TARN

THE TRAUMA AUDIT & RESEARCH NETWORK

TU Example Hospital

CLINICAL REPORT ISSUE 1 - MARCH 2021

I: CORE MEASURES FOR ALL PATIENTS

II: THORACIC & ABDOMINAL INJURIES 3+ RIB FRACTURES PATIENTS IN SHOCK

Created on 22/03/2021

EXECUTIVE SUMMARY

01 January 2020 to 31 December 2020 core measures

Improvements are shown in GREEN, no change in AMBER and deteriorations in RED. These are the areas you may want to review.

Data quality and rate of survival	Meets target	Compared to previous year
Case Ascertainment is 100+% (average 100%), this is ***above*** the target of 80%. This represents ***no change*** compared to previous year.		
Data Accreditation is 95.2%, this is ***within 1% of*** the target of 95%. This represents ***no change*** compared to previous year.		

The excess rate of survival is as expected
Ws is 0.43. 95% confidence intervals are **-0.71 to 1.58**
The survivor /death ratio is 1.34
The data in this report should be viewed with **caution** (see data reliability index)

n.b. Both Ws and survivor / death ratio are based on a 2 year period

CORE section	Compared to TU average	Compared to previous year
28% of ISS > 15 patients were seen by a Consultant within 5 minutes of arrival, this is ***above*** the TU average of 11.1% and has ***remained at the same level*** compared to previous year.		
48% of NICE criteria patients had a **CT within 60 minutes**, this is ***below*** the TU average of 49% and has ***decreased by 19%*** compared to previous year. *50% of the patients that had a CT within 60 minutes arrived between the hours of 08:00 - 20:00.*		
8 days median length of stay for ISS > 15 patients, this is ***within 1 day of*** the TU average of 7 days.		
Rehabilitation prescription was completed for **43%** of patients with ISS >8, this is ***below*** the TU average of 63%. This has ***decreased by 27%*** compared to previous year.		
THEMED section: Patients with 3+ rib fractures that were given pain relief*		
170 minutes median time to pain relief, this is below the TU average of 230 minutes. This represents an increase of 16 minutes compared to previous year.		
39% of patients were given pain relief pre hospital, this is above the TU average of 30%. This representsno change compared to previous year.		
62% of patients were given pain relief in ED, this is below the TU average of 65%. This represents no change compared to previous year.		

BEST PRACTICE SPOTLIGHT

As agreed by the TARN Audit Committee, the Best Practice Spotlight is changing.
In advance of future reports TARN will approach Trusts or Networks who have shown significant improvement or who are consistently good in key areas, asking them to share information on how they have changed or improved things in this area.
Your Trust or Network may be contacted by TARN and asked to contribute to this feature for future reports.

Contents

This Report contains the following sections:

1. **CORE** - includes ALL injured patients admitted in the time frames indicated.
2. **Thoracic, Abdominal & Shocked -** includes patients with thoracic injuries, abdominal injuries and those shocked.
3. **Appendix** - detailed information on individual patients (provided on request as a separate file).

Core

Thoracic, Abdominal & Shocked

Some sections may not appear if there is insufficient data

Glossary

Explanation of acronyms, abbreviations and other key terms used in this report.

