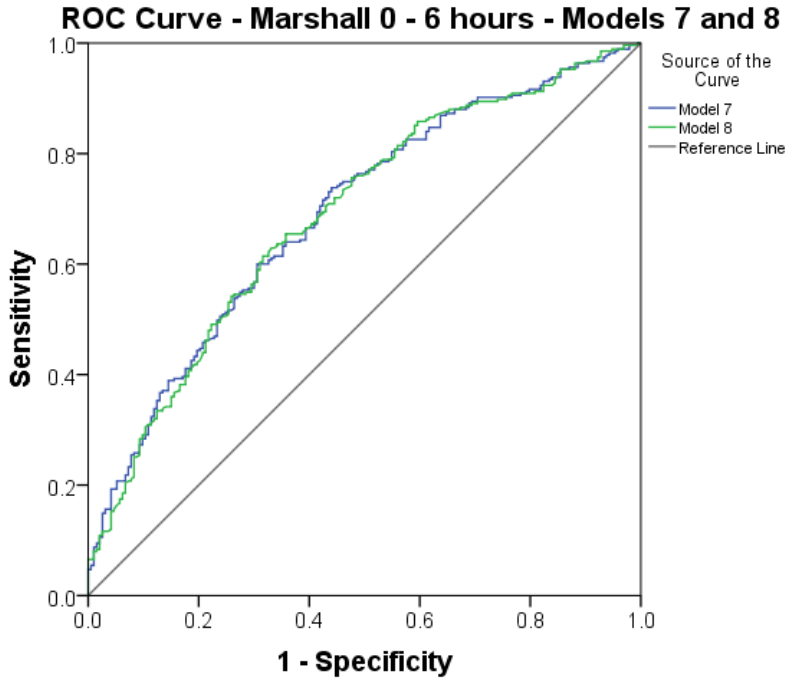
0.2
0.4
0.6
0.8
1.0


ROC Curve - Marshall 0 - 6 hours - Model 6
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Marshall 0 - 6 hours - Models 7 and 8
Sensitivity
1 - Specificity
Source of the Curve
Model 7
Model 8
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0

Marshall 0-6 hours	ROC AUC	95% CI
Model 1	0.709	0.656, 0.761
Model 2	0.709	0.657, 0.761
Model 3	0.711	0.659, 0.763
Model 4	0.707	0.655, 0.759
Model 5	0.705	0.652, 0.757
Model 6	0.692	0.643, 0.741
Model 7	0.690	0.642, 0.738
Model 8	0.688	0.640, 0.736

SELECTED MODEL STATISTICS

Model 5

Variable	Coefficient	Wald statistic p value	Adjusted OR (95% CI)
Constant	-4.484		
Age	0.019	0.003	1.02 (1.01, 1.03)
Sex	0.568	0.041	1.77 (1.02, 3.04)
CV disease	1.184	0.016	3.27 (1.25, 8.54)
Head injury	1.192	<0.001	3.29 (1.92, 5.65)
Abdominal injury	0.968	<0.001	2.63 (1.58, 4.40)
Limb/pelvic injury	0.839	0.003	2.31 (1.33, 4.02)
External injury	-0.496	0.052	0.61 (0.37, 1.00)
Time to hospital	0.005	0.083	1.01 (1.00, 1.01)
HR	0.006	0.202	1.01 (1.00, 1.02)
Vasopressors	1.536	0.001	4.65 (1.92, 11.25)

14.3.4. MARSHALL 0 – 12 HOURS MODEL

MODEL VARIABLE LISTS

Model 1	Model 2	Model 3	Model 4
n = 83	**n = 83**	**n = 100**	**n = 101**
Age	Age	Age	Age
Sex	Sex	Sex	Sex
CV disease	CV disease	CV disease	CV disease
Drugs/alcohol	Drugs/alcohol	Drugs/alcohol	Drugs/alcohol
Respiratory disease	Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Chest injury
Abdominal injury	Abdominal injury	Abdominal injury	Abdominal injury
Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury
External injury	External injury	External injury	External injury
SBP	SBP	SBP	SBP
FiO2	FiO2	FiO2	FiO2
HR	HR	HR	HR
RR min	RR min	RR min	RR min
Temperature	Temperature	Temperature	Temperature
APTT	APTT	APTT	APTT
Haemoglobin	Haemoglobin	Haemoglobin	Haemoglobin
Platelet count	Platelet count	PT	PT
PT	PT	Albumin	Albumin
Albumin	Albumin	BD	BD
BD	BD	Bilirubin	Bilirubin
Bilirubin	Bilirubin	Creatinine	Glucose
Creatinine	Creatinine	Glucose	Lactate
Glucose	Glucose	Lactate	IV fluids
Lactate	Lactate	IV fluids	Vasopressors
Sodium max	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 5	Model 6	Model 7	Model 8
n = 107	**n = 109**	**n = 109**	**n = 109**
Age	Age	Age	Age
Sex	Sex	Sex	Sex
CV disease	CV disease	CV disease	CV disease
Drugs/alcohol	Drugs/alcohol	Drugs/alcohol	Drugs/alcohol
Respiratory disease	Respiratory disease	Head injury	Head injury
Head injury	Head injury	Chest injury	Chest injury
Chest injury	Chest injury	Abdominal injury	Abdominal injury
Abdominal injury	Abdominal injury	Limb/pelvic injury	Limb/pelvic injury
Limb/pelvic injury	Limb/pelvic injury	External injury	External injury
External injury	External injury	SBP	SBP
SBP	SBP	FiO2	FiO2
FiO2	FiO2	HR	HR
HR	HR	RR min	RR min
RR min	RR min	APTT	APTT
APTT	APTT	Haemoglobin	Haemoglobin
Haemoglobin	Haemoglobin	PT	PT
PT	PT	Albumin	Albumin
Albumin	Albumin	BD	Glucose
BD	BD	Glucose	Lactate
Bilirubin	Glucose	Lactate	IV fluids
Glucose	Lactate	IV fluids	Vasopressors
Lactate	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 9	Model 10	Model 11	Model 12
n = 109	**n = 114**	**n = 118**	**n = 125**
Age	Age	Age	Age
Sex	Sex	Sex	Sex
CV disease	CV disease	CV disease	CV disease
Drugs/alcohol	Drugs/alcohol	Drugs/alcohol	Drugs/alcohol
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Chest injury
Abdominal injury	Abdominal injury	Abdominal injury	Abdominal injury
Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury
SBP	SBP	SBP	SBP
FiO2	FiO2	FiO2	FiO2
HR	HR	HR	HR
RR min	RR min	RR min	RR min
APTT	APTT	APTT	APTT
Haemoglobin	Haemoglobin	Haemoglobin	Haemoglobin
PT	Albumin	Albumin	Glucose
Albumin	Glucose	Glucose	Lactate
Glucose	Lactate	Lactate	Vasopressors
Lactate	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 13	Model 14	Model 15	Model 16
n = 171	**n = 171**	**n = 171**	**n = 187**
Age	Age	Age	Age
Sex	Sex	CV disease	CV disease
CV disease	CV disease	Drugs/alcohol	Drugs/alcohol
Drugs/alcohol	Drugs/alcohol	Head injury	Head injury
Head injury	Head injury	Chest injury	Chest injury
Chest injury	Chest injury	Abdominal injury	Abdominal injury
Abdominal injury	Abdominal injury	Limb/pelvic injury	Limb/pelvic injury
Limb/pelvic injury	Limb/pelvic injury	SBP	SBP
SBP	SBP	FiO2	FiO2
FiO2	FiO2	RR min	APTT
HR	RR min	APTT	Haemoglobin
RR min	APTT	Haemoglobin	Lactate
APTT	Haemoglobin	Lactate	Vasopressors
Haemoglobin	Lactate	Vasopressors	
Lactate	Vasopressors		
Vasopressors			

Model 17	Model 18	Model 19	Model 20
n = 187	**n = 187**	**n = 187**	**n = 187**
Age	Age	Age	Age
CV disease	CV disease	CV disease	CV disease
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Abdominal injury
Abdominal injury	Abdominal injury	Abdominal injury	Limb/pelvic injury
Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury	FiO2
SBP	FiO2	FiO2	APTT
FiO2	APTT	APTT	Lactate
APTT	Haemoglobin	Lactate	Vasopressors
Haemoglobin	Lactate	Vasopressors	
Lactate	Vasopressors		
Vasopressors			

Model 21	Model 22
n = 222	**n = 235**
Age	Age
CV disease	Head injury
Head injury	Abdominal injury
Abdominal injury	Limb/pelvic injury
Limb/pelvic injury	FiO2
FiO2	Lactate
Lactate	Vasopressors
Vasopressors	

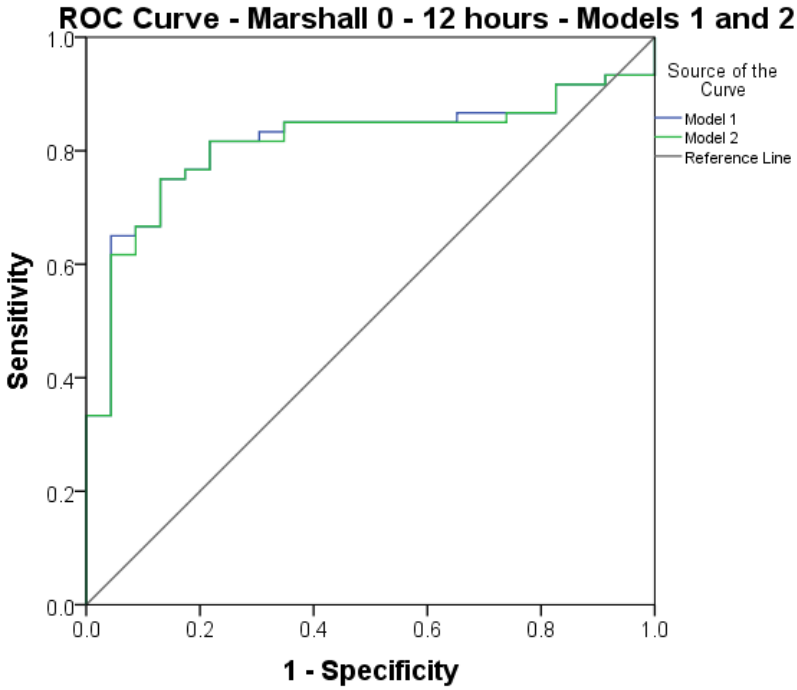
GOODNESS-OF-FIT MEASURES

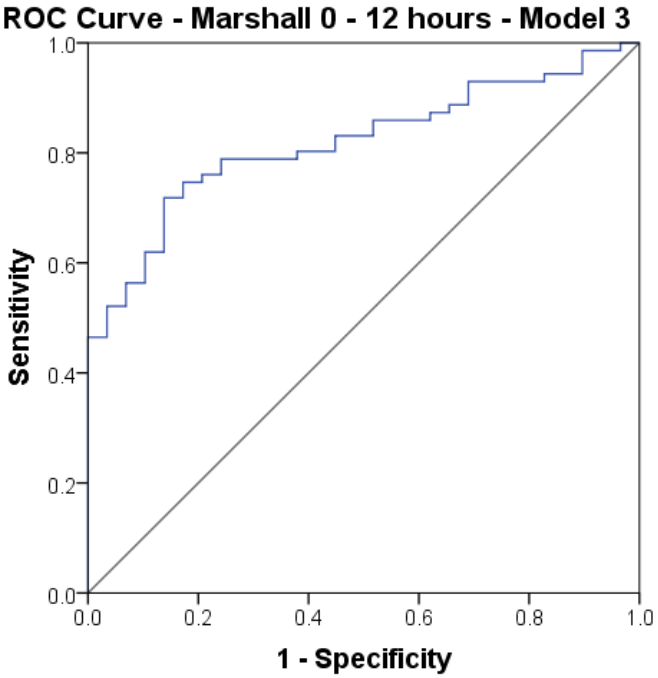
Marshall 0-12 hours	Model χ^2	Model χ^2 p value	-2 log likelihood	Nagelkerke R^2	Hosmer-Lemeshow χ^2	Hosmer-Lemeshow χ^2 p value
Model 1	55.685	0.003	59.076	0.652	4.687	0.790
Model 2	55.636	0.002	59.126	0.652	51.940	0.737
Model 3	57.527	0.001	80.462	0.585	8.710	0.367
Model 4	55.428	0.001	83.785	0.565	14.103	0.079
Model 5	60.690	<0.001	87.185	0.578	7.478	0.486
Model 6	63.552	<0.001	87.324	0.589	7.627	0.471
Model 7	63.455	<0.001	87.422	0.589	7.491	0.485
Model 8	63.230	<0.001	87.647	0.587	2.772	0.948
Model 9	63.229	<0.001	87.647	0.587	2.772	0.948
Model 10	54.524	<0.001	103.373	0.507	15.222	0.055
Model 11	56.033	<0.001	107.414	0.504	0.033	0.025
Model 12	58.143	<0.001	115.136	0.496	20.206	0.010
Model 13	73.786	<0.001	162.984	0.468	7.109	0.525
Model 14	73.264	<0.001	163.506	0.465	8.283	0.406
Model 15	73.240	<0.001	163.550	0.465	3.864	0.869
Model 16	70.348	<0.001	187.985	0.419	5.509	0.702
Model 17	69.650	<0.001	188.682	0.415	4.683	0.791
Model 18	68.582	<0.001	189.750	0.410	4.529	0.807
Model 19	66.902	<0.001	191. 431	0.402	10.595	0.226
Model 20	65.313	<0.001	192.820	0.395	11.376	0.181
Model 21	75.582	<0.001	230.174	0.386	12.082	0.148
Model 22	72.385	<0.001	252.163	0.354	10.146	0.255

