NOCA National Office of Clinical Audit

MTA Major Trauma Audit

MAJOR TRAUMA AUDIT

NATIONAL REPORT 2019 AND 2020

APPENDICES

Contents

APPENDIX 1 AUDIT OBJECTIVES

AUDIT OBJECTIVES

AIM AND OBJECTIVES

Aim

The Major Trauma Audit will drive system-wide quality improvement to achieve the best outcomes for trauma patients in Ireland.

Objectives

- To support the collection of high-quality data (in line with Health Information and Quality Authority standards) on all major trauma patients in Ireland for local, national and international reporting and comparison.
- To promote the use of the data for reflective clinical practice, peer review and quality improvement in order to improve quality of care and reduce death and disability from trauma.
- To provide high-quality data in order to enable research.
- To work towards collecting health-related quality-of-life and functional outcome measures which provide greater sensitivity to patient-centred outcomes.
- To capture the patient voice/experience and disseminate audit findings to patients and the public in an accessible manner.

APPENDIX 2: INCLUSION CRITERIA

The decision to include a patient should be based on the following 3 points:
1. ALL TRAUMA PATIENTS IRRESPECTIVE OF AGE
2. WHO FULFIL ONE OF THE FOLLOWING LENGTH OF STAY CRITERIA

DIRECT ADMISSIONS	PATIENTS TRANSFERRED IN
Trauma admissions whose length of stay is 3 days 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 or ICU/HDU bed whose combined hospital stay at both sites is 3 days 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) *Patients transferred in for rehabilitation only should not be submitted to TARN.*

3. AND WHOSE ISOLATED INJURIES MEET THE FOLLOWING CRITERIA

BODY REGION OR SPECIFIC INJURY	INCLUDED – IN ISOLATION (EXCEPT WHERE SPECIFIED)	EXCLUDED – IN ISOLATION (EXCEPT WHERE SPECIFIED)
HEAD	All brain or skull injuries	LOC or injuries to scalp
THORAX	All internal injuries	
ABDOMEN	All internal injuries	
SPINE	Cord injury, fracture, dislocation or nerve root injury.	Spinal strain or sprain.
FACE	Fractures documented as: Significantly Displaced, open, compound or comminuted. All Lefort fractures All panfacial fractures. All Orbital Blowout fractures	Fractures documented as Closed and simple or stable.
NECK	Any Organ or vascular injury or hyoid fracture	Nerve Injuries Skin Injuries
FEMORAL FRACTURE	All Shaft, Distal, Head or Subtrochanteric fractures, **regardless of Age.** Isolated Neck of Femur or Inter/ Greater trochanteric fractures **<65 years old**	Isolated Neck of femur or Inter/Greater trochanteric fractures ≥ **65 years.**
FOOT OR HAND: JOINT OR BONE	Crush or amputation only.	Any fractures &/or dislocations, even if Open &/or multiple
FINGER OR TOE	None	All injuries to digits, even if Open fractures, amputation or crush &/or multiple injuries.

BODY REGION OR SPECIFIC INJURY	INCLUDED – IN ISOLATION (EXCEPT WHERE SPECIFIED)	EXCLUDED – IN ISOLATION (EXCEPT WHERE SPECIFIED)
LIMB – UPPER (EXCEPT HAND/FINGERS)	Any Open injury. Any 2 limb fractures &/or dislocations.	Any Closed unilateral injury fractures, (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 fractures, (including multiple closed fractures & or dislocations or the same limb)
PELVIS	All isolated fractures to Ischium, Sacrum, Coccyx, Ileum, acetabulum. Multiple pubic rami fractures. Single pubic rami fracture <65 years old. Any fracture involving SIJ or Symphysis pubis.	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. (>50% body region)	Simple skin lacerations or penetrating injuries with blood loss < 20% (1000mls); single or multiple. Contusions or abrasions: single or multiple. Minor degloving injury. (<50% body region)
BURN	Any full thickness burn or Partial/superficial burn >10% body surface area	Partial or superficial burn <10% body surface area.
INHALATION	All included	
FROSTBITE	Severe frostbite	Superficial frostbite
ASPHYXIA	All	None
DROWNING	All	None
EXPLOSION	All	None
HYPOTHERMIA	Accompanied by another TARN eligible injury	Hypothermia in isolation
ELECTRICAL	All	None

ANATOMICAL INJURY DESCRIPTIONS

INJURY DETAIL

Injury detail is of **paramount importance to any TARN submission**, therefore all injuries sustained by a patient must be recorded on every submission.

Information relating to injuries should be obtained from the following sources: clinician's notes, nursing notes, radiology reports, operative notes, discharge summaries and post mortem reports.

Guidelines to help with injury documentation, record:

- Length, depth or grade of lacerations (especially to internal organs)
- Depth, size and location of haemorrhages and contusions (especially in the brain)
- Open or closed fractures
- Stability & site of fractures (e.g. comminuted/displaced shaft/proximal/distal fracture)
- Articular (joint) involvement (e.g. intra-articular, extra-articular)
- Blood loss
- Vessel damage
- Location & number of rib fractures
- Compression or effacement of ventricles/brain stem cisterns
- Neurology associated with spinal cord injuries
- Instability, blood loss, joint involvement or vascular damage associated with pelvic fractures
- Cardiac arrest associated with asphyxia or drowning

UNCONFIRMED INJURIES

Injuries should only be recorded when the diagnosis is confirmed.
Never record possible, probable or suspected injuries.

RADIOLOGY REPORTS AND POST-MORTEMS

The user should paste a radiology report into the relevant imaging section of any electronic data collection and reporting (EDCR) submission.

When a report is pasted into an EDCR submission, it will automatically appear on the AIS coding section, thus ensuring that the TARN coder has all the information in front of them before assigning AIS codes.

Post mortem results should be used whenever available even if this results in a delay in dispatching your submission.

All injury coding using AIS is done centrally at TARN, but users can see every AIS code issued by TARN by clicking into the AIS coding section once a submission has been approved.

Accurate and detailed injury descriptions will enable a more precise Injury Severity Score and therefore a more accurate Probability of Survival calculation.