AIS	Abbreviated Injury Scale score. A value between 1 (minor) and 6 (very severe) can be assigned to each injury. TARN currently uses the AIS 2005 system, the most recent available.
BOAST 4	British Orthopaedic Association Standard 4, setting out key markers for care of patients with high energy open lower limb fractures.
Confidence interval	Indicates the precision and possible range of a result. A wide confidence interval indicates the potential for large variation from the measured value because of small sample size. The larger the sample, the smaller the confidence intervals. The smaller the confidence intervals, the more precise the measured value.
Direct admissions	Describes care in the first treating hospital.
ED	Emergency Department.
GCS	Glasgow Coma Scale. A measure of consciousness ranging from 3, indicating complete unconsciousness, to 15, indicating a state of normal alertness. GCS is composed of eye, verbal and motor scores.
HES / HIPE / PEDW	Hospital Episode Statistics / Hospital In-Patient Enquiry Scheme / Patient Episode Database Wales. Data collected in hospitals on all admissions. This data is used by TARN to produce an expected number of TARN eligible patients.
Interquartile range	Range of values within a selection of data excluding the top 25% and bottom 25%. This filters out unusually high and unusually low values and shows where the most significant values in the data range are concentrated.
Intubation	The insertion of a flexible plastic tube into the trachea to support a patient's airway.
ISS	Injury Severity Score. A score ranging from 1, indicating minor injuries to 75, indicating very severe injuries that are very likely to result in death. An ISS between 9 and 15 is considered moderate. An ISS of 16 or more is considered severe. ISS is calculated using the Abbreviated Injury Scale (AIS).
Median	The middle value in a range. Less easily distorted by very high or very low values than other aggregation methods, such as the mean.
NICE	National Institute for Health and Care Excellence. This organisation sets standards for patient care including for severe head injury, defined here as patients with any head injury and a Glasgow Coma Score (GCS) of less than 13.
Paediatric	Patients under 16 years of age at time of admission.
RTC	Road traffic collision.
STR	Specialist Trainee.
TARN fraction	The proportion of TARN patients in each PS band. Used as a weight to standardise hospital outcome performance according to case mix.
Thoracotomy	A surgical incision made into the pleural space of the chest.
W	Variable showing hospital outcome performance. W represents excess deaths or survivors per 100 patients. This is calculated using observed and expected survivors and the total number of patients in the hospital's rate of survival dataset. See rate of survival breakdown section of report for full formula.
Ws	Excess deaths or survivors (W) standardised according to hospital case mix using the TARN fraction. A hospital with the same case mix as the overall TARN population will have identical W and Ws values. A hospital whose case mix differs from the overall TARN population will have different W and Ws values.

TARN

THE TRAUMA AUDIT & RESEARCH NETWORK

Example TU Hospital

SECTION 1

CORE MEASURES FOR ALL PATIENTS

Case Ascertainment & Accreditation

If case ascertainment is low then the analysis in the rest of the report may not be reflective of true practice.

	01 January 2020 to 31 December 2020				01 January 2019 to 31 December 2019			
Trust / Hospital	N	E	C (%)	A (%)	N	E	C (%)	A (%)
NHS Trust	218	221 - 263	82.9 - 98.5	96.8	249	221 - 263	94.7 - 100+	97.2
NHS Trust	706	648 - 661	100+	94.0	807	648 - 661	100+	93.3
NHS Trust	**673**	**537 - 638**	**100+**	**95.2**	**762**	**537 - 638**	**100+**	**95.7**
NHS Trust	462	399 - 474	97.5 - 100+	97.2	515	399 - 474	100+	96.5
NHS Trust	1189	1189	100	96.1	1372	1189	100+	95.9

N The number of approved submissions for the period
E The expected number of submissions for the period (from HES / HIPE / PEDW)
C The case ascertainment % for the period
A The accreditation % for the period

HES / HIPE / PEDW

Hospital Episode Statistics / Hospital In-Patient Enquiry Scheme / Patient Episode Database Wales is the data collected in hospitals on all admissions. The TARN inclusion criteria is applied to this data to derive the expected number of cases for each site. Work with TARN participating sites has shown there is some over-estimation of cases in the results due to the variation in ICD10 coding.

The HES data used for the case ascertainment calculation is the same as the previous report. A notice will be added to the TARN website when the new HES data has been received.