CATEGORY PREDICTORS

Marshall 0-12 hours	PAC (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Model 1	84.3	86.4	82.1	84.4	84.2
Model 2	84.3	86.4	82.1	84.4	84.2
Model 3	83.0	87.0	78.3	82.5	83.7
Model 4	79.2	81.8	76.1	80.4	77.8
Model 5	79.4	80.7	78.0	80.7	78.0
Model 6	79.8	80.7	78.8	80.7	78.8
Model 7	79.8	80.7	78.8	80.7	78.8
Model 8	80.7	80.7	80.8	82.1	79.2
Model 9	80.7	80.7	80.8	82.1	79.2
Model 10	78.1	78.0	78.2	79.3	76.8
Model 11	77.1	77.0	77.2	78.3	75.9
Model 12	74.4	71.4	77.4	76.3	72.7
Model 13	76.6	75.6	77.5	75.6	77.5
Model 14	75.4	74.4	76.4	74.4	76.4
Model 15	75.4	74.4	76.4	74.4	76.4
Model 16	73.3	71.3	75.0	71.3	75.0
Model 17	73.8	71.3	76.0	72.1	75.2
Model 18	75.4	72.4	78.0	74.1	76.5
Model 19	75.9	72.4	79.0	75.0	76.7
Model 20	77.0	73.6	80.0	76.2	77.7
Model 21	76.1	72.5	79.2	74.7	77.2
Model 22	74.9	71.6	77.8	73.6	76.0

ROC CURVES


ROC Curve - Marshall 0 - 12 hours - Models 1 and 2
Sensitivity
1 - Specificity
Source of the Curve
Model 1
Model 2
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Marshall 0 - 12 hours - Model 3
Sensitivity
1 - Specificity
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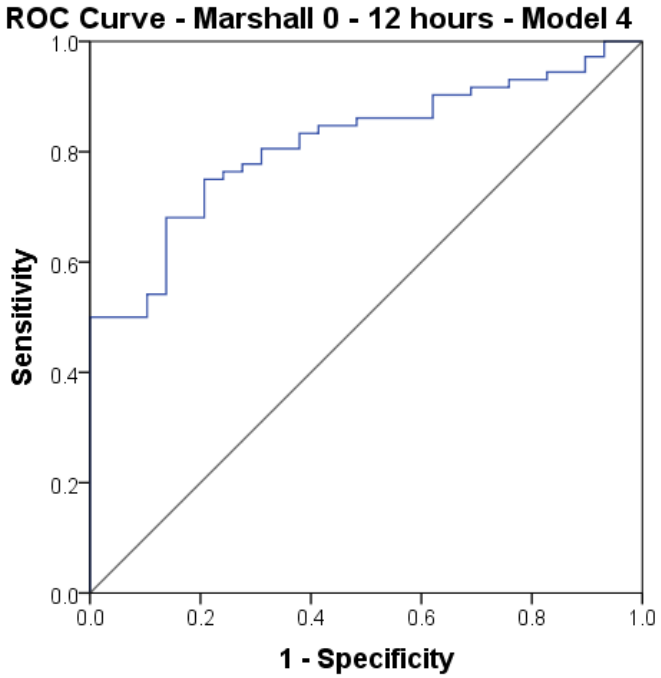
0.2
0.4
0.6
0.8
1.0


ROC Curve - Marshall 0 - 12 hours - Model 4
Sensitivity
1 - Specificity
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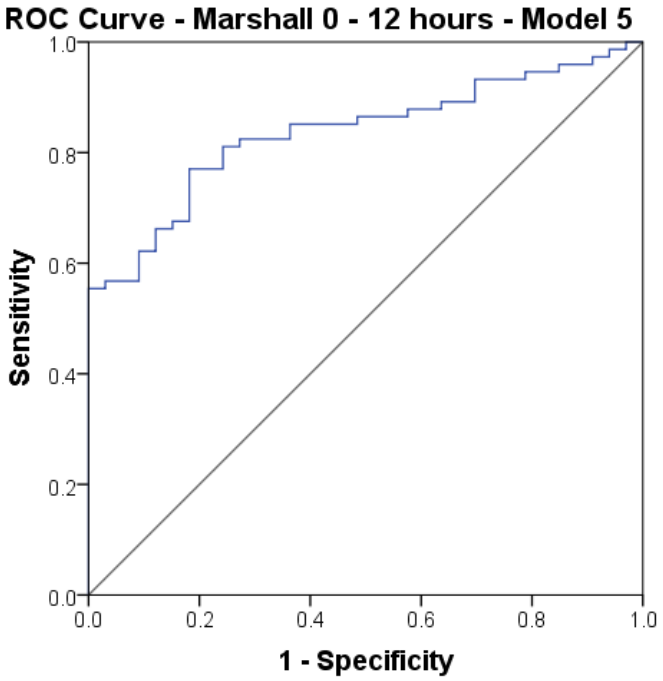
0.2
0.4
0.6
0.8
1.0


ROC Curve - Marshall 0 - 12 hours - Model 5
Sensitivity
1 - Specificity
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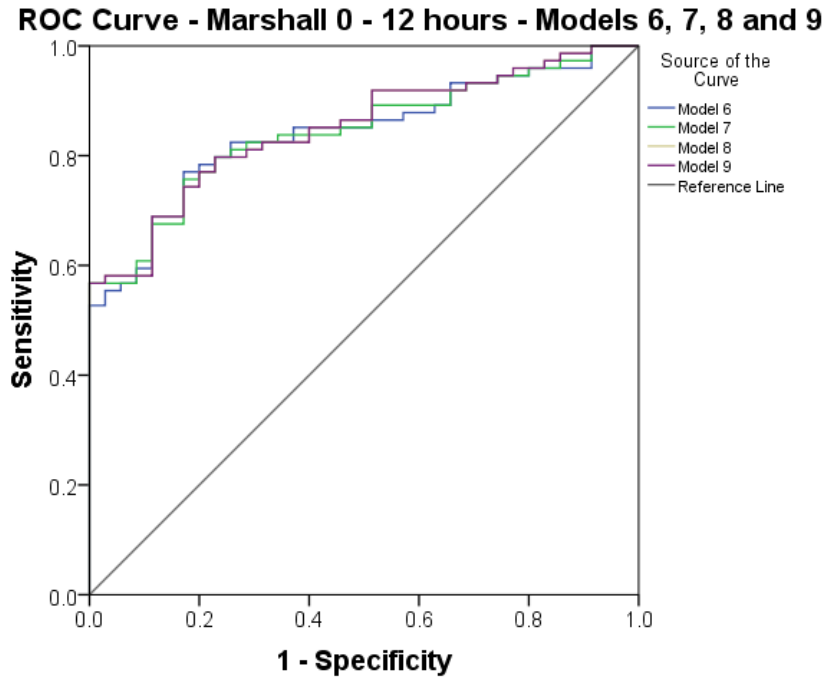
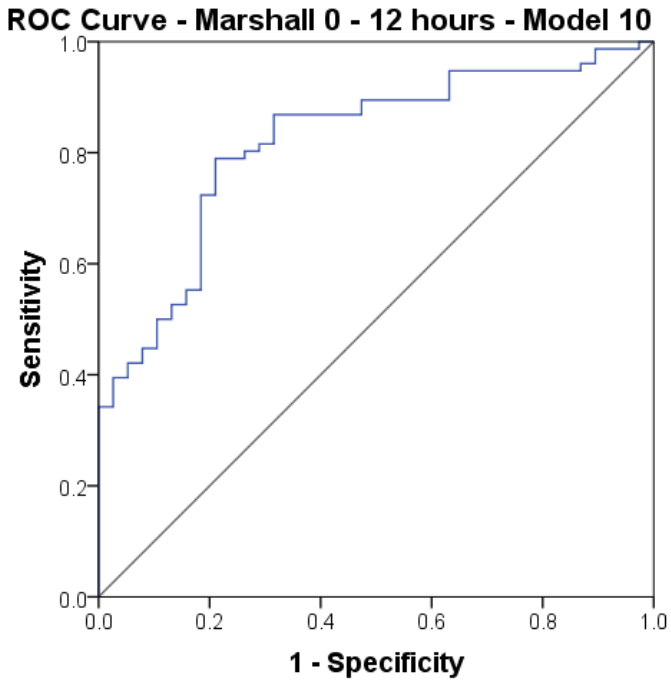
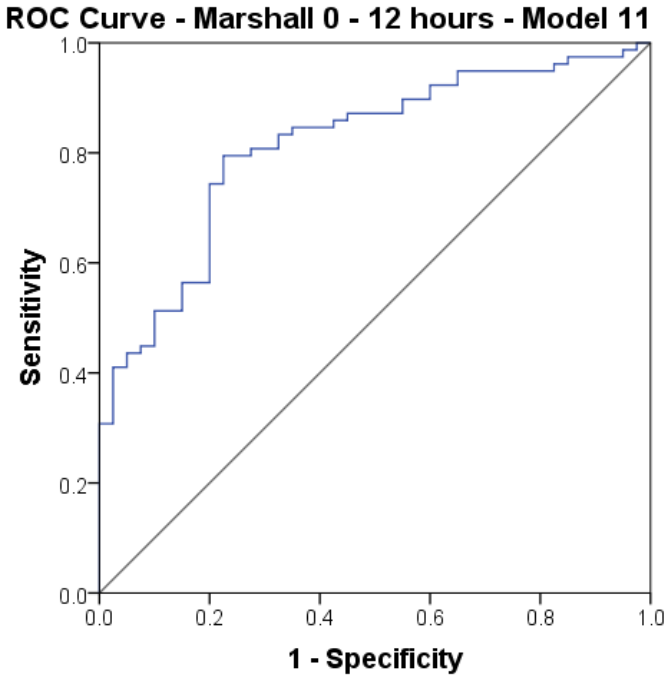
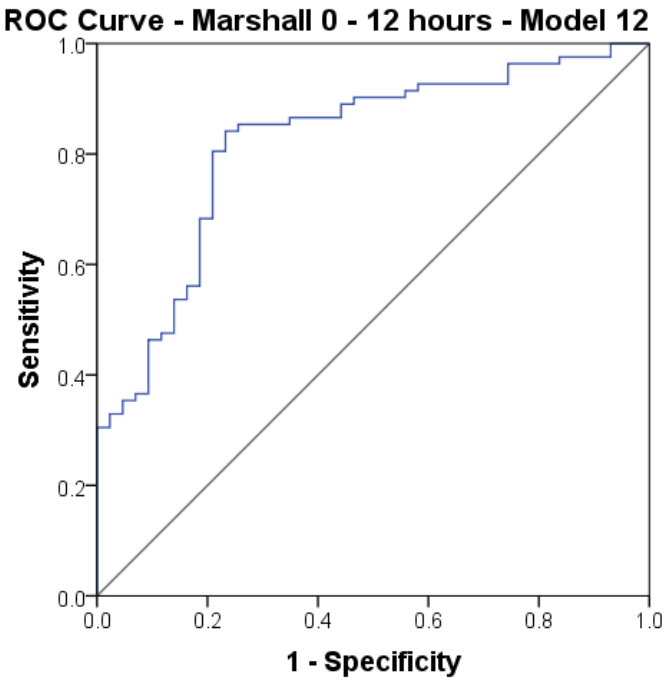
0.2
0.4
0.6
0.8
1.0

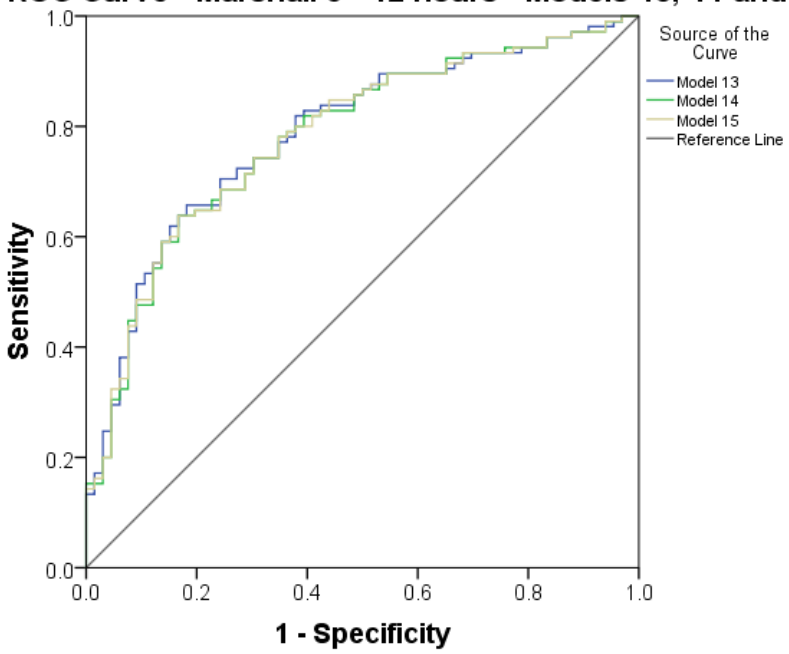

ROC Curve - Marshall 0 - 12 hours - Models 6, 7, 8 and 9
Sensitivity
1 - Specificity
Source of the Curve
Model 6
Model 7
Model 8
Model 9
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Marshall 0 - 12 hours - Model 10
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

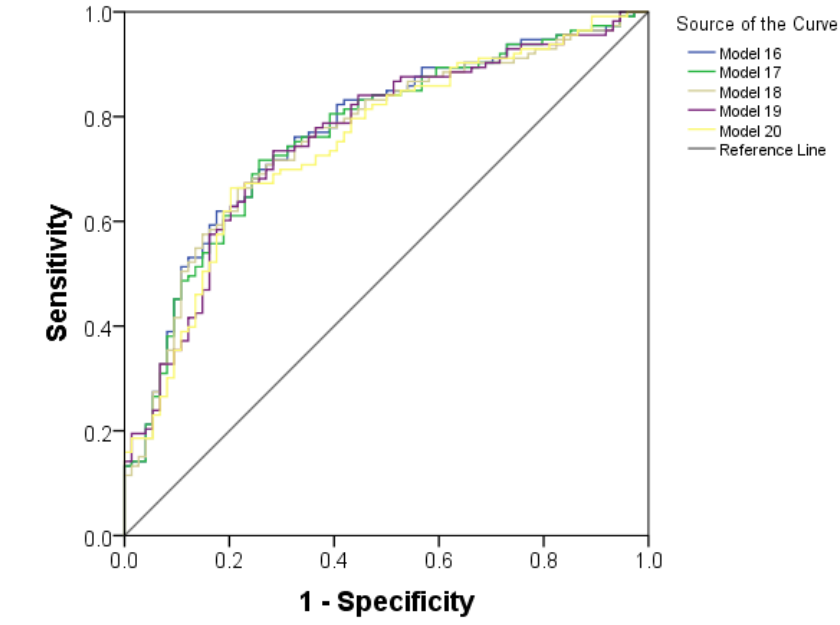

ROC Curve - Marshall 0 - 12 hours - Model 11
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