APPENDIX 3: ABBREVIATED INJURY SCALE (AIS)

BACKGROUND INFORMATION

A.I.S. was first published in 1969 by the Association for the Advancement of Automotive Medicine (A.A.A.M.). The latest edition (AIS2005) is now available from the AAAM website: www.AAAM..org at cost of $250 per dictionary.

STRUCTURE

- Based on anatomical injury.
- A single AIS score for each injury.
- More than 1500 injuries listed.
- Scores range from 1 to 6, the higher the score the more severe the injury.
- The intervals between the scores are not always consistent e.g. the difference between AIS3 and AIS4 is not necessarily the same as the difference between AIS1 and AIS2.

EXAMPLE AIS CODES

INJURY	NUMERICAL IDENTIFIER	AIS	SEVERITY
Fracture 1 rib	450201	1	Minor
Fractured 2 ribs	450202	2	Moderate
Haemopneumothorax	442205	3	Serious
Bilateral lung lacerations	441450	4	Severe
Bilateral flail chest	450214	5	Critical
Massive chest crush	413000	6	Maximum

CODING STRUCTURE EXPLAINED

BODY REGION	TYPE OF ANATOMICAL STRUCTURE	SPECIFIC ANATOMICAL STRUCTURE	SPECIFIC ANATOMICAL STRUCTURE	LEVEL	LEVEL
4	5	0	2	0	2

AIS
2

All existing codes on the TARN database that were coded with AIS98 (previous version of Dictionary) were successfully mapped to corresponding AIS2005 codes, so continuing comparisons can be made.

APPENDIX 4: MTA GOVERNANCE COMMITTEE MEETING ATTENDANCE 2021

MTA Governance Committee Attendance 2021					
Representative	20/01/21	14/04/21	22/09/21	17/11/21	Total
Louise Brent	✓	✓	✓	✓	4/4
Dr Tomás Breslin	x	✓	✓	✓	3/4
Ann Calvert	x	x	x	x	0/4
Mr Darach Crimmins	x	✓	x	x	1/4
Prof. Conor Deasy	✓	✓	✓	✓	4/4
Dr Rachael Doyle	✓	✓	✓	✓	4/4
Dr Joan Fitzgerald	✓	✓	✓	✓	4/4
Naomi Fitzgibbon	✓	x	✓	✓	3/4
Dr Jennifer Hastings	✓	x	✓	✓	3/4
Nora Hourigan	✓	✓	x	✓	3/4
Macartan Hughes	x	✓	✓	✓	3/4
Mr Dara Kavanagh	x	x	x	x	0/4
Dr Gerry Lane	x	x	x	x	0/4
Dr George Little	✓	x	x	✓	2/4
Marion Lynders	✓	✓	✓	✓	4/4
Dr Peter MacMahon	✓	x	✓	x	2/4
Dr Ciara Martin	✓	✓	✓	x	3/4
Dr Caroline Mason Mohan	x	✓	✓	✓	3/4
Fiona McDaid	x	✓	✓	✓	3/4
Dr Jacinta McElligott	✓	✓	x	✓	3/4
Mr Morgan McMonagle	✓	x	x	✓	2/4
Mr Brendan O'Daly	✓	✓	x	x	2/4
Martin O'Reilly	n/a	n/a	✓	x	1/2
Mr Barry O'Sullivan	x	x	x	x	0/4
Donna Price	n/a	✓	x	✓	2/3
Rosie Quinn	✓	✓	x	✓	3/4

APPENDIX 5: FREQUENCY TABLES

FIGURE 3.1: DATA COVERAGE PERCENTAGES BY HOSPITAL AND YEAR, 2019 AND 2020

	2019	2020
Beaumont Hospital	100%	100%
Connolly Hospital	100%	100%
Mater Misericordiae University Hospital	100%	100%
Mayo University Hospital	100%	100%
Our Lady of Lourdes Hospital Drogheda	100%	100%
Tipperary University Hospital	100%	100%
St Luke's General Hospital, Carlow/Kilkenny	100%	100%
Wexford General Hospital	100%	100%
University Hospital Kerry	100%	94%
Cork University Hospital	100%	89%
Cavan General Hospital	100%	16%
University Hospital Galway	97%	100%
Children's Health Ireland at Temple Street	84%	70%
University Hospital Waterford	79%	91%
St James's Hospital	75%	55%
Tallaght University Hospital	74%	74%
Children's Health Ireland at Crumlin	61%	22%
Midland Regional Hospital Tullamore	58%	5%
University Hospital Limerick	53%	8%
Regional Hospital Mullingar	51%	20%
Letterkenny University Hospital	36%	25%
Sligo University Hospital	24%	3%
Mercy University Hospital	24%	0%
St Vincent's University Hospital	17%	92%
Midland Regional Hospital Portlaoise	4%	10%
Naas General Hospital	0%	0%
National	**83%**	**73%**

FIGURE 3.2: DATA ACCREDITATION PERCENTAGES BY HOSPITAL AND YEAR, 2019 AND 2020

	2019	2020
Children's Health Ireland at Temple Street	99%	97%
Our Lady of Lourdes Hospital Drogheda	99%	99%
Mater Misericordiae University Hospital	98%	98%
Midland Regional Hospital Tullamore	98%	97%
Sligo University Hospital	98%	98%
Cavan General Hospital	97%	100%
Cork University Hospital	97%	97%
Mayo University Hospital	97%	97%
Mercy University Hospital	97%	0%
Connolly Hospital	96%	96%
St Luke's General Hospital, Carlow/Kilkenny	95%	96%
University Hospital Kerry	95%	94%
University Hospital Waterford	95%	96%
Wexford General Hospital	95%	94%
Beaumont Hospital	94%	93%
Tipperary University Hospital	94%	96%
Tallaght University Hospital	94%	94%
University Hospital Galway	94%	97%
Letterkenny University Hospital	93%	95%
University Hospital Limerick	93%	89%
Regional Hospital Mullingar	92%	89%
St James's Hospital	90%	93%
Children's Health Ireland at Crumlin	88%	79%
Midland Regional Hospital Portlaoise	86%	91%
St Vincent's University Hospital	84%	84%
National	**95%**	**95%**