Case ascertainment

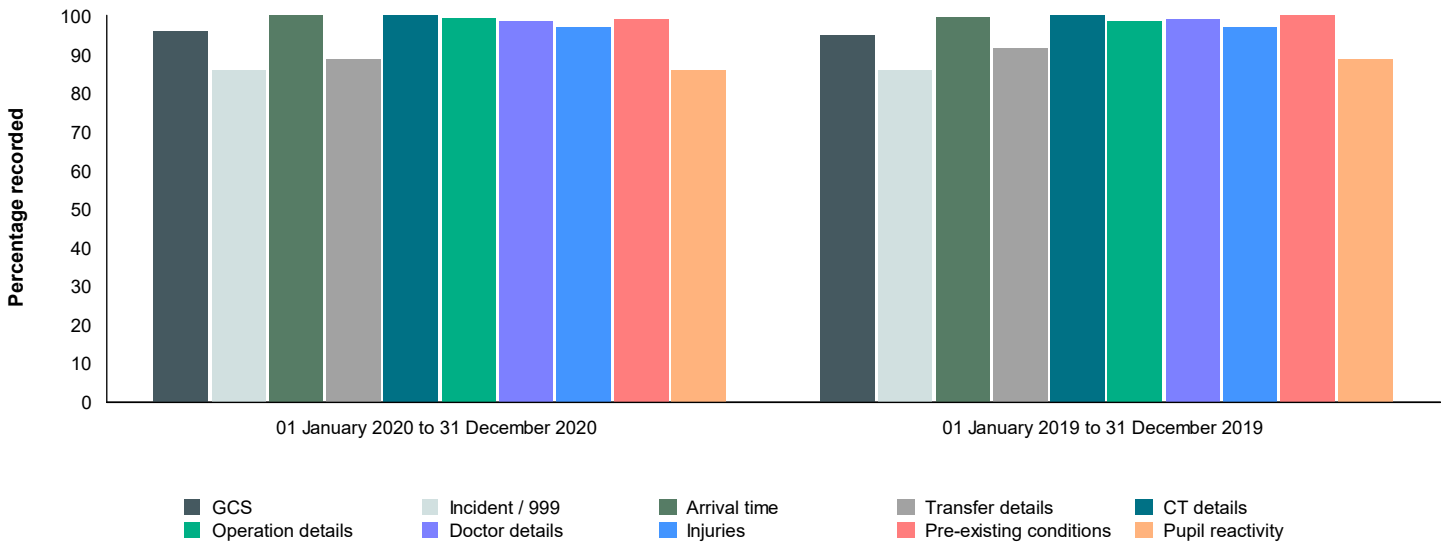
This is displayed as a percentage range and represents the number of patients submitted to TARN compared to the number of patients expected based on the HES dataset. The range represents the variance seen in the accuracy of the HES data. A single value is shown for hospitals that have provided feedback to TARN about their denominator.

Accreditation

This is the proportion of key fields used in this report that are filled in for each patient submitted to TARN.