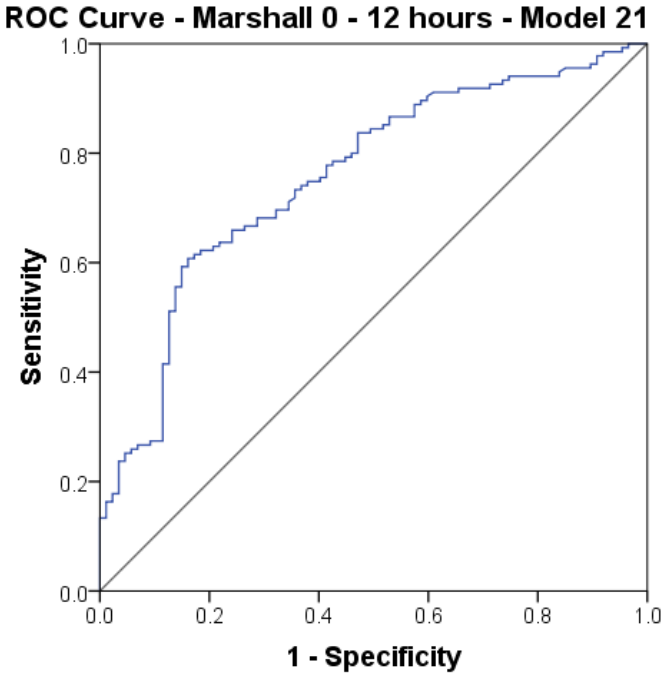

ROC Curve - Marshall 0 - 12 hours - Model 12
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

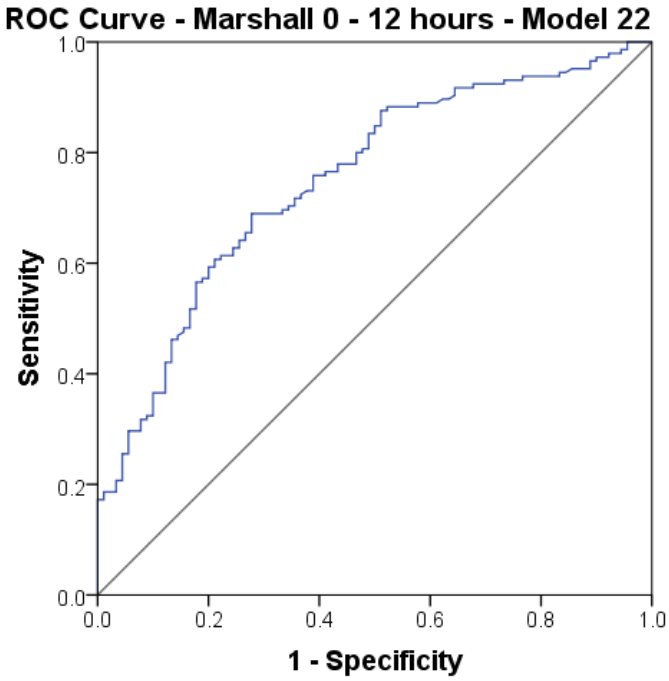
ROC Curve - Marshall 0 - 12 hours - Models 13, 14 and 15



ROC Curve - Marshall 0 - 12 hours - Models 16, 17, 18, 19 and 20




ROC Curve - Marshall 0 - 12 hours - Model 21
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Marshall 0 - 12 hours - Model 22
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

Marshall 0-12 hours	ROC AUC	95% CI
Model 1	0.815	0.721, 0.909
Model 2	0.812	0.717, 0.906
Model 3	0.818	0.737, 0.900
Model 4	0.815	0.733, 0.898
Model 5	0.836	0.761, 0.910
Model 6	0.841	0.768, 0.914
Model 7	0.843	0.771, 0.915
Model 8	0.849	0.778, 0.919
Model 9	0.849	0.778, 0.919
Model 10	0.819	0.739, 0.899
Model 11	0.814	0.735, 0.892
Model 12	0.820	0.742, 0.898
Model 13	0.786	0.717, 0.855
Model 14	0.781	0.711, 0.851
Model 15	0.782	0.712, 0.852
Model 16	0.770	0.702, 0.839
Model 17	0.765	0.696, 0.834
Model 18	0.762	0.693, 0.832
Model 19	0.759	0.689, 0.829
Model 20	0.749	0.679, 0.820
Model 21	0.756	0.692, 0.821
Model 22	0.751	0.688, 0.814

SELECTED MODEL STATISTICS

Model 15

Variable	Coefficient	Wald statistic p value	Adjusted OR (95% CI)
Constant	-4.764		
Age	0.019	0.104	1.02 (1.00, 1.04)
CV disease	-2.139	0.085	0.12 (0.01, 1.35)
Drugs/alcohol	0.673	0.385	1.96 (0.43, 8.95)
Head injury	2.363	<0.001	10.62 (3.44, 32.82)
Chest injury	0.842	9.095	2.32 (0.87, 6.23)
Abdominal injury	1.287	0.009	3.62 (1.38, 9.49)
Limb/pelvic injury	0.566	0.26	1.76 (0.66, 4.72)
SBP	0.007	0.423	1.01 (1.00, 1.03)
FiO2		0.007	
41-60%	-1.072	0.089	0.34 (0.10, 1.18)
61-80%	0.855	0.318	2.35 (0.44, 12.62)
> 80%	0.393	0.54	1.48 (0.42, 5.20)
RR min	0.035	0.413	1.04 (0.95, 1.13)
APTT	0.016	0.055	1.02 (1.00, 1.03)
Haemoglobin	-0.162	0.074	0.85 (0.71, 1.02)
Lactate	0.289	0.008	1.34 (1.08, 1.66)
Vasopressors	0.635	0.168	1.89 (0.77, 4.66)

14.3.5. MARSHALL 0 – 24 HOURS MODEL

MODEL VARIABLE LISTS

Model 1	Model 2	Model 3	Model 4
n = 149	**n = 153**	**n = 153**	**n = 155**
Age	Age	Age	Age
Sex	Sex	Sex	Sex
CV disease	CV disease	CV disease	CV disease
Drugs/alcohol	Drugs/alcohol	Drugs/alcohol	Drugs/alcohol
Respiratory disease	Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Chest injury
Abdominal injury	Abdominal injury	Abdominal injury	Abdominal injury
Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury
External injury	External injury	External injury	External injury
SBP	SBP	SBP	SBP
FiO2	FiO2	FiO2	FiO2
HR	HR	HR	HR
RR max	RR max	RR max	RR max
Temperature	APTT	APTT	APTT
APTT	Haemoglobin	Haemoglobin	Haemoglobin
Haemoglobin	Platelet count	Platelet count	Platelet count
Platelet count	PT	PT	PT
PT	Albumin	Albumin	Albumin
Albumin	BD	BD	BD
BD	Bilirubin	Bilirubin	Bilirubin
Bilirubin	Creatinine	Creatinine	Creatinine
Creatinine	Glucose	Glucose	Lactate
Glucose	Lactate	Lactate	Potassium max
Lactate	Potassium max	Potassium max	Transfusion level
Potassium max	Sodium max	Transfusion level	IV fluids
Sodium max	Transfusion level	IV fluids	Vasopressors
Transfusion level	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 5	Model 6	Model 7	Model 8
n = 160	**n = 160**	**n = 160**	**n = 160**
Age	Age	Age	Age
Sex	Sex	Sex	Sex
CV disease	CV disease	CV disease	CV disease
Drugs/alcohol	Drugs/alcohol	Drugs/alcohol	Drugs/alcohol
Respiratory disease	Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Chest injury
Abdominal injury	Abdominal injury	Abdominal injury	Abdominal injury
Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury
External injury	External injury	External injury	External injury
SBP	SBP	SBP	SBP
FiO2	FiO2	FiO2	FiO2
HR	HR	HR	HR
RR max	RR max	RR max	RR max
APTT	APTT	APTT	APTT
Haemoglobin	Haemoglobin	Platelet count	Platelet count
Platelet count	Platelet count	Albumin	Albumin
Albumin	Albumin	BD	BD
BD	BD	Bilirubin	Bilirubin
Bilirubin	Bilirubin	Creatinine	Potassium max
Creatinine	Creatinine	Potassium max	Transfusion level
Lactate	Potassium max	Transfusion level	IV fluids
Potassium max	Transfusion level	IV fluids	Vasopressors
Transfusion level	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 9	Model 10	Model 11	Model 12
n = 163	**n = 163**	**n = 163**	**n = 163**
Age	Age	Age	Age
Sex	Sex	Sex	Sex
CV disease	CV disease	CV disease	CV disease
Drugs/alcohol	Respiratory disease	Respiratory disease	Respiratory disease
Respiratory disease	Head injury	Head injury	Head injury
Head injury	Chest injury	Chest injury	Chest injury
Chest injury	Abdominal injury	Abdominal injury	Abdominal injury
Abdominal injury	Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury
Limb/pelvic injury	External injury	External injury	External injury
External injury	SBP	SBP	SBP
SBP	FiO2	FiO2	FiO2
FiO2	HR	HR	APTT
HR	RR max	APTT	Platelet count
RR max	APTT	Platelet count	Albumin
APTT	Platelet count	Albumin	BD
Platelet count	Albumin	BD	Potassium max
Albumin	BD	Potassium max	Transfusion level
BD	Potassium max	Transfusion level	IV fluids
Potassium max	Transfusion level	IV fluids	Vasopressors
Transfusion level	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 13	Model 14	Model 15	Model 16
n = 163	**n = 163**	**n = 163**	**n = 163**
Sex	Sex	Sex	Sex
CV disease	Respiratory disease	Respiratory disease	Respiratory disease
Respiratory disease	Head injury	Head injury	Head injury
Head injury	Chest injury	Chest injury	Chest injury
Chest injury	Abdominal injury	Abdominal injury	Limb/pelvic injury
Abdominal injury	Limb/pelvic injury	Limb/pelvic injury	External injury
Limb/pelvic injury	External injury	External injury	SBP
External injury	SBP	SBP	FiO2
SBP	FiO2	FiO2	APTT
FiO2	APTT	APTT	Platelet count
APTT	Platelet count	Platelet count	Albumin
Platelet count	Albumin	Albumin	BD
Albumin	BD	BD	Potassium max
BD	Potassium max	Potassium max	Transfusion level
Potassium max	Transfusion level	Transfusion level	IV fluids
Transfusion level	IV fluids	IV fluids	
IV fluids	Vasopressors		
Vasopressors			

Model 17	Model 18	Model 19	Model 20
n = 173	**n = 227**	**n = 227**	**n = 227**
Sex	Sex	Sex	Head injury
Head injury	Head injury	Head injury	Chest injury
Chest injury	Chest injury	Chest injury	Limb/pelvic injury
Limb/pelvic injury	Limb/pelvic injury	Limb/pelvic injury	External injury
External injury	External injury	External injury	FiO2
SBP	SBP	FiO2	APTT
FiO2	FiO2	APTT	Platelet count
APTT	APTT	Platelet count	Albumin
Platelet count	Platelet count	Albumin	BD
Albumin	Albumin	BD	Transfusion level
BD	BD	Transfusion level	IV fluids
Potassium max	Transfusion level	IV fluids	
Transfusion level	IV fluids		
IV fluids			

Model 21	Model 22
n = 227	**n = 228**
Head injury	Head injury
Limb/pelvic injury	Limb/pelvic injury
External injury	External injury
FiO2	FiO2
APTT	APTT
Platelet count	Platelet count
Albumin	Albumin
BD	BD
Transfusion level	Transfusion level
IV fluids	