FIGURE 3.3: DATA ACCREDITATION BY KEY DATA FIELDS

	2019	2020
Pre-existing conditions	99%	99%
Arrival time	100%	100%
Operation details	100%	99%
First computed tomography details	100%	100%
Computed tomography report time	98%	95%
Computed tomography review time	96%	90%
Pupil reactivity, AIS and head injury	94%	92%
Doctors in the emergency department	96%	97%
Injury details	95%	95%
Transfer details	98%	97%
999 call details	82%	86%
Incident time	87%	84%
Glasgow Coma Scale	95%	96%
Intubation	96%	98%
Tranexamic acid	99%	94%
Overall	**95%**	**95%**

FIGURE 4.1: PERCENTAGE OF MAJOR TRAUMA AUDIT PATIENTS BY SEX AND AGE GROUP, 2019 AND 2020 (N=8764)

	Female		Male		Total	
	N	%	N	%	N	%
0–14	121	36.7%	209	63.3%	330	100.0%
15–24	140	22.8%	475	77.2%	615	100.0%
25–34	127	20.3%	499	79.7%	626	100.0%
35-–44	158	22.0%	559	78.0%	717	100.0%
45–54	274	28.7%	682	71.3%	956	100.0%
55–64	621	44.8%	764	55.2%	1385	100.0%
65–74	574	42.7%	769	57.3%	1343	100.0%
75–84	945	59.5%	643	40.5%	1588	100.0%
85+	794	65.9%	410	34.1%	1204	100.0%
Total	**3754**	**42.8%**	**5010**	**57.2%**	**8764**	**100.0%**

FIGURE 4.2: CHARLSON COMORBIDITY INDEX SCORE OF MAJOR TRAUMA AUDIT PATIENTS BY AGE GROUP AND YEAR, 2019 AND 2020 (n=8678)

	0–14		15–59		60+		Total	
	N	%	N	%	N	%	N	%
2019								
No significant pre-existing condition	202	92.2%	1187	63.1%	714	28.8%	2103	45.9%
Mild comorbidities	15	6.8%	544	28.9%	1143	46.1%	1702	37.2%
Moderate comorbidities	~	*	*	*	480	19.3%	557	12.2%
Severe comorbidities	~	*	*	*	144	5.8%	219	4.8%
Total	**219**	**100.0%**	**1881**	**100.0%**	**2481**	**100.0%**	**4581**	**100.0%**
2020								
No significant pre-existing condition	126	92.6%	881	56.7%	625	26.0%	1632	39.8%
Mild comorbidities	*	*	539	34.7%	1090	45.3%	1638	40.0%
Moderate comorbidities	~	*	*	*	540	22.4%	613	15.0%
Severe comorbidities	0	0.0%	61	3.9%	153	6.4%	214	5.2%
Total	**136**	**100.0%**	**1553**	**100.0%**	**2408**	**100.0%**	**4097**	**100.0%**
Total								
No significant pre-existing condition	328	92.4%	2068	60.2%	1339	27.4%	3735	43.0%
Mild comorbidities	*	*	1083	31.5%	2233	45.7%	3340	38.5%
Moderate comorbidities	~	*	*	*	1020	20.9%	1170	13.5%
Severe comorbidities	~	*	*	*	297	6.1%	433	5.0%
Total	**355**	**100.0%**	**3434**	**100.0%**	**4889**	**100.0%**	**8678**	**100.0%**

~ Denotes five cases or fewer

* Further suppression required in order to prevent disclosure of five cases or fewer

FIGURE 4.3: MECHANISM OF INJURY, BY MONTH AND YEAR, 2019 AND 2020 (N=8764)

	Blow(s)		Fall less than 2 m		Fall more than 2 m		Road trauma		Other		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
2019												
JAN	42	9.4%	260	58.2%	57	12.8%	59	13.2%	29	6.5%	447	100.0%
FEB	33	8.5%	245	63.3%	32	8.3%	53	13.7%	24	6.2%	387	100.0%
MAR	42	9.6%	269	61.3%	37	8.4%	69	15.7%	22	5.0%	439	100.0%
APR	26	6.3%	253	60.8%	35	8.4%	78	18.8%	24	5.8%	416	100.0%
MAY	47	11.9%	216	54.8%	35	8.9%	76	19.3%	20	5.1%	394	100.0%
JUNE	34	9.1%	214	57.5%	37	9.9%	69	18.5%	18	4.8%	372	100.0%
JUL	39	9.5%	231	56.3%	43	10.5%	73	17.8%	24	5.9%	410	100.0%
AUG	55	14.4%	202	53.0%	43	11.3%	70	18.4%	11	2.9%	381	100.0%
SEPT	40	10.9%	208	56.8%	41	11.2%	60	16.4%	17	4.6%	366	100.0%
OCT	30	9.1%	189	57.1%	35	10.6%	65	19.6%	12	3.6%	331	100.0%
NOV	26	7.9%	193	58.8%	37	11.3%	51	15.5%	21	6.4%	328	100.0%
DEC	24	6.9%	204	58.8%	44	12.7%	57	16.4%	18	5.2%	347	100.0%
Total	**438**	**9.5%**	**2684**	**58.1%**	**476**	**10.3%**	**780**	**16.9%**	**240**	**5.2%**	**4618**	**100.0%**
2020												
JAN	27	6.4%	253	59.5%	45	10.6%	77	18.1%	23	5.4%	425	100.0%
FEB	20	5.7%	225	64.5%	32	9.2%	54	15.5%	18	5.2%	349	100.0%
MAR	18	6.7%	167	62.3%	32	11.9%	39	14.6%	12	4.5%	268	100.0%
APR	11	3.8%	158	55.1%	48	16.7%	47	16.4%	23	8.0%	287	100.0%
MAY	18	5.3%	210	61.8%	49	14.4%	41	12.1%	22	6.5%	340	100.0%
JUNE	15	4.2%	229	63.6%	37	10.3%	55	15.3%	24	6.7%	360	100.0%
JUL	31	7.7%	240	59.6%	46	11.4%	66	16.4%	20	5.0%	403	100.0%
AUG	30	8.5%	217	61.6%	36	10.2%	52	14.8%	17	4.8%	352	100.0%
SEPT	25	7.1%	212	60.1%	39	11.0%	59	16.7%	18	5.1%	353	100.0%
OCT	22	6.4%	210	60.7%	41	11.8%	50	14.5%	23	6.6%	346	100.0%
NOV	15	4.9%	192	63.2%	33	10.9%	44	14.5%	20	6.6%	304	100.0%
DEC	13	3.6%	246	68.5%	38	10.6%	47	13.1%	15	4.2%	359	100.0%
Total	**245**	**5.9%**	**2559**	**61.7%**	**476**	**11.5%**	**631**	**15.2%**	**235**	**5.7%**	**4146**	**100.0%**