Accreditation Breakdown

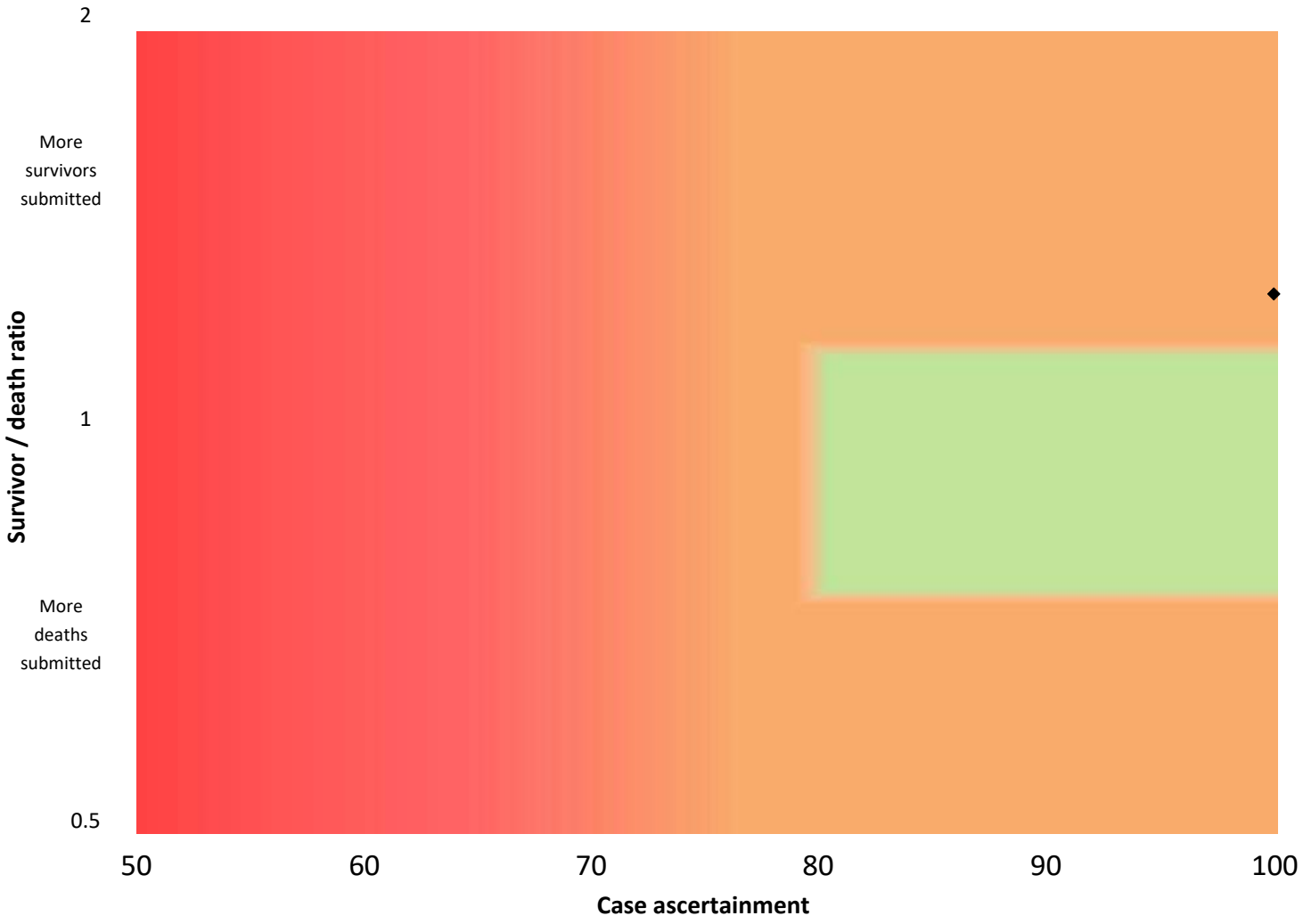
Component	01 January 2020 to 31 December 2020	01 January 2019 to 31 December 2019	Description
n	673	762	Number of patients
GCS	96.1%	95.0%	A GCS value or a recording of intubation / ventilation that can be used as part of the Ps calculation
Incident / 999 call details	86.0%	86.2%	Incident or 999 call date & time
Arrival time	100.0%	99.9%	Time of arrival at hospital
Transfer details	88.8%	91.7%	Reason for transfer & transfer request date
CT details	100.0%	100.0%	Date and time of recorded CT scan(s)
Operation details	99.3%	98.8%	Date and time, grade and speciality of surgeon and grade of anaesthetist for all recorded operations
Doctors in the ED	98.9%	99.0%	Date, time, grade and speciality of recorded ED doctor(s)
Injuries	97.2%	97.1%	Detailed injury descriptions
Pre-existing conditions	99.3%	100.0%	Information about pre-existing conditions
Pupil reactivity	86.0%	88.7%	Pupil reactivity for patients with AIS 3+ head injuries
Accreditation Total	95.2%	95.7%	



Example Hospital

Data reliability index -

Example Hospital is highlighted



Hospital

Case ascertainment: **100+ (average 100)**

Survivor / death ratio: **1.34**

The data in this report should be viewed with **caution**.

Data reliability

Data reliability is measured using case ascertainment (if this is a range, the average of the two figures is used) and the survivor / death ratio for the report period. Survivor / death ratio is calculated as follows:

$$\frac{\textit{survivors submitted} \div \textit{expected number of survivors (HES)}}{\textit{deaths submitted} \div \textit{expected number of deaths (HES)}}$$

This ratio should be as close to 1 as possible. If it is above 1 it means proportionally more survivors are being submitted than deaths and if it is below 1 then proportionally more deaths are being submitted than survivors.