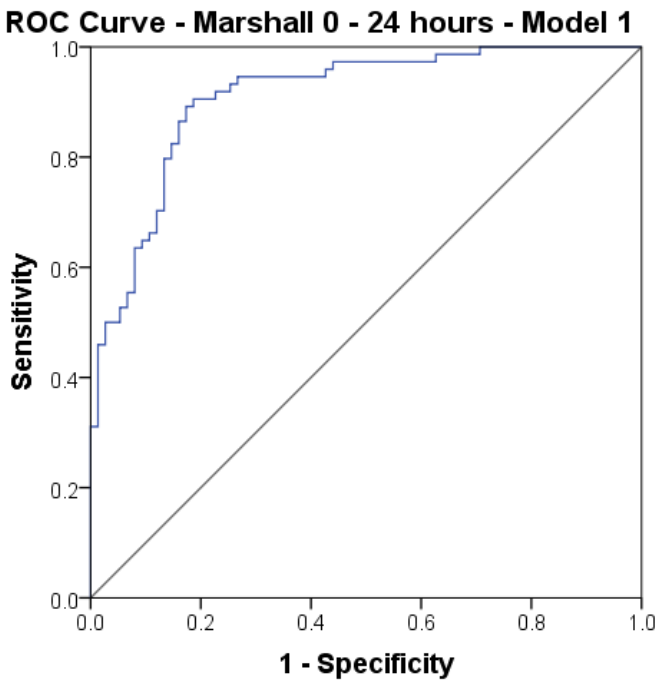
GOODNESS-OF-FIT MEASURES

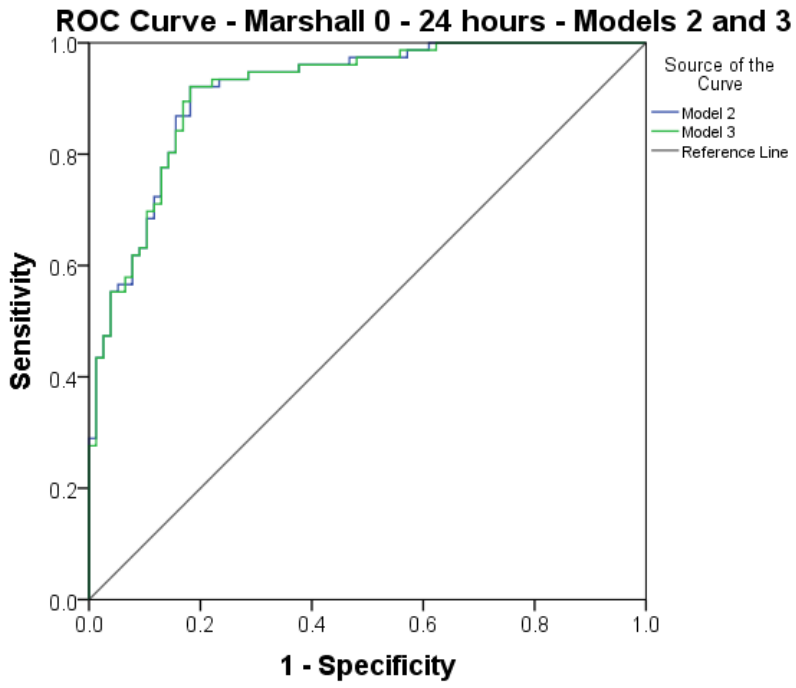
Marshall 0-24 hours	Model χ^2	Model χ^2 p value	-2 log likelihood	Nagelkerke R^2	Hosmer-Lemeshow χ^2	Hosmer-Lemeshow χ^2 p value
Model 1	93.258	<0.001	113.293	0.680	9.065	0.337
Model 2	96.689	<0.001	115.407	0.625	7.535	0.480
Model 3	96.664	<0.001	115.432	0.624	4.381	0.821
Model 4	98.185	<0.001	116.685	0.626	7.269	0.508
Model 5	90.555	<0.001	131.251	0.576	6.705	0.569
Model 6	90.367	<0.001	131.441	0.575	6.664	0.573
Model 7	90.127	<0.001	131.680	0.574	7.529	0.481
Model 8	89.760	<0.001	132.047	0.572	9.296	0.318
Model 9	92.417	<0.001	133.543	0.577	10.654	0.222
Model 10	92.241	<0.001	133.718	0.576	7.799	0.453
Model 11	91.989	<0.001	133.971	0.575	3.937	0.863
Model 12	91.492	<0.001	134.467	0.573	6.818	0.556
Model 13	90.697	<0.001	135.263	0.569	5.214	0.734
Model 14	90.219	<0.001	135.740	0.567	3.662	0.886
Model 15	89.756	<0.001	136.204	0.565	6.304	0.613
Model 16	89.268	<0.001	136.092	0.562	4.726	0.786
Model 17	80.075	<0.001	159.748	0.494	14.994	0.059
Model 18	92.745	<0.001	219.998	0.448	5.183	0.738
Model 19	92.335	<0.001	220.408	0.447	8.254	0.409
Model 20	91.320	<0.001	221.424	0.443	8.091	0.425
Model 21	89.480	<0.001	223.623	0.436	7.620	0.471
Model 22	87.019	<0.001	226.930	0.424	7.145	0.521

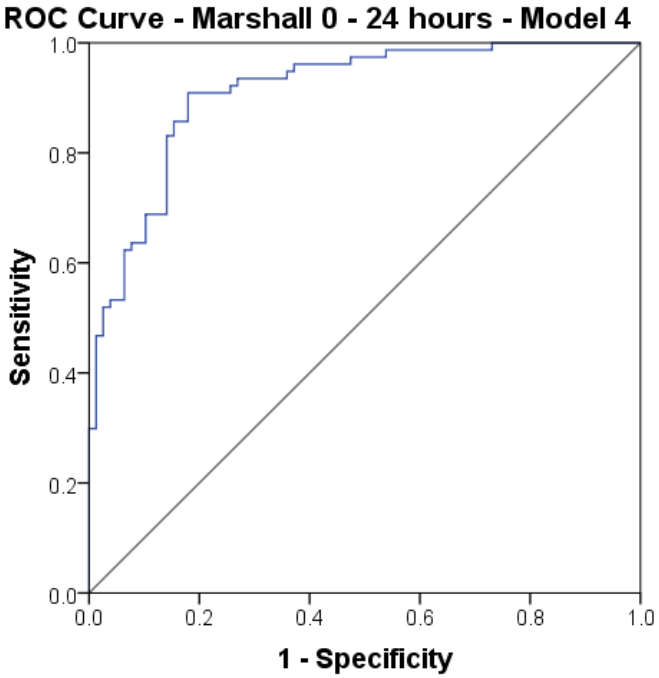
CATEGORY PREDICTORS

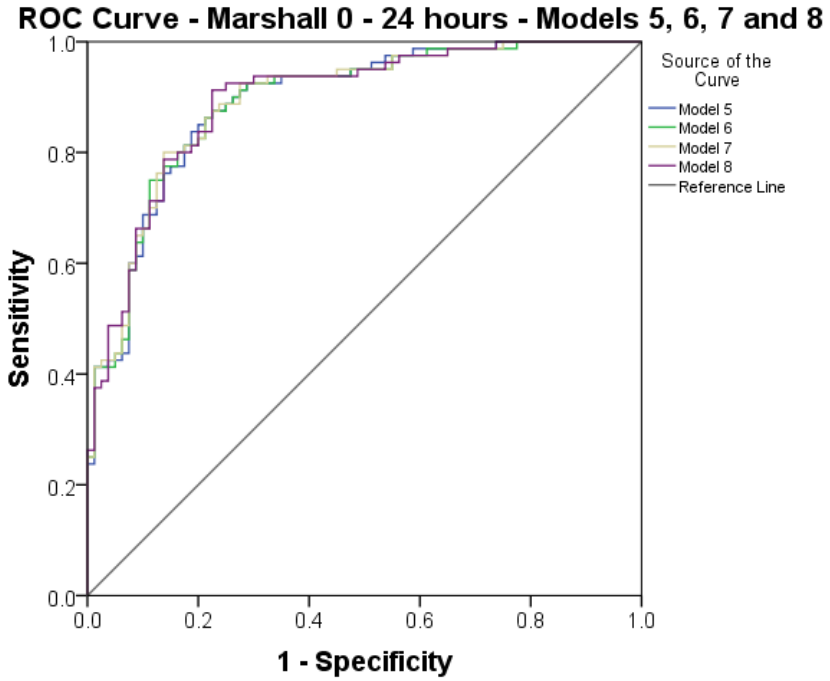
Marshall 0-24 hours	PAC (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Model 1	83.9	83.8	84	83.8	84.0
Model 2	84.3	84.2	84.4	84.2	84.4
Model 3	83.0	81.6	84.4	83.8	82.3
Model 4	83.9	83.1	84.6	84.2	83.5
Model 5	81.3	81.3	81.3	81.3	81.3
Model 6	81.3	81.3	81.3	81.3	81.3
Model 7	81.3	82.5	80.0	80.5	82.1
Model 8	80.6	80.0	81.3	81.0	80.2
Model 9	80.4	80.2	80.5	80.2	80.5
Model 10	81.0	79.0	82.9	82.1	80.0
Model 11	81.0	79.0	82.9	82.1	80.0
Model 12	79.8	79.0	80.5	80.0	79.5
Model 13	81.6	81.5	81.7	81.5	81.7
Model 14	81.0	81.5	80.5	80.5	81.5
Model 15	82.2	84.0	80.5	81.0	83.5
Model 16	81.6	82.7	80.5	80.7	82.5
Model 17	80.9	80.2	81.6	81.1	80.7
Model 18	78.0	73.8	81.5	76.8	78.9
Model 19	78.9	73.8	83.1	78.4	79.2
Model 20	79.3	74.8	83.1	78.6	79.8
Model 21	74.9	69.9	79.0	73.4	76.0
Model 22	72.8	68.0	76.9	69.9	74.4

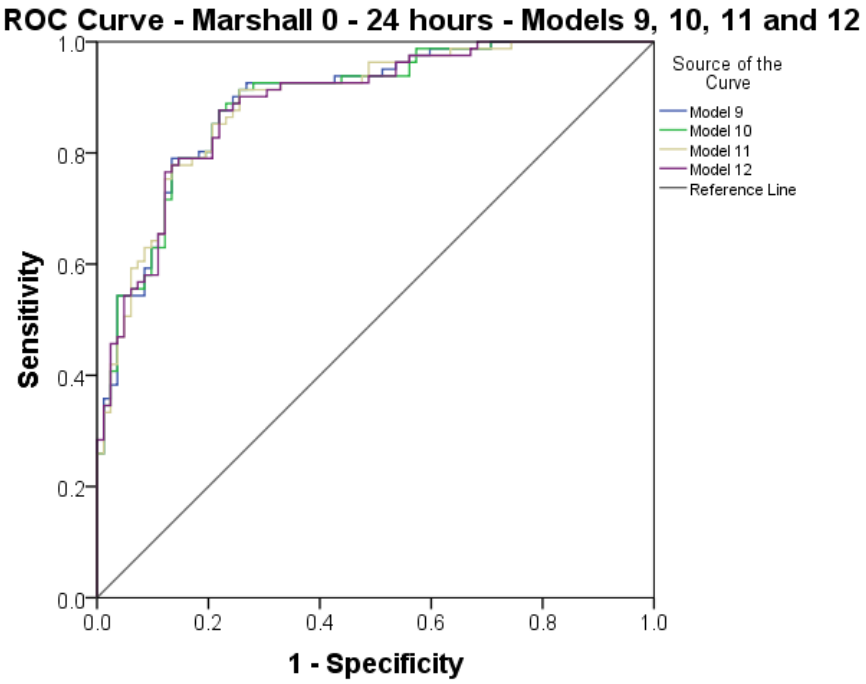
ROC CURVES

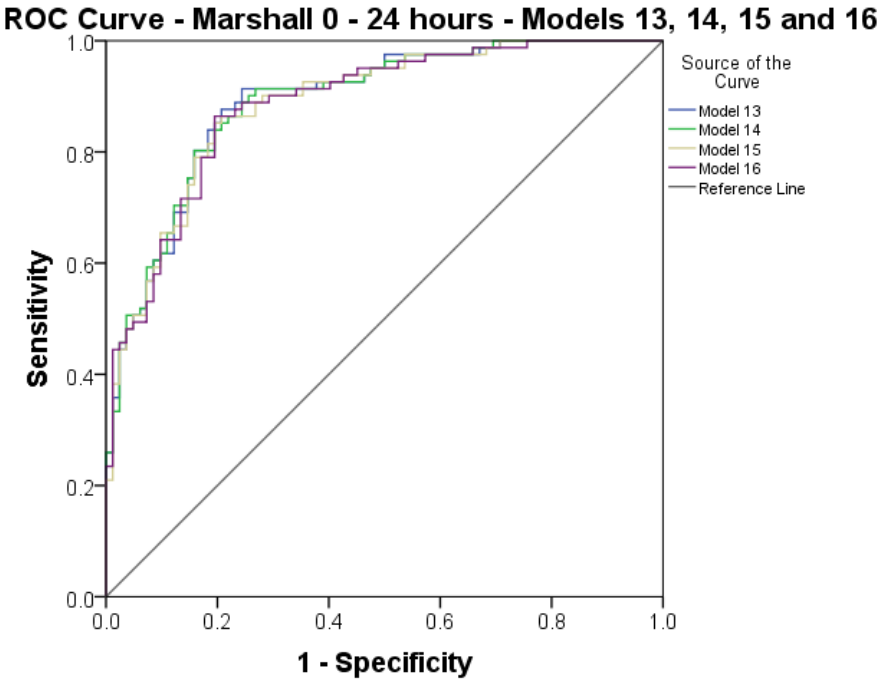

ROC Curve - Marshall 0 - 24 hours - Model 1
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

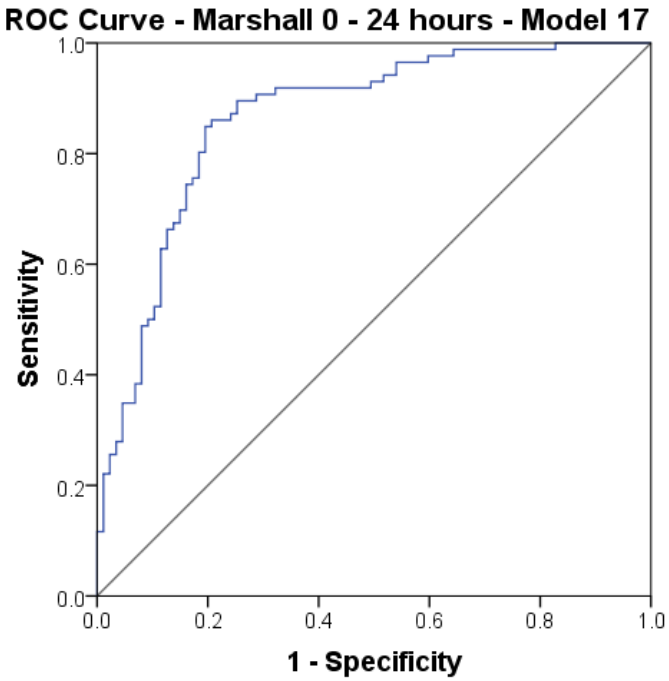

ROC Curve - Marshall 0 - 24 hours - Models 2 and 3
Sensitivity
1 - Specificity
Source of the Curve
Model 2
Model 3
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0

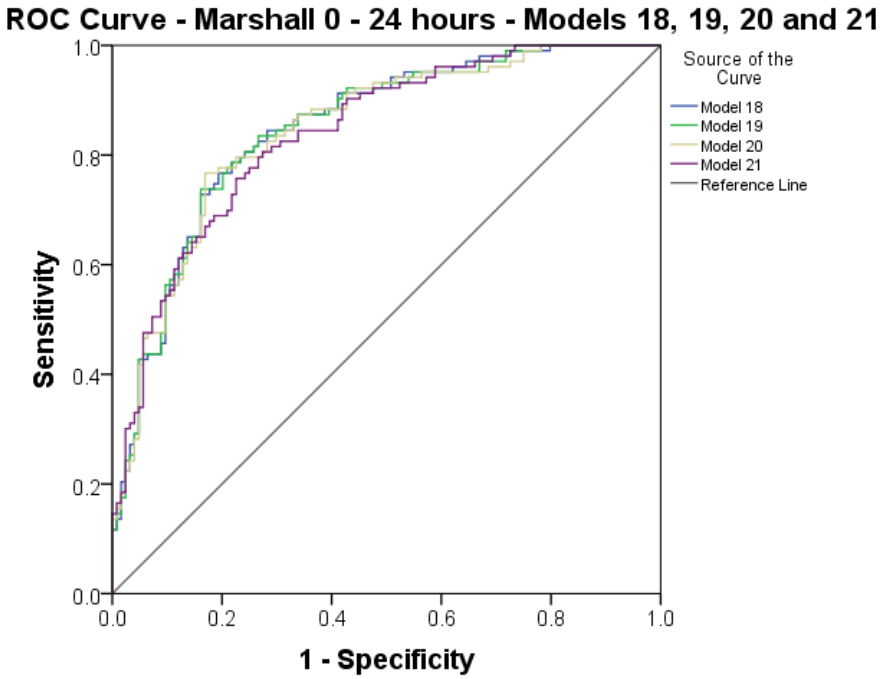

ROC Curve - Marshall 0 - 24 hours - Model 4
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0