FIGURE 4.4: INJURY SEVERITY SCORE OF MAJOR TRAUMA AUDIT PATIENTS, 2019 AND 2020 (N=8764)

	2019							
	Low-severity injury		Moderate-severity injury		Severe injury		Total	
	N	%	N	%	N	%	N	%
0–14	39	18.9%	78	37.9%	89	43.2%	206	100.0%
15–24	113	31.0%	113	31.0%	139	38.1%	365	100.0%
25–34	132	36.5%	103	28.5%	127	35.1%	362	100.0%
35–44	92	24.1%	134	35.1%	156	40.8%	382	100.0%
45–54	94	19.2%	214	43.8%	181	37.0%	489	100.0%
55–64	96	13.6%	417	59.0%	194	27.4%	707	100.0%
65–74	167	23.5%	287	40.4%	257	36.1%	711	100.0%
75–84	208	25.8%	329	40.8%	270	33.5%	807	100.0%
85+	173	29.4%	243	41.3%	173	29.4%	589	100.0%
Total	**1114**	**24.1%**	**1918**	**41.5%**	**1586**	**34.3%**	**4618**	**100.0%**
	2020							
	Low-severity injury		**Moderate-severity injury**		**Severe injury**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
0–14	19	15.3%	62	50.0%	43	34.7%	124	100.0%
15–24	54	21.6%	76	30.4%	120	48.0%	250	100.0%
25–34	52	19.7%	88	33.3%	124	47.0%	264	100.0%
35–44	74	22.1%	122	36.4%	139	41.5%	335	100.0%
45–54	92	19.7%	220	47.1%	155	33.2%	467	100.0%
55–64	113	16.7%	386	56.9%	179	26.4%	678	100.0%
65–74	149	23.6%	261	41.3%	222	35.1%	632	100.0%
75–84	201	25.7%	312	39.9%	268	34.3%	781	100.0%
85+	151	24.6%	255	41.5%	209	34.0%	615	100.0%
Total	**905**	**21.8%**	**1782**	**43.0%**	**1459**	**35.2%**	**4146**	**100.0%**

FIGURE 4.5: PLACE OF INJURY FOR MAJOR TRAUMA AUDIT PATIENTS, BY MONTH AND YEAR, 2019 AND 2020 (N=8764)

	Home		Public area or road		Institution		Farm		Industrial area		Other		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
2019														
JAN	229	51.2%	162	36.2%	23	5.1%	9	2.0%	13	2.9%	11	2.5%	447	100.0%
FEB	191	49.4%	140	36.2%	20	5.2%	10	2.6%	8	2.1%	18	4.7%	387	100.0%
MAR	236	53.8%	165	37.6%	16	3.6%	9	2.1%	~	*	*	*	439	100.0%
APR	194	46.6%	162	38.9%	17	4.1%	17	4.1%	8	1.9%	18	4.3%	416	100.0%
MAY	189	48.0%	145	36.8%	21	5.3%	20	5.1%	9	2.3%	10	2.5%	394	100.0%
JUNE	171	46.0%	156	41.9%	16	4.3%	*	*	~	*	14	3.8%	372	100.0%
JUL	187	45.6%	168	41.0%	19	4.6%	19	4.6%	~	*	*	*	410	100.0%
AUG	159	41.7%	169	44.4%	17	4.5%	*	*	~	*	18	4.7%	381	100.0%
SEPT	171	46.7%	147	40.2%	13	3.6%	11	3.0%	11	3.0%	13	3.6%	366	100.0%
OCT	165	49.8%	120	36.3%	15	4.5%	7	2.1%	12	3.6%	12	3.6%	331	100.0%
NOV	159	48.5%	114	34.8%	16	4.9%	18	5.5%	9	2.7%	12	3.7%	328	100.0%
DEC	174	50.1%	119	34.3%	18	5.2%	9	2.6%	7	2.0%	20	5.8%	347	100.0%
Total	**2225**	**48.2%**	**1767**	**38.3%**	**211**	**4.6%**	**156**	**3.4%**	**92**	**2.0%**	**167**	**3.6%**	**4618**	**100.0%**
2020														
JAN	216	50.8%	144	33.9%	24	5.6%	10	2.4%	*	*	24	5.6%	425	100.0%
FEB	204	58.5%	87	24.9%	19	5.4%	9	2.6%	15	4.3%	15	4.3%	349	100.0%
MAR	135	50.4%	74	27.6%	21	7.8%	15	5.6%	6	2.2%	17	6.3%	268	100.0%
APR	177	61.7%	65	22.6%	20	7.0%	12	4.2%	~	*	*	*	*	100.0%
MAY	207	60.9%	81	23.8%	9	2.6%	20	5.9%	8	2.4%	15	4.4%	340	100.0%
JUNE	216	60.0%	90	25.0%	18	5.0%	16	4.4%	9	2.5%	11	3.1%	360	100.0%
JUL	232	57.6%	90	22.3%	21	5.2%	18	4.5%	9	2.2%	33	8.2%	403	100.0%
AUG	189	53.7%	107	30.4%	16	4.5%	9	2.6%	9	2.6%	22	6.3%	352	100.0%
SEPT	184	52.1%	102	28.9%	20	5.7%	17	4.8%	11	3.1%	19	5.4%	353	100.0%
OCT	196	56.6%	96	27.7%	15	4.3%	13	3.8%	15	4.3%	11	3.2%	346	100.0%
NOV	165	54.3%	86	28.3%	21	6.9%	7	2.3%	9	3.0%	16	5.3%	304	100.0%
DEC	212	59.1%	94	26.2%	19	5.3%	8	2.2%	13	3.6%	13	3.6%	359	100.0%
Total	**2333**	**56.3%**	**1116**	**26.9%**	**223**	**5.4%**	**154**	**3.7%**	**115**	**2.8%**	**205**	**4.9%**	**4146**	**100.0%**