Data confidence levels

Confidence: Case ascertainment **80+** and; survivor / death ratio between **0.8** and **1.2**

Caution: Case ascertainment **80+** and; survivor / death ratio **< 0.8** or **> 1.2**

Extreme caution: Case ascertainment **< 80**

Example Hospital

Case mix standardised excess rate of survival (Ws) & Ws Breakdown

01 January 2019 to 31 December 2020

Patients who died at or were discharged from this hospital are eligible for Ws calculations. Patients who were transferred out from this hospital and not re-admitted are excluded.

Outcome at 30 days or discharge

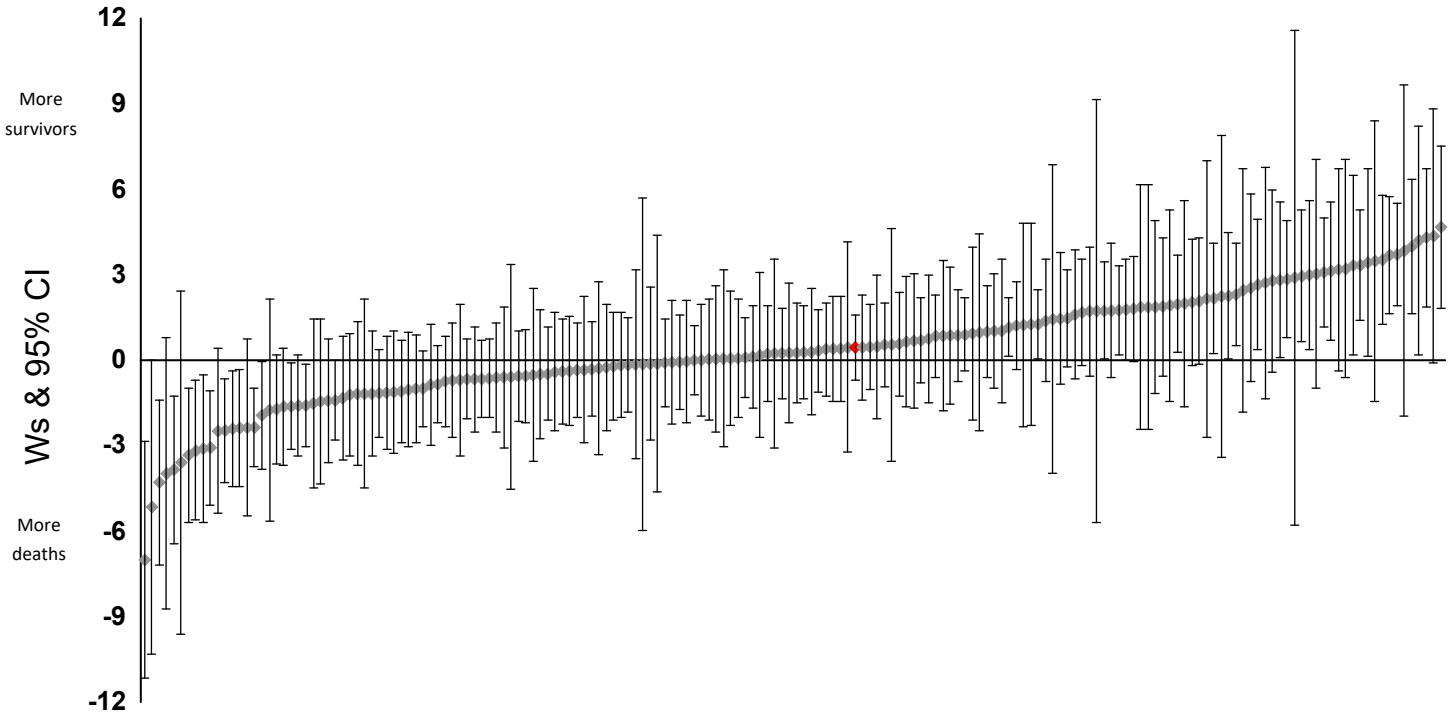
PS Band	Number in band	Observed Survivors	Expected Survivors	Difference*	TARN fraction	Ws	95% confidence interval
95 - 100	709	702	695.34	0.94	0.67	0.63	
90 - 95	326	303	302.64	0.11	0.16	0.02	
80 - 90	181	152	155.84	-2.12	0.08	-0.18	
65 - 80	67	53	49.21	5.66	0.04	0.21	
45 - 65	34	23	19.54	10.19	0.02	0.23	
25 - 45	14	2	4.87	-20.53	0.02	-0.32	
0 - 25	14	0	1.57	-11.19	0.01	-0.16	
Total	*1345*	*1235*	*1229.00*			**0.43**	**-0.71 to 1.58**