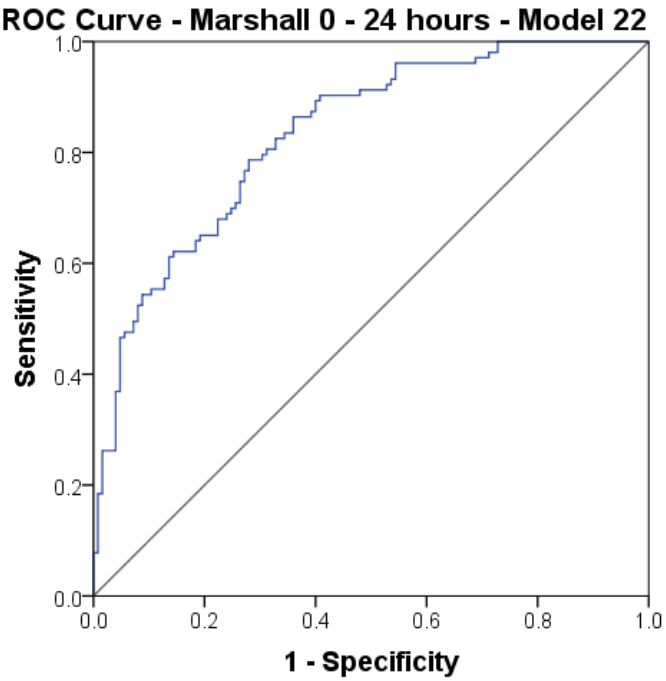

ROC Curve - Marshall 0 - 24 hours - Models 5, 6, 7 and 8
Sensitivity
1 - Specificity
Source of the Curve
Model 5
Model 6
Model 7
Model 8
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Marshall 0 - 24 hours - Models 9, 10, 11 and 12
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0
Source of the Curve
Model 9
Model 10
Model 11
Model 12
Reference Line


ROC Curve - Marshall 0 - 24 hours - Models 13, 14, 15 and 16
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0
Source of the Curve
Model 13
Model 14
Model 15
Model 16
Reference Line


ROC Curve - Marshall 0 - 24 hours - Model 17
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Marshall 0 - 24 hours - Models 18, 19, 20 and 21
Sensitivity
1 - Specificity
Source of the Curve
Model 18
Model 19
Model 20
Model 21
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0



Marshall 0-24 hours	ROC AUC	95% CI
Model 1	0.910	0.863, 0.956
Model 2	0.914	0.870, 0.958
Model 3	0.914	0.870, 0.958
Model 4	0.911	0.867, 0.956
Model 5	0.891	0.842, 0.941
Model 6	0.891	0.842, 0.941
Model 7	0.893	0.844, 0.942
Model 8	0.895	0.846, 0.943
Model 9	0.893	0.845, 0.941
Model 10	0.891	0.843, 0.940
Model 11	0.891	0.834, 0.940
Model 12	0.889	0.840, 0.938
Model 13	0.891	0.842, 0.939
Model 14	0.890	0.841, 0.939
Model 15	0.886	0.837, 0.936
Model 16	0.885	0.835, 0.935
Model 17	0.864	0.809, 0.920
Model 18	0.848	0.798, 0.897
Model 19	0.847	0.796, 0.897
Model 20	0.845	0.794, 0.895
Model 21	0.839	0.788, 0.890
Model 22	0.832	0.781, 0.884

SELECTED MODEL STATISTICS

Model 15

Variable	Coefficient	Wald statistic p value	Adjusted OR (95% CI)
Constant	-10.938		
Sex	1.103	0.049	3.01 (1.01, 9.04)
Respiratory disease	-0.816	0.266	0.44 (0.11, 1.86)
Head injury	3.359	<0.001	28.75 (6.89, 119.95)
Chest injury	0.857	0.088	2.36 (0.88, 6,31)
Abdominal injury	0.385	0.487	1.47 (0.50, 4.35)
Limb/pelvic injury	1.016	0.099	2.76 (0.83, 9.23)
External injury	-0.964	0.063	0.38 (0.14, 1.05)
SBP	0.026	0.045	1.03 (1.00, 1.05)
FiO2		0.022	
41-60%	-1.485	0.060	0.23 (0.05, 1.07)
61-80%	-0.467	0.633	0.63 (0.09, 4.26)
> 80%	0.253	0.743	1.29 (0.28, 5.87)
APTT	0.037	0.120	1.04 (1.00, 1.09)
Platelet count	0.010	0.029	1.01 (1.00, 1.02)
Albumin	-0.960	0.028	0.91 (0.84, 0.990
BD	-0.247	<0.001	0.78 (0.68, 0.90)
Potassium max	0.722	0.077	2.06 (0.92, 4.58)
Transfusion level		0.138	
Transfusion	-0.977	0.128	0.38 (0.11, 1.33)
Massive transfusion	1.239	0.257	3.45 (0.41, 29.44)
IV fluids	<0.001	0.157	1.00 (1.00, 1.00)

14.3.6. MARSHALL 0 – 48 HOURS MODEL

MODEL VARIABLE LISTS

Model 1	Model 2	Model 3	Model 4
n = 220	**n = 220**	**n = 220**	**n = 220**
Age	Age	Age	Age
Sex	Sex	Sex	Sex
CV disease	CV disease	CV disease	CV disease
Drugs/alcohol	Drugs/alcohol	Drugs/alcohol	Drugs/alcohol
Respiratory disease	Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Chest injury
Abdominal injury	Abdominal injury	Abdominal injury	Abdominal injury
Limb/pelvic injury	Limb/pelvic injury	External injury	External injury
External injury	External injury	SBP	SBP
SBP	SBP	FiO2	FiO2
FiO2	FiO2	HR	HR
HR	HR	Temperature	Temperature
RR max	Temperature	APTT	APTT
Temperature	APTT	Haemoglobin	Haemoglobin
APTT	Haemoglobin	Platelet count	Platelet count
Haemoglobin	Platelet count	PT	PT
Platelet count	PT	Albumin	BD
PT	Albumin	BD	Bilirubin
Albumin	BD	Bilirubin	Creatinine
BD	Bilirubin	Creatinine	Glucose
Bilirubin	Creatinine	Glucose	Lactate
Creatinine	Glucose	Lactate	Potassium max
Glucose	Lactate	Potassium max	Sodium max
Lactate	Potassium max	Sodium max	Transfusion level
Potassium max	Sodium max	Transfusion level	IV fluids
Sodium max	Transfusion level	IV fluids	Vasopressors
Transfusion level	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 5	Model 6	Model 7	Model 8
n = 222	**n = 222**	**n = 222**	**n = 222**
Age	Age	Age	Age
Sex	Sex	Sex	Sex
CV disease	CV disease	CV disease	CV disease
Drugs/alcohol	Drugs/alcohol	Drugs/alcohol	Drugs/alcohol
Respiratory disease	Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Chest injury
Abdominal injury	Abdominal injury	Abdominal injury	Abdominal injury
External injury	External injury	External injury	External injury
SBP	SBP	SBP	SBP
FiO2	FiO2	FiO2	FiO2
HR	Temperature	Temperature	Temperature
Temperature	APTT	APTT	APTT
APTT	Haemoglobin	Haemoglobin	Haemoglobin
Haemoglobin	Platelet count	Platelet count	Platelet count
Platelet count	BD	BD	BD
BD	Bilirubin	Bilirubin	Bilirubin
Bilirubin	Creatinine	Creatinine	Creatinine
Creatinine	Glucose	Glucose	Glucose
Glucose	Lactate	Lactate	Lactate
Lactate	Potassium max	Sodium max	Sodium max
Potassium max	Sodium max	Transfusion level	IV fluids
Sodium max	Transfusion level	IV fluids	Vasopressors
Transfusion level	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 9	Model 10	Model 11	Model 12
n = 265	**n = 265**	**n = 266**	**n = 266**
Age	Age	Age	Age
Sex	Sex	Sex	Sex
CV disease	CV disease	CV disease	CV disease
Drugs/alcohol	Drugs/alcohol	Drugs/alcohol	Drugs/alcohol
Respiratory disease	Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Chest injury
Abdominal injury	Abdominal injury	Abdominal injury	Abdominal injury
External injury	External injury	External injury	External injury
SBP	FiO2	FiO2	FiO2
FiO2	Temperature	Temperature	Temperature
Temperature	APTT	APTT	APTT
APTT	Haemoglobin	Haemoglobin	Haemoglobin
Haemoglobin	Platelet count	Platelet count	Platelet count
Platelet count	BD	BD	BD
BD	Bilirubin	Bilirubin	Bilirubin
Bilirubin	Creatinine	Lactate	Lactate
Creatinine	Lactate	Sodium max	IV fluids
Lactate	Sodium max	IV fluids	Vasopressors
Sodium max	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 13	Model 14	Model 15	Model 16
n = 270	**n = 276**	**n = 276**	**n = 276**
Age	Age	Age	Age
Sex	Sex	Sex	Sex
CV disease	CV disease	CV disease	CV disease
Drugs/alcohol	Drugs/alcohol	Drugs/alcohol	Drugs/alcohol
Respiratory disease	Respiratory disease	Respiratory disease	Respiratory disease
Head injury	Head injury	Head injury	Head injury
Chest injury	Chest injury	Chest injury	Chest injury
Abdominal injury	Abdominal injury	Abdominal injury	Abdominal injury
External injury	External injury	FiO2	FiO2
FiO2	FiO2	APTT	APTT
APTT	APTT	Haemoglobin	BD
Haemoglobin	Haemoglobin	BD	Bilirubin
Platelet count	BD	Bilirubin	Lactate
BD	Bilirubin	Lactate	IV fluids
Bilirubin	Lactate	IV fluids	Vasopressors
Lactate	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 17	Model 18	Model 19	Model 20
n = 276	**n = 284**	**n = 284**	**n = 284**
Age	Age	Age	Age
Sex	Sex	Sex	CV disease
CV disease	CV disease	CV disease	Respiratory disease
Respiratory disease	Respiratory disease	Respiratory disease	Head injury
Head injury	Head injury	Head injury	Abdominal injury
Chest injury	Chest injury	Abdominal injury	FiO2
Abdominal injury	Abdominal injury	FiO2	APTT
FiO2	FiO2	APTT	BD
APTT	APTT	BD	Lactate
BD	BD	Lactate	IV fluids
Bilirubin	Lactate	IV fluids	Vasopressors
Lactate	IV fluids	Vasopressors	
IV fluids	Vasopressors		
Vasopressors			

Model 21	Model 22	Model 23	Model 24	Model 25
n = 284	**n = 284**	**n =301**	**n = 308**	**n = 308**
CV disease	Respiratory disease	Head injury	Head injury	Head injury
Respiratory disease	Head injury	Abdominal injury	Abdominal injury	Abdominal injury
Head injury	Abdominal injury	FiO2	FiO2	FiO2
Abdominal injury	FiO2	APTT	BD	Lactate
FiO2	APTT	BD	Lactate	IV fluids
APTT	BD	Lactate	IV fluids	Vasopressors
BD	Lactate	IV fluids	Vasopressors	
Lactate	IV fluids	Vasopressors		
IV fluids	Vasopressors			
Vasopressors				