~ Denotes five cases or fewer

* Further suppression required in order to prevent disclosure of five cases or fewer

FIGURE 4.5A: TYPE OF ROAD TRAUMA, BY YEAR, 2019 AND 2020 (n=1411)

	2019		2020	
	N	**%**	**N**	**%**
Car	349	44.7%	221	35.0%
Bicycle	154	19.7%	193	30.6%
Pedestrian	123	15.8%	98	15.5%
Motorcycle	135	17.3%	96	15.2%
Other	19	2.4%	23	3.6%
Total	**780**	**100.0%**	**631**	**100.0%**

FIGURE 4.5B: TYPE OF ROAD TRAUMA, BY MONTH AND YEAR, 2019 AND 2020 (n=1411)

	Car		Bicycle		Pedestrian		Motorcycle		Other		Not known		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
2019														
JAN	34	57.6%	12	20.3%	10	16.9%	~	*	~	*	0	0.0%	59	100.0%
FEB	28	52.8%	10	18.9%	~	*	9	17.0%	~	*	0	0.0%	53	100.0%
MAR	29	42.0%	14	20.3%	16	23.2%	10	14.5%	0	0.0%	0	0.0%	69	100.0%
APR	32	41.0%	15	19.2%	14	17.9%	15	19.2%	~	*	~	*	78	100.0%
MAY	36	47.4%	13	17.1%	10	13.2%	14	18.4%	~	*	0	0.0%	76	100.0%
JUNE	35	50.7%	12	17.4%	9	13.0%	12	17.4%	~	*	0	0.0%	69	100.0%
JUL	27	37.0%	17	23.3%	9	12.3%	17	23.3%	~	*	~	*	73	100.0%
AUG	20	28.6%	14	20.0%	11	15.7%	20	28.6%	~	*	~	*	70	100.0%
SEPT	24	40.0%	17	28.3%	*	*	10	16.7%	~	*	0	0.0%	60	100.0%
OCT	31	47.7%	13	20.0%	10	15.4%	11	16.9%	0	0.0%	0	0.0%	65	100.0%
NOV	23	45.1%	9	17.6%	11	21.6%	*	*	0	0.0%	~	*	51	100.0%
DEC	30	52.6%	8	14.0%	10	17.5%	8	14.0%	0	0.0%	~	*	57	100.0%
Total	**349**	**44.7%**	**154**	**19.7%**	**123**	**15.8%**	**135**	**17.3%**	**12**	**1.5%**	**7**	**0.9%**	**780**	**100.0%**
2020														
JAN	32	41.6%	22	28.6%	15	19.5%	7	9.1%	0	0.0%	~	*	77	100.0%
FEB	29	53.7%	7	13.0%	10	18.5%	7	13.0%	~	*	0	0.0%	54	100.0%
MAR	*	*	12	30.8%	10	25.6%	~	*	0	0.0%	~	*	39	100.0%
APR	13	27.7%	15	31.9%	8	17.0%	7	14.9%	0	0.0%	~	*	47	100.0%
MAY	~	*	17	41.5%	10	24.4%	9	22.0%	0	0.0%	0	0.0%	41	100.0%
JUNE	14	25.5%	24	43.6%	~	*	13	23.6%	~	*	0	0.0%	55	100.0%
JUL	27	40.9%	15	22.7%	9	13.6%	10	15.2%	~	*	~	*	66	100.0%
AUG	18	34.6%	21	40.4%	6	11.5%	~	*	~	*	~	*	52	100.0%
SEPT	19	32.2%	18	30.5%	7	11.9%	15	25.4%	0	0.0%	0	0.0%	59	100.0%
OCT	16	32.0%	11	22.0%	9	18.0%	12	24.0%	~	*	~	*	50	100.0%
NOV	15	34.1%	17	38.6%	~	*	~	*	~	*	0	0.0%	44	100.0%
DEC	22	46.8%	14	29.8%	6	12.8%	~	*	~	*	0	0.0%	47	100.0%
Total	**221**	**35.0%**	**193**	**30.6%**	**98**	**15.5%**	**96**	**15.2%**	**12**	**1.9%**	**11**	**1.7%**	**631**	**100.0%**

~ Denotes five cases or fewer

* Further suppression required in order to prevent disclosure of five cases or fewer

FIGURE 4.6: TYPE OF BODY REGION INJURED, BY YEAR, 2019 AND 2020 (N=8764)

	2019		2020	
	N	%	N	%
Abdomen	133	2.9%	92	2.2%
Chest	693	15.0%	675	16.3%
Face	236	5.1%	104	2.5%
Head	1070	23.2%	965	23.3%
Limbs	1238	26.8%	1188	28.7%
Multiple	390	8.4%	384	9.3%
Other	116	2.5%	120	2.9%
Spine	742	16.1%	618	14.9%
Total	**4618**	**100.0%**	**4146**	**100.0%**

FIGURE 4.7: INJURY SEVERITY SCORE BY BODY REGION INJURED, BY YEAR, 2019 AND 2020 (N=8764)