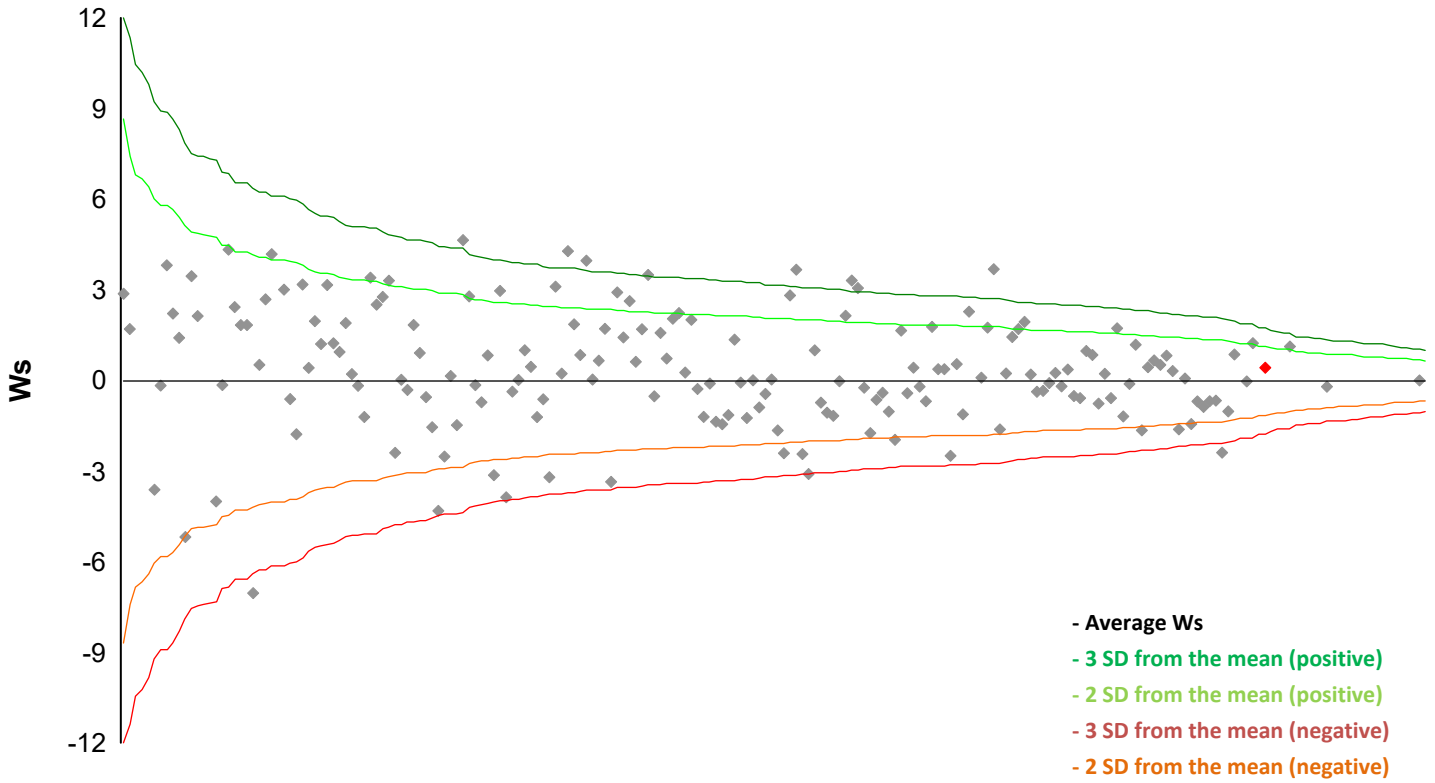
Example Hospital

TARN registered sites (excluding Major Trauma Centres)
Comparative Outcome Analysis - 01 January 2019 to 31 December 2020
Outcome at 30 days or discharge

Example Hospital is highlighted

The Ws must be reviewed in conjunction with the Data Completeness and Accreditation figures.