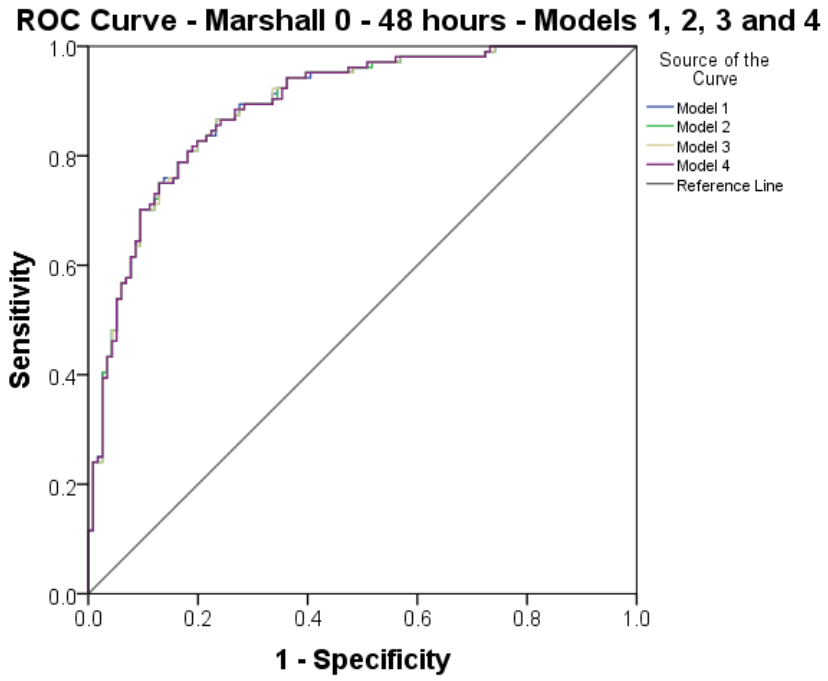
GOODNESS-OF-FIT MEASURES

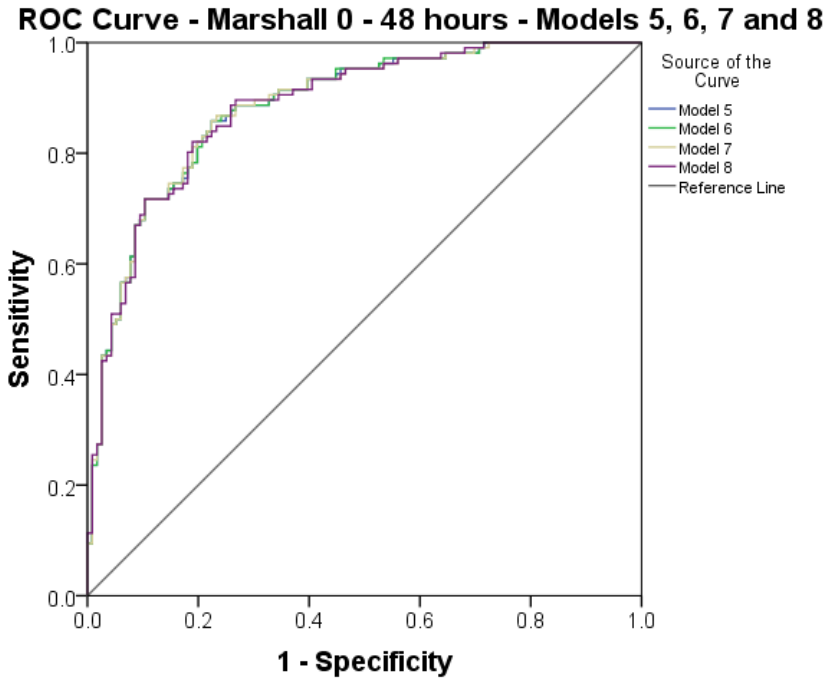
Marshall 0-48 hours	Model χ^2	Model χ^2 p value	-2 log likelihood	Nagelkerke R^2	Hosmer-Lemeshow χ^2	Hosmer-Lemeshow χ^2 p value
Model 1	116.404	<0.001	187.926	0.548	3.803	0.874
Model 2	116.043	<0.001	187.927	0.548	3.824	0.873
Model 3	116.400	<0.001	187.930	0.548	3.837	0.872
Model 4	116.389	<0.001	187.940	0.548	3.748	0.879
Model 5	114.657	<0.001	192.649	0.538	3.923	0.864
Model 6	114.657	<0.001	192.650	0.538	3.927	0.864
Model 7	114.624	<0.001	192.683	0.538	3.713	0.882
Model 8	114.435	<0.001	192.872	0.537	2.453	0.964
Model 9	122.014	<0.001	243.688	0.493	12.167	0.144
Model 10	121.946	<0.001	143.756	0.493	17.392	0.026
Model 11	120.428	<0.001	246.621	0.486	12.175	0.144
Model 12	120.213	<0.001	247.036	0.486	9.233	0.323
Model 13	123.470	<0.001	249.346	0.490	9.077	0.336
Model 14	127.316	<0.001	253.851	0.494	11.470	0.176
Model 15	126.940	<0.001	254.227	0.492	4.266	0.832
Model 16	126.441	<0.001	254.726	0.491	3.083	0.929
Model 17	129.959	<0.001	255.208	0.489	6.683	0.571
Model 18	128.992	<0.001	263.010	0.488	5.384	0.716
Model 19	127.528	<0.001	264.473	0.483	6.044	0.642
Model 20	125.968	<0.001	266.034	0.479	7.862	0.447
Model 21	124.348	<0.001	267.654	0.474	8.475	0.389
Model 22	121.957	<0.001	270.045	0.466	14.753	0.064
Model 23	116.413	<0.001	299.662	0.428	12.978	0.113
Model 24	117.240	<0.001	308.429	0.423	9.297	0.318
Model 25	114.753	<0.001	310.926	0.415	8.010	0.432

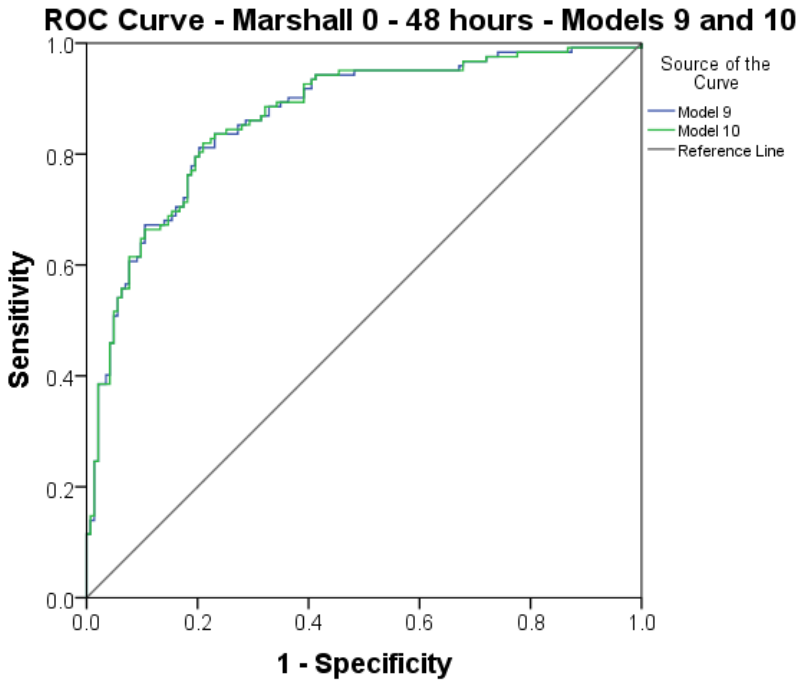
CATEGORY PREDICTORS

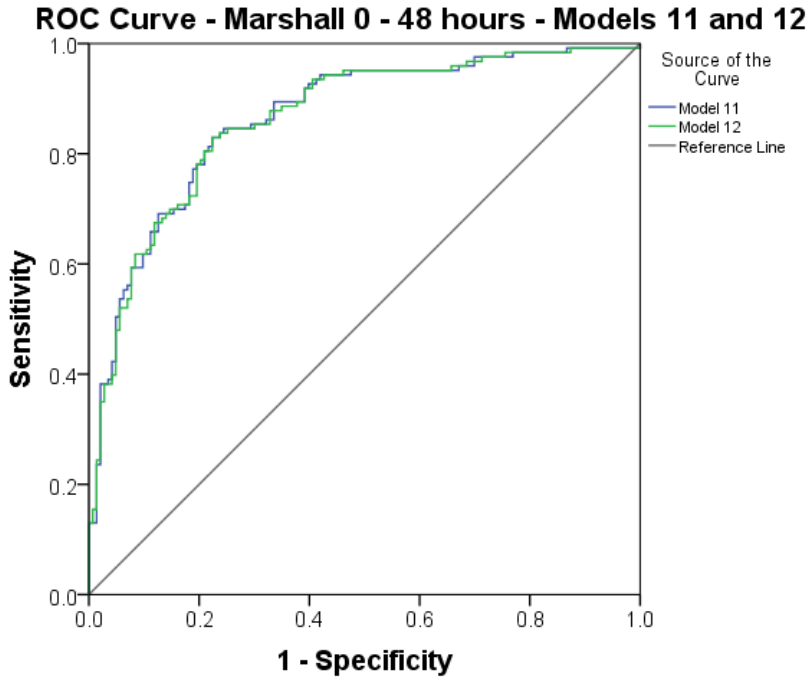
Marshall 0-48 hours	PAC (%)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Model 1	80.9	78.8	82.8	80.4	81.4
Model 2	80.9	78.8	82.8	80.4	81.4
Model 3	80.9	78.8	82.8	80.4	81.4
Model 4	80.9	78.8	82.8	80.4	81.4
Model 5	79.3	77.4	81.0	78.8	79.7
Model 6	79.3	77.4	81.0	78.8	79.7
Model 7	80.2	77.4	82.8	80.4	80.0
Model 8	79.7	77.4	81.9	79.6	79.8
Model 9	78.9	76.2	81.1	77.5	80.0
Model 10	79.2	76.2	81.8	78.2	80.1
Model 11	78.9	76.4	81.1	76.4	80.0
Model 12	78.6	76.4	80.4	75.8	79.9
Model 13	78.9	76.8	80.7	77.4	80.1
Model 14	80.1	78.9	81.1	78.3	81.6
Model 15	79.7	78.1	81.1	78.1	81.1
Model 16	78.6	76.6	80.4	77.2	80.4
Model 17	79.0	77.3	80.4	77.3	80.4
Model 18	79.2	75.6	82.4	78.6	79.7
Model 19	79.2	76.3	81.7	78.1	80.1
Model 20	79.9	77.1	82.4	78.9	80.8
Model 21	81.3	78.6	83.7	80.5	82.1
Model 22	81.0	77.9	83.7	80.3	81.5
Model 23	78.4	75.9	80.6	77.5	79.1
Model 24	77.9	75.0	80.5	77.1	78.6
Model 25	77.6	72.2	82.3	78.2	77.1

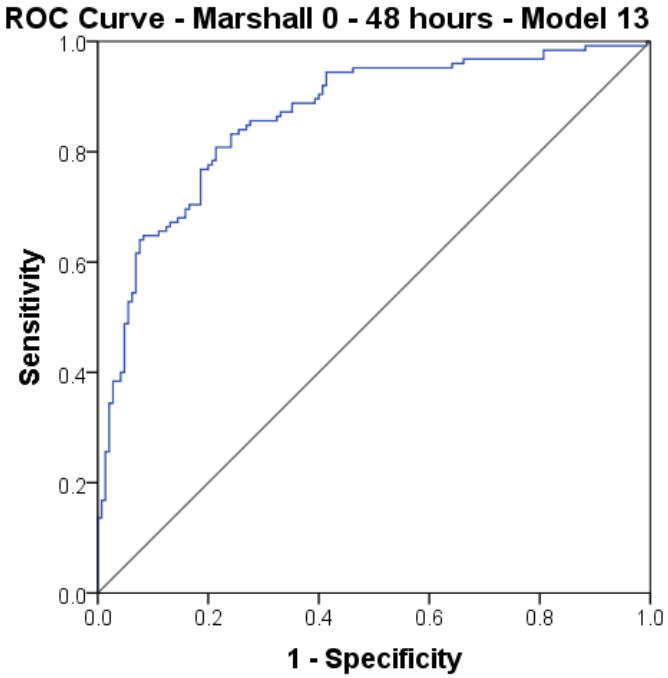
ROC CURVES

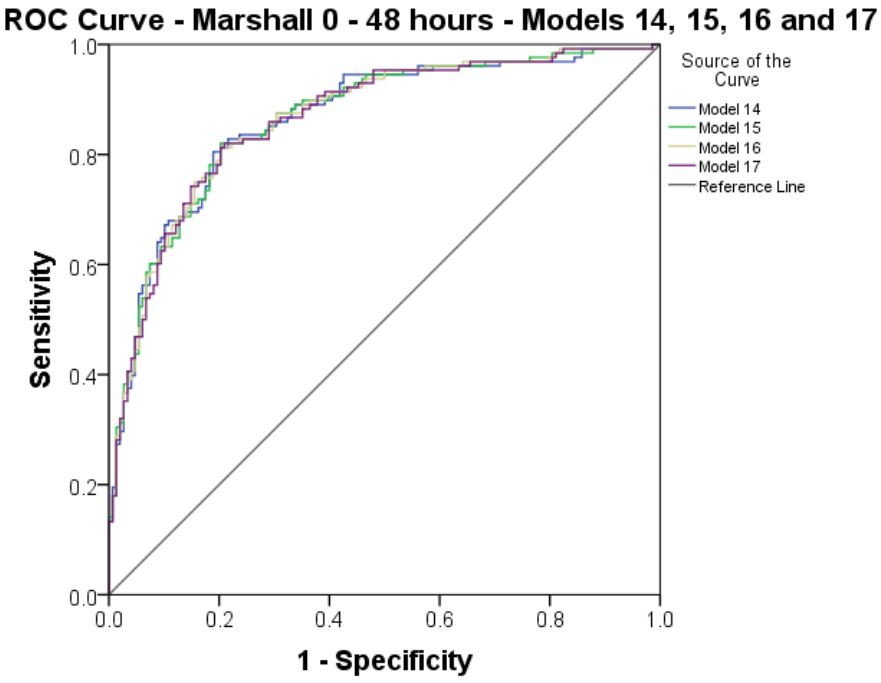

ROC Curve - Marshall 0 - 48 hours - Models 1, 2, 3 and 4
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0
Source of the Curve
Model 1
Model 2
Model 3
Model 4
Reference Line

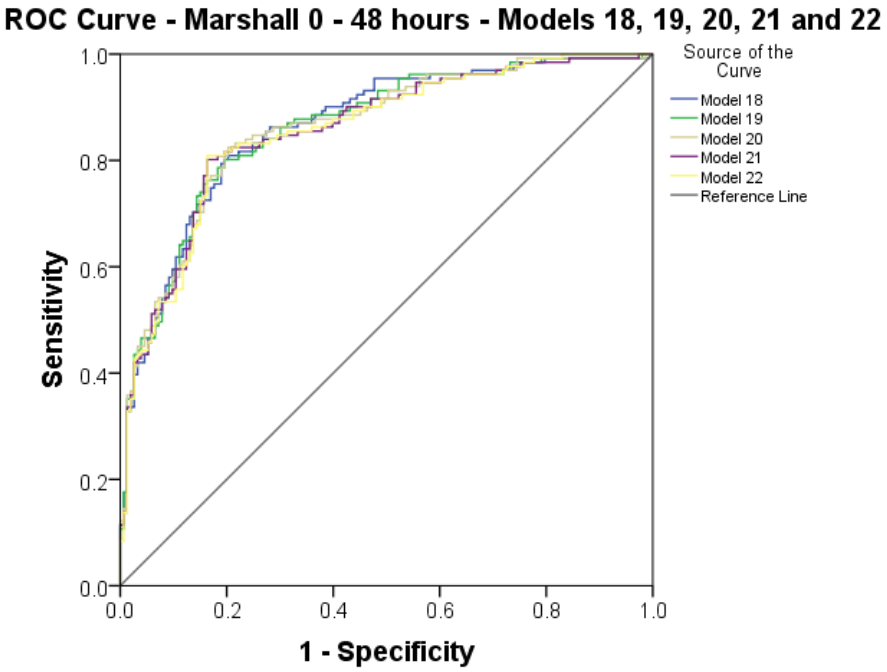

ROC Curve - Marshall 0 - 48 hours - Models 5, 6, 7 and 8
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0
Source of the Curve
Model 5
Model 6
Model 7
Model 8
Reference Line