	Low-severity injury		Moderate-severity injury		Severe injury		Total	
	N	%	N	%	N	%	N	%
2019								
Abdomen	29	21.8%	61	45.9%	43	32.3%	133	100.0%
Chest	101	14.6%	347	50.1%	245	35.4%	693	100.0%
Face	*	*	~	*	0	0.0%	236	100.0%
Head	10	0.9%	126	11.8%	934	87.3%	1070	100.0%
Limbs	227	18.3%	895	72.3%	116	9.4%	1238	100.0%
Multiple	196	50.3%	69	17.7%	125	32.1%	390	100.0%
Other	59	50.9%	*	*	46	39.7%	116	100.0%
Spine	257	34.6%	408	55.0%	77	10.4%	742	100.0%
Total	**1114**	**24.1%**	**1918**	**41.5%**	**1586**	**34.3%**	**4618**	**100.0%**
2020								
Abdomen	21	22.8%	44	47.8%	27	29.3%	92	100.0%
Chest	90	13.3%	369	54.7%	216	32.0%	675	100.0%
Face	*	*	~	*	0	0.0%	104	100.0%
Head	10	1.0%	98	10.2%	857	88.8%	965	100.0%
Limbs	222	18.7%	847	71.3%	119	10.0%	1188	100.0%
Multiple	169	44.0%	73	19.0%	142	37.0%	384	100.0%
Other	68	56.7%	*	*	35	29.2%	120	100.0%
Spine	225	36.4%	330	53.4%	63	10.2%	618	100.0%
Total	**905**	**21.8%**	**1782**	**43.0%**	**1459**	**35.2%**	**4146**	**100.0%**

~ Denotes five cases or fewer

* Further suppression required in order to prevent disclosure of five cases or fewer

FIGURE 5.3: MODE OF ARRIVAL TO HOSPITAL, BY YEAR, 2019 AND 2020 (n=7726)

	2019		2020	
	N	%	N	%
Ambulance	3006	74.0%	2825	77.1%
Ambulance and helicopter	35	0.9%	63	1.7%
Car	805	19.8%	607	16.6%
Helicopter	34	0.8%	46	1.3%
Walking	181	4.5%	124	3.4%
Total	**4061**	**100.0%**	**3665**	**100.0%**

FIGURE 5.4: MOST SENIOR PRE-HOSPITAL HEALTHCARE PROFESSIONAL, BY YEAR, 2019 AND 2020 (n=6009)

	2019		2020		Total	
	N	%	N	%	N	%
Advanced paramedic	1073	34.9%	1089	37.1%	2162	36.0%
Doctor	24	0.8%	*	*	*	*
Not known	483	15.7%	352	12.0%	835	13.9%
Other	0	0.0%	~	*	~	*
Paramedic	1495	48.6%	1462	49.8%	2957	49.2%
Total	**3075**	**100.0%**	**2934**	**100.0%**	**6009**	**100.0%**

~ Denotes five cases or fewer

* Further suppression required in order to prevent disclosure of five cases or fewer

FIGURE 5.5: PROPORTION OF PATIENTS WHO WERE TRANSFERRED, BY YEAR, 2019 AND 2020 (N=8764)

	2019		2020	
	N	%	N	%
Not transferred	3649	79.0%	3398	82.0%
Transferred	969	21.0%	748	18.0%
Total	**4618**	**100.0%**	**4146**	**100.0%**

FIGURE 5.6: PROPORTION OF PATIENTS WITH A SEVERE TRAUMATIC BRAIN INJURY WHO WERE ADMITTED TO A NEUROSURGICAL UNIT (ABBREVIATED INJURY SCALE ≥3) (n=2181)

	2019		2020		Total	
	N	%	N	%	N	%
Direct	241	21.1%	218	21.0%	459	21.0%
Transferred	252	22.0%	212	20.4%	464	21.3%
Not transferred	651	56.9%	607	58.5%	1258	57.7%
Total	**1144**	**100.0%**	**1037**	**100.0%**	**2181**	**100.0%**

FIGURE 5.6A: PROPORTION OF PATIENTS WITH A SEVERE TRAUMATIC BRAIN INJURY WHO WERE ADMITTED TO A NEUROSURGICAL UNIT (ABBREVIATED INJURY SCALE ≥3 AND GLASGOW COMA SCALE <9) (n=266)

	2019		2020		Total	
	N	%	N	%	N	%
Direct	22	16.3%	37	28.2%	59	22.2%
Transferred	47	34.8%	46	35.1%	93	35.0%
Not transferred	66	48.9%	48	36.6%	114	42.9%
Total	**135**	**100.0%**	**131**	**100.0%**	**266**	**100.0%**

FIGURE 6.1: PROPORTION OF PATIENTS WHO WERE PRE-ALERTED, 2019 AND 2020 (n=8030)

	Pre-alerted		Not pre-alerted		Not recorded		Total	
	N	%	N	%	N	%	N	%
2019								
JAN	55	13.3%	299	72.2%	60	14.5%	414	100.0%
FEB	43	11.9%	270	74.8%	48	13.3%	361	100.0%
MAR	46	11.0%	308	73.5%	65	15.5%	419	100.0%
APR	37	9.6%	309	80.1%	40	10.4%	386	100.0%
MAY	30	8.3%	282	77.9%	50	13.8%	362	100.0%
JUNE	40	12.0%	261	78.4%	32	9.6%	333	100.0%
JUL	41	10.9%	282	75.0%	53	14.1%	376	100.0%
AUG	35	10.3%	264	77.4%	42	12.3%	341	100.0%
SEPT	53	15.8%	249	74.1%	34	10.1%	336	100.0%
OCT	38	12.6%	234	77.5%	30	9.9%	302	100.0%
NOV	43	14.2%	226	74.6%	34	11.2%	303	100.0%
DEC	40	13.1%	226	74.1%	39	12.8%	305	100.0%
Total	**501**	**11.8%**	**3210**	**75.7%**	**527**	**12.4%**	**4238**	**100.0%**
2020								
JAN	55	13.9%	286	72.4%	54	13.7%	395	100.0%
FEB	36	11.3%	251	78.4%	33	10.3%	320	100.0%
MAR	46	18.8%	178	72.7%	21	8.6%	245	100.0%
APR	30	11.2%	193	72.3%	44	16.5%	267	100.0%
MAY	40	12.6%	248	78.0%	30	9.4%	318	100.0%
JUNE	43	13.2%	244	74.8%	39	12.0%	326	100.0%
JUL	39	10.5%	277	74.5%	56	15.1%	372	100.0%
AUG	32	9.8%	243	74.8%	50	15.4%	325	100.0%
SEPT	40	12.4%	242	75.2%	40	12.4%	322	100.0%
OCT	44	14.0%	239	75.9%	32	10.2%	315	100.0%
NOV	24	8.9%	221	82.2%	24	8.9%	269	100.0%
DEC	42	13.2%	248	78.0%	28	8.8%	318	100.0%
Total	**471**	**12.4%**	**2870**	**75.7%**	**451**	**11.9%**	**3792**	**100.0%**