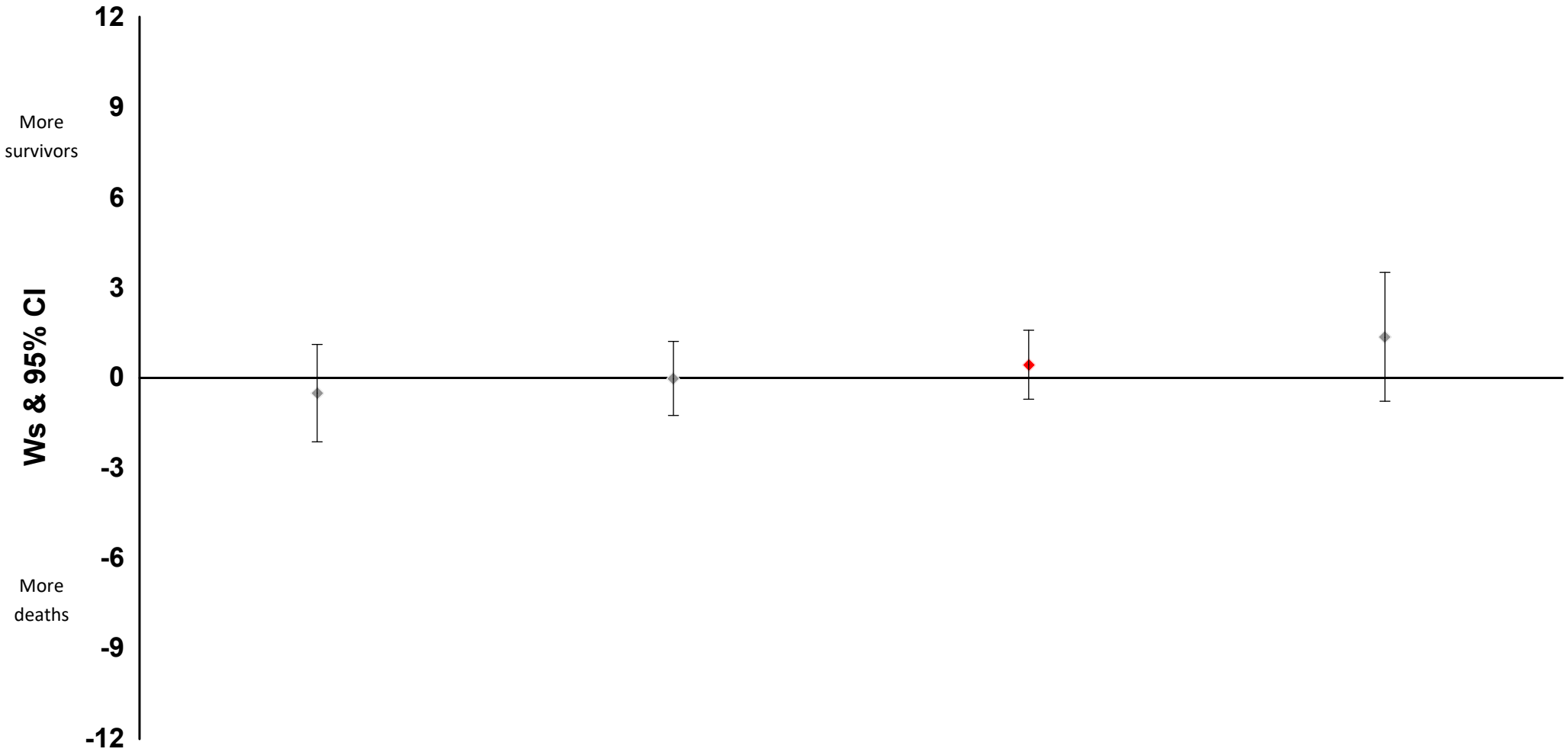
Hospitals are plotted in order of precision (1 / standard error).