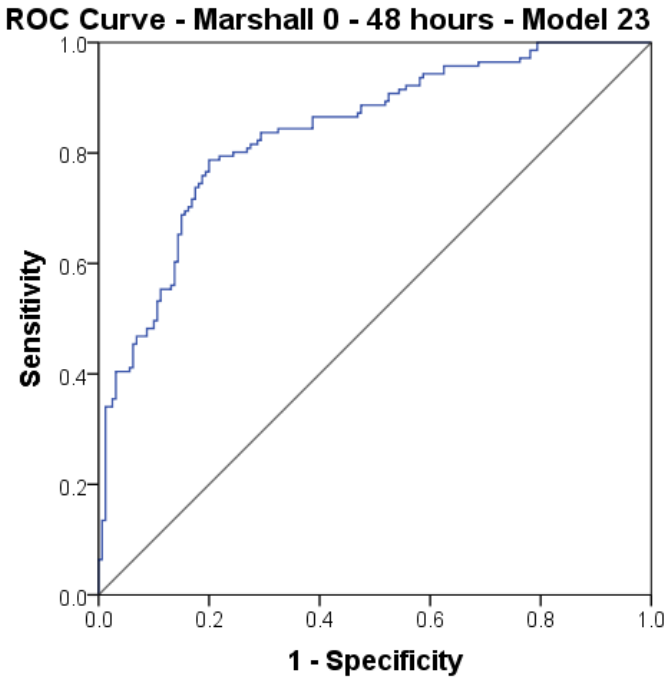

ROC Curve - Marshall 0 - 48 hours - Models 9 and 10
Sensitivity
1 - Specificity
Source of the Curve
Model 9
Model 10
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0

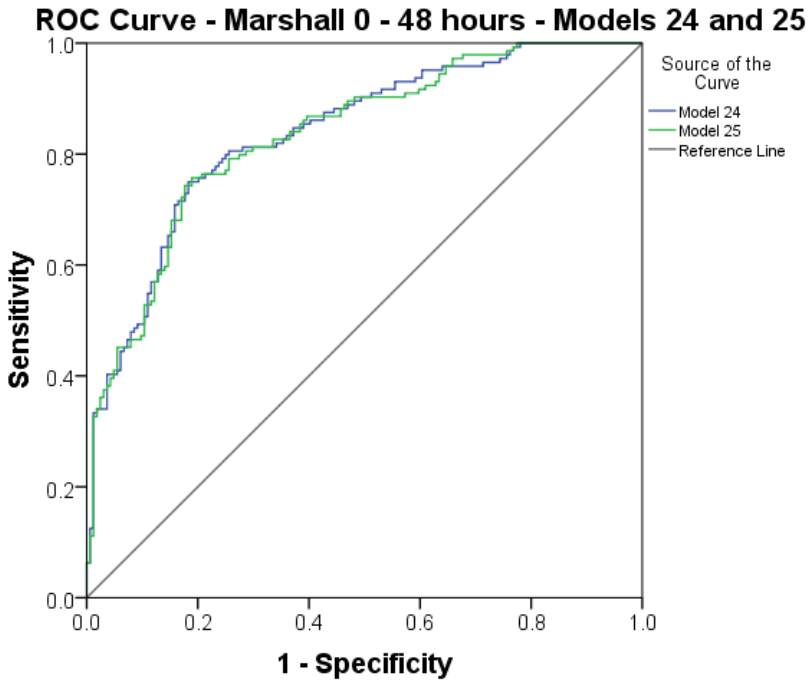

ROC Curve - Marshall 0 - 48 hours - Models 11 and 12
Sensitivity
1 - Specificity
Source of the Curve
Model 11
Model 12
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Marshall 0 - 48 hours - Model 13
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Marshall 0 - 48 hours - Models 14, 15, 16 and 17
Sensitivity
1 - Specificity
Source of the Curve
Model 14
Model 15
Model 16
Model 17
Reference Line
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Marshall 0 - 48 hours - Models 18, 19, 20, 21 and 22
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0
Source of the Curve
Model 18
Model 19
Model 20
Model 21
Model 22
Reference Line


ROC Curve - Marshall 0 - 48 hours - Model 23
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0


ROC Curve - Marshall 0 - 48 hours - Models 24 and 25
Sensitivity
1 - Specificity
0.0
0.2
0.4
0.6
0.8
1.0
Source of the Curve
Model 24
Model 25
Reference Line

Marshall 0-48 hours	ROC AUC	95% CI
Model 1	0.890	0.847, 0.932
Model 2	0.889	0.847, 0.932
Model 3	0.889	0.847, 0.932
Model 4	0.890	0.847, 0.932
Model 5	0.885	0.841, 0.928
Model 6	0.885	0.842, 0.928
Model 7	0.885	0.842, 0.928
Model 8	0.884	0.841, 0.927
Model 9	0.867	0.823, 0.911
Model 10	0.867	0.823, 0.911
Model 11	0.865	0.820, 0.909
Model 12	0.863	0.819, 0.908
Model 13	0.864	0.820, 0.908
Model 14	0.866	0.822, 0.909
Model 15	0.865	0.822, 0.908
Model 16	0.865	0.822, 0.908
Model 17	0.864	0.821, 0.908
Model 18	0.864	0.822, 0.907
Model 19	0.862	0.819, 0.905
Model 20	0.861	0.818, 0.904
Model 21	0.857	0.813, 0.901
Model 22	0.856	0.812, 0.900
Model 23	0.838	0.793, 0.883
Model 24	0.837	0.793, 0.881
Model 25	0.834	0.790, 0.879

SELECTED MODEL STATISTICS

Model 21

Variable	Coefficient	Wald statistic p value	Adjusted OR (95% CI)
Constant	-3.449		
CV disease	-1.584	0.158	0.21 (0.02, 1.85)
Respiratory disease	0.698	0.135	2.01 (0.81, 5.01)
Head injury	1.365	<0.001	3.92 (1.87, 8.20)
Abdominal injury	0.652	0.056	1.92 (0.99, 3.75)
FiO2		<0.001	
41-60%	-1.577	0.005	0.21 (0.07, 0.62)
61-80%	-0.862	0.229	0.42 (0.10, 1.72)
> 80%	0.150	0.751	1.16 (0.46, 2.95)
APTT	0.008	0.109	1.01 (1.00, 1.02)
BD	-0.064	0.084	0.94 (0.87, 1.01)
Lactate	0.162	0.083	1.18 (0.98, 1.41)
IV fluids	0.001	<0.001	1.00 (1.00, 1.00)
Vasopressors	0.846	0.010	2.33 (1.22, 4.45)

APPENDIX 15 COMPARISON OF MODEL POPULATIONS

15.1. DENVER COMBINED AND EXTENDED MODELS – COMPARISON OF INCLUDED/EXCLUDED PATIENTS

Denver test set model	Variable	Included patients	Excluded patients	p value
0-2 hours		**n = 257**	**n = 234**	
	Age (years)[1]	39.7 (37.5, 42.0)	36.2 (34.0. 38.3)	0.027
	Sex (% male)	192 (74.7%)	179 (76.5%)	0.645
	ISS	25.2 (23.7, 26.7)	25.5 (23.8, 27.1)	0.814
	NISS	34.2 (32.4, 36.0)	35.3 (33.2, 37.4)	0.429
	ICU stay (days)	7.4 (6.2, 8.5)	7.9 (6.6, 9.2)	0.573
	Hospital stay (days)	32.0 (28.3, 25.6)	27.5 (23.7, 31.3)	0.095
	Deaths (%)	26 (10.1%)	26 (11.1%)	0.721
	Operation (%)	196 (76.3%)	188 (80.3%)	0.274
0-4 hours		**n = 280**	**n = 211**	
	Age (years)[1]	39.4 (37.3, 41.6)	36.1 (33.8, 38.5)	0.044
	Sex (% male)	211 (75.4%)	160 (75.8%)	0.904
	ISS	24.9 (23.5, 26.3)	25.9 (24.1, 27.7)	0.376
	NISS	33.7 (32.0, 35.5)	36.1 (33.8, 38.3)	0.100
	ICU stay (days)	7.2 (6.2, 8.2)	8.2 (6.7, 9.6)	0.298
	Hospital stay (days)	32.3 (28.6, 36.0)	26.5 (22.9, 30.0)	0.026
	Deaths (%)	27 (9.6%)	25 (11.8%)	0.432
	Operation (%)	217 (77.5%)	167 (79.1%)	0.662
0-6 hours		**n = 301**	**n = 190**	
	Age (years)[1]	38.5 (36.6, 40.6)	37.0 (34.5, 39.6)	0.366
	Sex (% male)	227 (75.4%)	144 (75.8%)	0.925
	ISS	25.4 (24.0, 26.7)	25.3 (23.4, 27.1)	0.943
	NISS	34.3 (32.6, 36.0)	35.4 (33.1, 37.8)	0.421
	ICU stay (days)	7.3 (6.3, 8.3)	8.1 (6.6, 9.7)	0.409
	Hospital stay (days)	31.9 (28.4, 35.4)	26.6 (22.7, 30.4)	0.054
	Deaths (%)	39 (10.4%)	13 (11.2%)	0.572
	Operation (%)	236 (78.4%)	148 (77.9%)	0.894

0-12 hours		n = 375	n = 116	
	Age (years)[1]	38.2 (36.5, 40.1)	36.7 (33.6, 40.2)	0.440
	Sex (% male)	288 (76.8%)	83 (71.6%)	0.250
	ISS	25.5 (24.2, 26.8)	24.8 (22.5, 27.1)	0.628
	NISS	34.7 (33.1, 36.2)	35.0 (32.0, 37.9)	0.852
	ICU stay (days)	7.3 (6.4, 8.2)	8.5 (6.4, 10.7)	0.296
	Hospital stay (days)	30.9 (27.8, 34.1)	26.2 (21.8, 30.6)	0.141
	Deaths (%)	39 (10.4%)	13 (11.2%)	0.805
	Operation (%)	296 (78.9%)	88 (75.6%)	0.484
0-24 hours		**n = 410**	**n = 81**	
	Age (years)[1]	37.8 (36.1, 39.5)	38.8 (35.1, 43.0)	0.612
	Sex (% male)	314 (76.6%)	57 (70.4%)	0.234
	ISS	25.7 (24.5, 27.0)	23.0 (20.3, 25.7)	0.082
	NISS	35.0 (33.6, 36.5)	33.0 (29.5, 36.6)	0.291
	ICU stay (days)	7.5 (6.6, 8.4)	8.2 (5.8, 10.6)	0.646
	Hospital stay (days)	30.4 (27.4, 33.3)	27.1 (21.9, 32.3)	0.378
	Deaths (%)	45 (11.0%)	7 (8.6%)	0.533
	Operation (%)	321 (78.3%)	63 (77.8%)	0.918
0-48 hours		**n = 447**	**n = 44**	
	Age (years)[1]	38.1 (36.5, 39.8)	36.2 (31.3 , 41.8)	0.586
	Sex (% male)	339 (75.8%)	32 (72.7%)	0.647
	ISS	25.3 (24.2, 26.5)	25.3 (21.2, 29.5)	0.993
	NISS	34.5 (33.1, 36.0)	37.0 (31.4, 42.0)	0.402
	ICU stay (days)	7.5 (6.7, 8.4)	8.4 (4.5, 12.4)	0.722
	Hospital stay (days)	29.7 (27.0, 32.5)	30.1 (23.0, 38.9)	0.848
	Deaths (%)	48 (10.7%)	4 (9.1%)	0.735
	Operation (%)	349 (78.1%)	35 (79.5%)	0.822

[1] Geometric mean

Denver extended set model	Variable	Included patients	Excluded patients	p value
0-12 hours		**n = 196**	**n = 295**	
	Age (years)[1]	37.2 (34.9, 39.8)	38.4 (36.4, 40.5)	0.459
	Sex (% male)	142 (72.4%)	229 (77.6%)	0.191
	ISS	27.5 (25.7, 29.2)	23.9 (22.4, 25.3)	0.002
	NISS	36.7 (34.6, 38.8)	33.4 (31.6, 35.2)	0.019
	ICU stay (days)	8.1 (7.0, 9.3)	7.2 (6.1, 8.4)	0.286
	Hospital stay (days)	31.6 (27.7, 35.5)	28.7 (25.1, 32.2)	0.277
	Deaths (%)	18 (9.2%)	34 (11.5%)	0.409
	Operation (%)	146 (74.5%)	238 (80.7%)	0.104
0-24 hours		**n = 291**	**n = 200**	
	Age (years)[1]	36.9 (35.0, 39.0)	39.5 (37.0, 42.2)	0.113
	Sex (% male)	215 (73.9%)	156 (78.0%)	0.297
	ISS	27.2 (25.8, 28.7)	22.5 (20.7, 24.2)	<0.001
	NISS	35.4 (34.7, 38.1)	32.2 (30.0, 34.4)	0.003
	ICU stay (days)	8.0 (7.0, 9.1)	7.0 (5.5, 8.5)	0.202
	Hospital stay (days)	32.1 (28.6, 35.6)	26.5 (22.6, 30.4)	0.041
	Deaths (%)	27 (9.3%)	25 (12.5%)	0.254
	Operation (%)	224 (77.0%)	160 (80.0%)	0.425
0-48 hours		**n = 355**	**n = 136**	
	Age (years)[1]	36.9 (35.2, 38.7)	40.9 (37.7, 44.4)	0.028
	Sex (% male)	265 (74.6%)	106 (77.9%)	0.447
	ISS	26.6 (25.3, 27.8)	22.0 (19.7, 24.2)	<0.001
	NISS	35.7 (34.2, 37.2)	32.1 (29.2, 34.9)	0.028
	ICU stay (days)	7.9 (7.0, 8.9)	6.7 (4.9, 8.5)	0.178
	Hospital stay (days)	30.4 (27.3, 33.4)	28.5 (23.1, 33.8)	0.523
	Deaths (%)	30 (8.5%)	22 (16.2%)	0.013
	Operation (%)	278 (78.3%)	106 (77.9%)	0.929