FIGURE 6.2: RECEPTION BY A TRAUMA TEAM, BY AGE GROUP AND YEAR, 2019 AND 2020 (n=8030)

		2019		2020		Total	
		N	%	N	%	N	%
0–14	Received by a trauma team	37	20.7%	22	20.2%	59	20.5%
	Not received by a trauma team	142	79.3%	87	79.8%	229	79.5%
	Total	**179**	**100.0%**	**109**	**100.0%**	**288**	**100.0%**
15–59	Received by a trauma team	199	11.4%	186	13.1%	385	12.2%
	Not received by a trauma team	1540	88.6%	1234	86.9%	2774	87.8%
	Total	**1739**	**100.0%**	**1420**	**100.0%**	**3159**	**100.0%**
60+	Received by a trauma team	116	5.0%	145	6.4%	261	5.7%
	Not received by a trauma team	2204	95.0%	2118	93.6%	4322	94.3%
	Total	**2320**	**100.0%**	**2263**	**100.0%**	**4583**	**100.0%**
Total	Received by a trauma team	352	8.3%	353	9.3%	705	8.8%
	Not received by a trauma team	3886	91.7%	3439	90.7%	7325	91.2%
	Total	**4238**	**100.0%**	**3792**	**100.0%**	**8030**	**100.0%**

FIGURE 6.3: GRADE OF MOST SENIOR DOCTOR TREATING MAJOR TRAUMA AUDIT PATIENTS ON ARRIVAL, BY AGE GROUP AND YEAR, 2019 AND 2020 (n=8030)

		2019		2020		Total	
		N	%	N	%	N	%
0–14	Consultant	70	39.1%	44	40.4%	114	39.6%
	Specialist registrar	26	14.5%	21	19.3%	47	16.3%
	Registrar	68	38.0%	35	32.1%	103	35.8%
	SHO	~	*	*	*	10	3.5%
	Other	*	*	~	2.8%	14	4.9%
	Total	**179**	**100.0%**	**109**	**100.0%**	**288**	**100.0%**
15–59	Consultant	423	24.3%	319	22.5%	742	23.5%
	Specialist registrar	335	19.3%	293	20.6%	628	19.9%
	Registrar	703	40.4%	603	42.5%	1306	41.3%
	SHO	140	8.1%	134	9.4%	274	8.7%
	Other	138	7.9%	71	5.0%	209	6.6%
	Total	**1739**	**100.0%**	**1420**	**100.0%**	**3159**	**100.0%**
60+	Consultant	436	18.8%	382	16.9%	818	17.8%
	Specialist registrar	356	15.3%	362	16.0%	718	15.7%
	Registrar	1039	44.8%	1079	47.7%	2118	46.2%
	SHO	404	17.4%	357	15.8%	761	16.6%
	Other	85	3.7%	83	3.7%	168	3.7%
	Total	**2320**	**100.0%**	**2263**	**100.0%**	**4583**	**100.0%**
Total	Consultant	929	21.9%	745	19.6%	1674	20.8%
	Specialist registrar	717	16.9%	676	17.8%	1393	17.3%
	Registrar	1810	42.7%	1717	45.3%	3527	43.9%
	SHO	548	12.9%	497	13.1%	1045	13.0%
	Other	234	5.5%	157	4.1%	391	4.9%
	Total	**4238**	**100.0%**	**3792**	**100.0%**	**8030**	**100.0%**

~ Denotes five cases or fewer

* Further suppression required in order to prevent disclosure of five cases or fewer

FIGURE 6.4: SURGICAL INTERVENTION, BY BODY REGION AND AGE GROUP, 2019 AND 2020 (n=3747)

		2019		2020	
		N	**%**	**N**	**%**
0–14	Abdomen	6	5.7%	~	*
	Face	8	7.5%	~	*
	General	~	*	~	*
	Head and brain	16	15.1%	15	21.7%
	Limb(s)	51	48.1%	37	53.6%
	Skin/soft tissue	20	18.9%	9	13.0%
	Spine	~	*	0	0.0%
	Thoracic	0	0.0%	~	*
	Total	**106**	**100.0%**	**69**	**100.0%**
15–59	Abdomen	63	5.9%	47	5.4%
	Face	189	17.7%	73	8.4%
	General	31	2.9%	19	2.2%
	Head and brain	101	9.5%	76	8.8%
	Limb(s)	492	46.2%	468	53.9%
	Skin/soft tissue	53	5.0%	59	6.8%
	Spine	111	10.4%	101	11.6%
	Thoracic	25	2.3%	25	2.9%
	Total	**1065**	**100.0%**	**868**	**100.0%**
60+	Abdomen	13	1.5%	19	2.4%
	Face	24	2.8%	11	1.4%
	General	18	2.1%	30	3.8%
	Head and brain	78	9.3%	82	10.3%
	Limb(s)	579	68.7%	543	68.2%
	Skin/soft tissue	30	3.6%	33	4.1%
	Spine	83	9.8%	67	8.4%
	Thoracic	18	2.1%	11	1.4%
	Total	**843**	**100.0%**	**796**	**100.0%**
Total	Abdomen	82	4.1%	70	4.0%
	Face	221	11.0%	86	5.0%
	General	52	2.6%	50	2.9%
	Head and brain	195	9.7%	173	10.0%
	Limb(s)	1122	55.7%	1048	60.5%
	Skin/soft tissue	103	5.1%	101	5.8%
	Spine	196	9.7%	168	9.7%
	Thoracic	43	2.1%	37	2.1%
	Total	**2014**	**100.0%**	**1733**	**100.0%**