[1] Geometric mean

15.2. SOFA Combined and Extended Models – Comparison of Included/Excluded Patients

SOFA test set model	Variable	Included patients	Excluded patients	p value
0-2 hours		**n = 251**	**n = 240**	
	Age (years)[1]	39.1 (37.3, 41.9)	36.3 (34.2, 38.5)	0.047
	Sex (% male)	188 (74.9%)	183 (76.3%)	0.728
	ISS	25.3 (23.7, 26.8)	25.4 (23.7, 27.0)	0.939
	NISS	34.3 (32.5, 36.1)	35.2 (33.2, 37.3)	0.497
	ICU stay (days)	7.3 (6.2, 8.5)	7.9 (6.6, 9.2)	0.538
	Hospital stay (days)	31.7 (28.1, 35.4)	27.8 (24.0, 31.6)	0.141
	Deaths (%)	26 (10.4%)	26 (10.8%)	0.864
	Operation (%)	193 (76.9%)	191 (79.6%)	0.470
0-4 hours		**n = 273**	**n = 218**	
	Age (years)[1]	39.2 (37.1, 41.4)	36.4 (34.1, 38.8)	0.085
	Sex (% male)	206 (75.5%)	165 (75.7%)	0.953
	ISS	25.0 (23.5, 26.4)	25.8 (24.1, 27.5)	0.476
	NISS	33.8 (32.0, 35.5)	35.9 (33.8, 38.1)	0.123
	ICU stay (days)	7.2 (6.1, 8.2)	8.2 (6.8, 9.6)	0.287
	Hospital stay (days)	32.2 (28.4, 35.9)	26.9 (23.3, 30.4)	0.048
	Deaths (%)	27 (9.9%)	25 (11.5%)	0.572
	Operation (%)	213 (78.0%)	171 (78.4%)	0.911
0-6 hours		**n = 294**	**n = 197**	
	Age (years)[1]	38.5 (36.5, 40.6)	37.1 (34.7, 39.7)	0.417
	Sex (% male)	222 (75.5%)	149 (75.6%)	0.975
	ISS	25.3 (23.9, 26.7)	25.3 (23.5, 27.1)	0.983
	NISS	34.1 (32.5, 35.8)	35.6 (33.3, 37.9)	0.292
	ICU stay (days)	7.2 (6.2, 8.2)	8.3 (6.8, 9.8)	0.247
	Hospital stay (days)	32.0 (28.4, 35.6)	26.6 (22.8, 30.3)	0.047
	Deaths (%)	30 (10.2%)	22 (11.2%)	0.734
	Operation (%)	232 (78.9%)	152 (77.2%)	0.644

0-12 hours		**n = 366**	**n = 125**	
	Age (years)[1]	38.3 (36.6, 40.2)	36.7 (33.7, 40.1)	0.419
	Sex (% male)	281 (76.8%)	90 (72.0%)	0.283
	ISS	25.3 (24.0, 26.6)	25.3 (23.0, 27.6)	1.000
	NISS	34.5 (33.0, 36.1)	35.4 (32.5, 38.2)	0.583
	ICU stay (days)	7.2 (6.3, 8.2)	8.7 (6.7, 10.8)	0.166
	Hospital stay (days)	31.1 (27.9, 34.3)	26.0 (21.9, 30.2)	0.062
	Deaths (%)	39 (10.7%)	13 (10.4%)	0.936
	Operation (%)	289 (79.0%)	95 (76.0%)	0.489

0-24 hours		**n = 399**	**n = 92**	
	Age (years)[1]	37.9 (36.2, 39.7)	38.0 (34.4, 41.9)	0.936
	Sex (% male)	307 (76.9%)	64 (69.6%)	0.138
	ISS	25.6 (24.4, 26.8)	24.1 (21.4, 26.7)	0.305
	NISS	34.9 (33.4, 36.4)	34.0 (30.7, 37.3)	0.625
	ICU stay (days)	7.5 (6.6, 8.4)	8.1 (5.9, 10.2)	0.728
	Hospital stay (days)	30.7 (27.6, 33.7)	26.1 (21.5, 30.8)	0.196
	Deaths (%)	45 (11.3%)	7 (7.6%)	0.303
	Operation (%)	314 (78.7%)	70 (76.1%)	0.585

0-48 hours		**n = 435**	**n = 56**	
	Age (years)[1]	38.2 (36.6, 40.0)	35.4 (31.1, 40.3)	0.317
	Sex (% male)	331 (76.1%)	40 (71.4%)	0.445
	ISS	25.2 (24.0, 26.4)	26.5 (22.8, 30.2)	0.472
	NISS	34.4 (33.0, 35.8)	37.5 (33.1, 42.0)	0.163
	ICU stay (days)	7.6 (6.7, 8.5)	8.0 (4.9, 11.0)	0.910
	Hospital stay (days)	30.0 (27.2, 32.9)	28.5 (22.0, 34.7)	0.689
	Deaths (%)	48 (11.0%)	4 (7.1%)	0.373
	Operation (%)	341 (78.4%)	43 (76.8%)	0.784

[1] Geometric mean

SOFA extended set model	Variable	Included patients	Excluded patients	p value
0-12 hours		**n = 175**	**n = 316**	
	Age (years)[1]	36.8 (34.4, 39.4)	38.6 (36.6, 40.7)	0.273
	Sex (% male)	130 (74.3%)	241 (76.3%)	0.625
	ISS	27.9 (26.0, 29.7)	23.4 (22.5, 25.3)	0.001
	NISS	37.6 (35.3, 39.8)	33.1 (31.4, 34.8)	0.002
	ICU stay (days)	7.8 (6.5, 9.1)	7.5 (6.4, 8.6)	0.732
	Hospital stay (days)	28.3 (25.0, 31.7)	30.7 (27.0, 34.3)	0.404
	Deaths (%)	16 (9.1%)	36 (11.4%)	0.438
	Operation (%)	131 (74.9%)	253 (80.1%)	0.181
0-24 hours		**n = 236**	**n = 255**	
	Age (years)[1]	36.3 (34.2, 38.4)	39.6 (37.3, 42.0)	0.036
	Sex (% male)	182 (77.1%)	189 (74.1%)	0.439
	ISS	27.7 (26.1, 29.3)	23.1 (21.6, 24.6)	<0.001
	NISS	37.2 (35.3, 39.2)	32.4 (30.5, 34.2)	<0.001
	ICU stay (days)	7.7 (6.6, 8.8)	7.5 (6.2, 8.8)	0.788
	Hospital stay (days)	29.3 (25.8, 32.8)	30.4 (26.4, 34.3)	0.698
	Deaths (%)	21 (8.9%)	31 (12.2%)	0.241
	Operation (%)	180 (76.3%)	204 (80.0%)	0.317
0-48 hours		**n = 279**	**n = 212**	
	Age (years)[1]	36.9 (35.0, 38.9)	39.4 (36.9, 42.0)	0.128
	Sex (% male)	214 (76.7%)	157 (74.1%)	0.499
	ISS	26.6 (25.1, 28.0)	23.6 (21.9, 25.3)	0.010
	NISS	36.1 (34.3, 37.8)	32.9 (30.9, 35.0)	0.026
	ICU stay (days)	8.0 (6.9, 9.1)	7.1 (5.8, 8.5)	0.300
	Hospital stay (days)	28.6 (25.6, 31.7)	31.5 (26.9, 36.1)	0.320
	Deaths (%)	24 (8.6%)	28 (13.2%)	0.100
	Operation (%)	217 (77.8%)	167 (78.8%)	0.791

[1] Geometric mean

15.3. MARSHALL COMBINED AND EXTENDED MODELS – COMPARISON OF INCLUDED/EXCLUDED PATIENTS

Marshall test set model	Variable	Included patients	Excluded patients	p value
0-2 hours		**n = 358**	**n = 133**	
	Age (years)[1]	38.1 (36.2, 40.0)	37.6 (34.9, 40.5)	0.828
	Sex (% male)	262 (73.2%)	109 (82.0%)	0.044
	ISS	25.3 (24.0, 26.6)	25.4 (23.1, 27.8)	0.932
	NISS	34.3 (32.8, 35.8)	35.9 (32.9, 38.9)	0.325
	ICU stay (days)	7.6 (6.6, 8.6)	7.6 (6.6, 8.6)	0.891
	Hospital stay (days)	32.1 (28.9, 35.3)	23.5 (19.3, 27.7)	0.002
	Deaths (%)	37 (10.3%)	15 (11.3%)	0.763
	Operation (%)	270 (75.4%)	114 (85.7%)	0.014
0-4 hours		**n = 372**	**n = 119**	
	Age (years)[1]	38.1 (36.3, 40.0)	37.4 (34.6, 40.5)	0.758
	Sex (% male)	274 (73.7%)	97 (81.5%)	0.083
	ISS	25.1 (23.8, 26.3)	26.1 (23.7, 28.6)	0.427
	NISS	34.1 (32.6, 35.6)	36.8 (32.6, 35.6)	0.118
	ICU stay (days)	7.5 (6.6, 8.5)	7.8 (6.0, 9.7)	0.876
	Hospital stay (days)	31.7 (28.6, 34.8)	23.8 (19.3, 28.4)	0.006
	Deaths (%)	37 (9.9%)	15 (12.6%)	0.412
	Operation (%)	282 (75.8%)	102 (85.7%)	0.023
0-6 hours		**n = 382**	**n = 109**	
	Age (years)[1]	38.3 (36.5, 40.1)	36.8 (33.9, 40.0)	0.483
	Sex (% male)	281 (73.6%)	90 (82.6%)	0.054
	ISS	25.2 (23.9, 26.4)	25.8 (23.3, 28.4)	0.646
	NISS	34.2 (32.7, 35.7)	36.6 (33.4, 39.8)	0.163
	ICU stay (days)	7.6 (6.6, 8.5)	7.7 (5.8, 9.7)	0.964
	Hospital stay (days)	31.4 (28.3, 34.4)	24.2 (19.3, 29.2)	0.018
	Deaths (%)	39 (10.2%)	13 (11.9%)	0.607
	Operation (%)	292 (76.4%)	92 (84.4%)	0.076

0-12 hours		**n = 423**	**n = 68**	
	Age (years)[1]	38.3 (36.6, 40.0)	35.7 (32.1, 39.8)	0.322
	Sex (% male)	318 (75.2%)	53 (77.9%)	0.623
	ISS	25.3 (24.1, 26.5)	25.4 (22.3, 28.5)	0.957
	NISS	34.5 (33.1, 36.0)	36.2 (32.1, 40.3)	0.425
	ICU stay (days)	7.4 (6.5, 8.3)	9.0 (6.2, 11.8)	0.294
	Hospital stay (days)	30.5 (27.5, 33.4)	25.8 (20.8, 30.8)	0.134
	Deaths (%)	46 (10.9%)	6 (8.8%)	0.610
	Operation (%)	329 (77.8%)	55 (80.9%)	0.565

0-24 hours		**n = 442**	**n = 49**	
	Age (years)[1]	37.9 (36.2, 39.5)	38.8 (34.1, 44.1)	0.699
	Sex (% male)	336 (76.0%)	35 (71.4%)	0.478
	ISS	25.4 (24.3, 26.6)	24.3 (20.1, 28.1)	0.570
	NISS	34.6 (33.2, 36.0)	36.4 (31.2, 41.7)	0.437
	ICU stay (days)	7.4 (6.5, 8.3)	9.7 (5.9, 13.4)	0.209
	Hospital stay (days)	30.0 (27.1, 32.8)	28.5 (21.6, 35.4)	0.735
	Deaths (%)	47 (10.6%)	5 (10.2%)	0.926
	Operation (%)	346 (78.3%)	38 (77.6%)	0.907

0-48 hours		**n = 462**	**n = 29**	
	Age (years)[1]	38.0 (36.4, 39.7)	36.2 (30.3, 43.2)	0.708
	Sex (% male)	351 (76.0%)	20 (69.0%)	0.394
	ISS	25.2 (24.1, 26.3)	27.5 (21.4, 33.6)	0.381
	NISS	34.4 (33.1, 35.8)	40.4 (32.5, 48.3)	0.063
	ICU stay (days)	7.4 (6.6, 8.3)	11.4 (5.2, 17.5)	0.112
	Hospital stay (days)	29.6 (26.9, 32.3)	34.0 (22.6, 45.4)	0.546
	Deaths (%)	48 (10.4%)	4 (13.8%)	0.563
	Operation (%)	363 (78.6%)	21 (72.4%)	0.436

[1] Geometric mean

Marshall extended set model	Variable	Included patients	Excluded patients	p value
0-12 hours		**n = 187**	**n = 304**	
	Age (years)[1]	36.4 (34.0, 38.9)	39.0 (37.0, 41.1)	0.109
	Sex (% male)	140 (74.9%)	231 (76.05)	0.779
	ISS	28.1 (26.3, 30.0)	23.6 (22.2, 25.0)	<0.001
	NISS	37.8 (35.6, 40.0)	32.8 (31.1, 34.5)	<0.001
	ICU stay (days)	7.7 (6.5, 8.9)	7.5 (6.4, 8.7)	0.787
	Hospital stay (days)	28.7 (25.3, 32.0)	30.6 (26.9, 34.3)	0.498
	Deaths (%)	17 (9.1%)	35 (11.5)	0.397
	Operation (%)	136 (72.7%)	248 (81.6%)	0.021
0-24 hours		**n = 242**	**n = 249**	
	Age (years)[1]	36.3 (34.3, 38.5)	39.6 (37.3, 42.0)	0.039
	Sex (% male)	188 (77.7%)	183 (73.5%)	0.280
	ISS	27.4 (25.8, 29.0)	23.2 (21.7, 24.8)	<0.001
	NISS	36.9 (34.9, 38.8)	32.6 (30.7, 34.5)	0.002
	ICU stay (days)	7.6 (6.6, 8.7)	7.6 (6.2, 8.9)	0.895
	Hospital stay (days)	29.4 (26.0, 32.8)	30.3 (26.3, 34.3)	0.742
	Deaths (%)	20 (8.3%)	32 (12.9%)	0.099
	Operation (%)	182 (75.2%)	202 (81.1%)	0.112
0-48 hours		**n = 285**	**n = 206**	
	Age (years)[1]	36.6 (34.7, 38.6)	40.0 (37.4, 42.7)	0.038
	Sex (% male)	220 (77.2%)	151 (73.3%)	0.322
	ISS	26.5 (25.1, 27.9)	23.6 (21.9, 25.4)	0.013
	NISS	35.9 (34.1, 37.6)	33.1 (31.0, 35.2)	0.050
	ICU stay (days)	7.9 (6.8, 9.0)	7.2 (5.8, 8.6)	0.421
	Hospital stay (days)	28.4 (25.3, 31.4)	32.0 (27.3, 36.6)	0.195
	Deaths (%)	24 (8.4%)	28 (13.6%)	0.066
	Operation (%)	221 (77.5%)	163 (79.1%)	0.675

[1] Geometric mean