~ Denotes five cases or fewer

* Further suppression required in order to prevent disclosure of five cases or fewer

FIGURE 6.5: AIRWAY MANAGEMENT OF MAJOR TRAUMA AUDIT PATIENTS WITH A GLASOW COMA SCALE <9, 2019 AND 2020 (n=347)

	2019		2020		Total	
	N	%	N	%	N	%
No intubation	*	*	~	*	*	*
Intubated – ED	124	67.8%	122	74.4%	246	70.9%
Intubated – pre-hospital	~	*	~	*	~	*
Intubated – both ED and pre-hospital	21	11.5%	16	9.8%	37	10.7%
Not known	30	16.4%	20	12.2%	50	14.4%
Total	**183**	**100.0%**	**164**	**100.0%**	**347**	**100.0%**

~ Denotes five cases or fewer

* Further suppression required in order to prevent disclosure of five cases or fewer

FIGURE 6.6: PERCENTAGE OF MAJOR TRAUMA AUDIT PATIENTS TO RECEIVE A COMPUTED TOMOGRAPHY SCAN WITHIN 1 HOUR, 2019 AND 2020 (n=463)

	2019		2020		Total	
	N	%	N	%	N	%
Within 1 hour	103	42.0%	93	42.7%	196	42.3%
After 1 hour	142	58.0%	125	57.3%	267	57.7%
Total	**245**	**100.0%**	**218**	**100.0%**	**463**	**100.0%**

FIGURE 7.1: PROPORTION OF PATIENTS WITH MAJOR TRAUMA WHO DIED, BY MONTH AND YEAR (N=8764)

	ALIVE		DEAD		TOTAL	
	N	**%**	**N**	**%**	**N**	**%**
2019						
JAN	423	95.7%	19	4.3%	442	100.0%
FEB	369	95.3%	18	4.7%	387	100.0%
MAR	427	97.0%	13	3.0%	440	100.0%
APR	396	95.9%	17	4.1%	413	100.0%
MAY	384	96.7%	13	3.3%	397	100.0%
JUNE	350	94.3%	21	5.7%	371	100.0%
JUL	391	94.9%	21	5.1%	412	100.0%
AUG	362	94.3%	22	5.7%	384	100.0%
SEPT	343	95.5%	16	4.5%	359	100.0%
OCT	316	94.6%	18	5.4%	334	100.0%
NOV	313	95.4%	15	4.6%	328	100.0%
DEC	335	95.4%	16	4.6%	351	100.0%
Total	**4074**	**95.5%**	**193**	**4.5%**	**4267**	**100.0%**
2020						
JAN	393	93.1%	29	6.9%	422	100.0%
FEB	327	93.2%	24	6.8%	351	100.0%
MAR	253	94.1%	16	5.9%	269	100.0%
APR	259	90.9%	26	9.1%	285	100.0%
MAY	324	95.6%	15	4.4%	339	100.0%
JUNE	337	93.4%	24	6.6%	361	100.0%
JUL	380	94.3%	23	5.7%	403	100.0%
AUG	336	95.7%	15	4.3%	351	100.0%
SEPT	336	94.9%	18	5.1%	354	100.0%
OCT	330	95.9%	14	4.1%	344	100.0%
NOV	292	95.4%	14	4.6%	306	100.0%
DEC	351	97.2%	10	2.8%	361	100.0%
Total	**4253**	**94.6%**	**244**	**5.4%**	**4497**	**100.0%**

FIGURE 7.2: MORTALITY BY AGE GROUP AND YEAR, 2019 AND 2020 (n=437)

	2019		2020		Total	
	N	%	N	%	N	%
0–14	*	*	~	*	10	2.3%
15–24	*	*	~	*	19	4.3%
25–34	8	3.8%	8	3.5%	16	3.7%
35–44	18	8.6%	10	4.4%	28	6.4%
45–54	15	7.2%	16	7.0%	31	7.1%
55–64	22	10.5%	21	9.2%	43	9.8%
65–74	23	11.0%	40	17.5%	63	14.4%
75–84	46	22.0%	57	25.0%	103	23.6%
85+	55	26.3%	69	30.3%	124	28.4%
Total	**209**	**100.0%**	**228**	**100.0%**	**437**	**100.0%**

~ Denotes five cases or fewer

* Further suppression required in order to prevent disclosure of five cases or fewer

FIGURE 7.3: MORTALITY BY MECHANISM OF INJURY AND YEAR, 2019 AND 2020 (n=437)

	2019		2020		Total	
	N	%	N	%	N	%
Blow(s)	*	*	~	*	12	2.7%
Fall less than 2 m	123	58.9%	146	64.0%	269	61.6%
Fall more than 2 m	*	*	36	15.8%	58	13.3%
Road trauma	25	12.0%	*	*	40	9.2%
Other	31	14.8%	27	11.8%	58	13.3%
Total	**209**	**100.0%**	**228**	**100.0%**	**437**	**100.0%**

~ Denotes five cases or fewer

* Further suppression required in order to prevent disclosure of five cases or fewer

FIGURE 7.4: MORTALITY BY INJURY SEVERITY SCORE AND YEAR, 2019 AND 2020 (n=437)

	2019		2020		Total	
	N	%	N	%	N	%
Low-severity injury	15	7.2%	18	7.9%	33	7.6%
Moderate-severity injury	38	18.2%	42	18.4%	80	18.3%
Severe injury	156	74.6%	168	73.7%	324	74.1%
Total	**209**	**100.0%**	**228**	**100.0%**	**437**	**100.0%**

FIGURE 7.5: DISCHARGE DESTINATION BY YEAR, 2019 AND 2020 (N=8764)

	2019		2020		Total	
	N	%	N	%	N	%
Home	2742	59.4%	2476	59.7%	5218	59.5%
Other acute hospital	578	12.5%	515	12.4%	1093	12.5%
Rehabilitation	470	10.2%	414	10.0%	884	10.1%
Mortuary	237	5.1%	247	6.0%	484	5.5%
Other	591	12.8%	494	11.9%	1085	12.4%
Total	**4618**	**100.0%**	**4146**	**100.0%**	**8764**	**100.0%**