Trauma Network (excluding Major Trauma Centres)

Comparative Outcome Analysis - 01 January 2019 to 31 December 2020

Outcome at 30 days or discharge

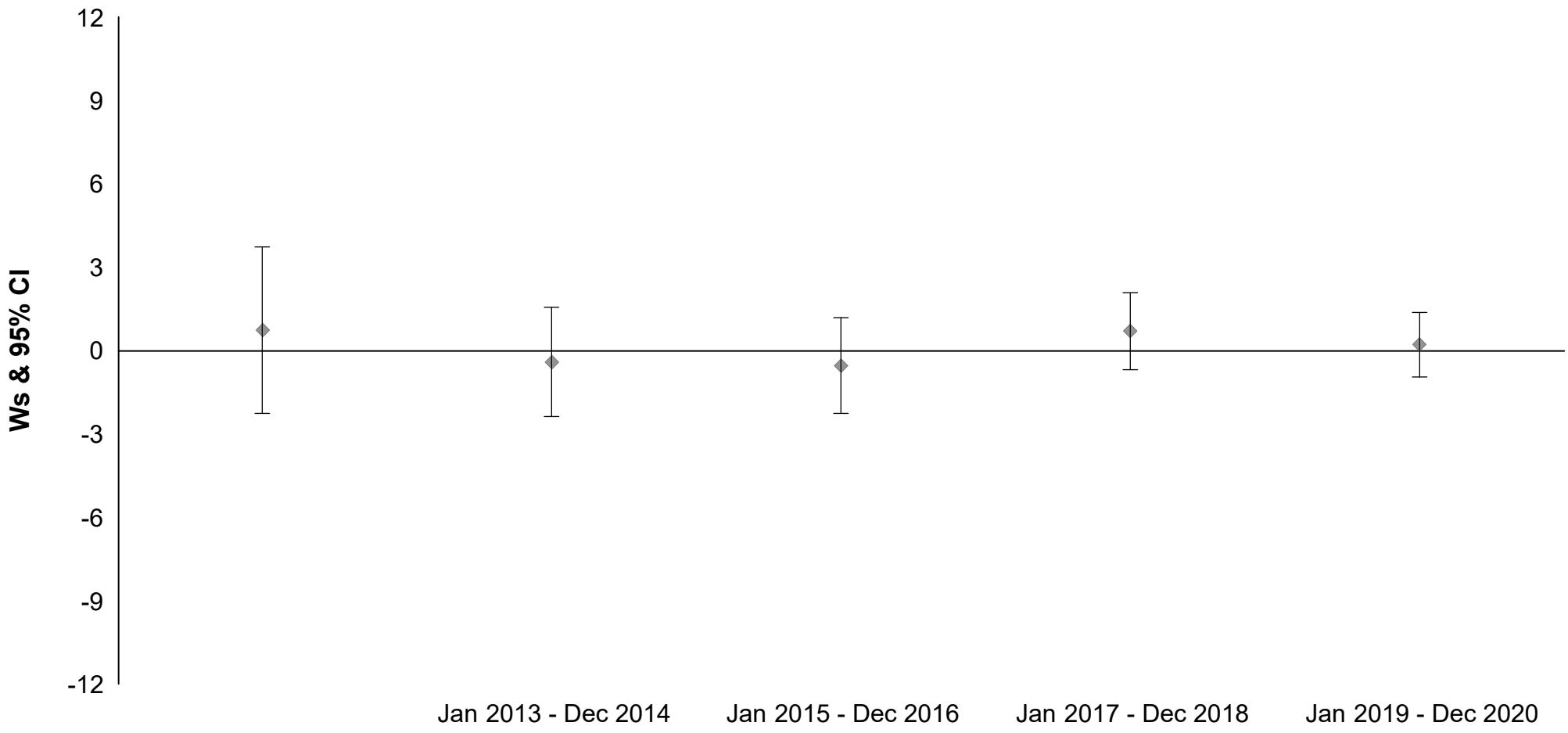
Example Hospital is highlighted



Example Hospital

Rolling Outcome Analysis

Outcome at 30 days or discharge



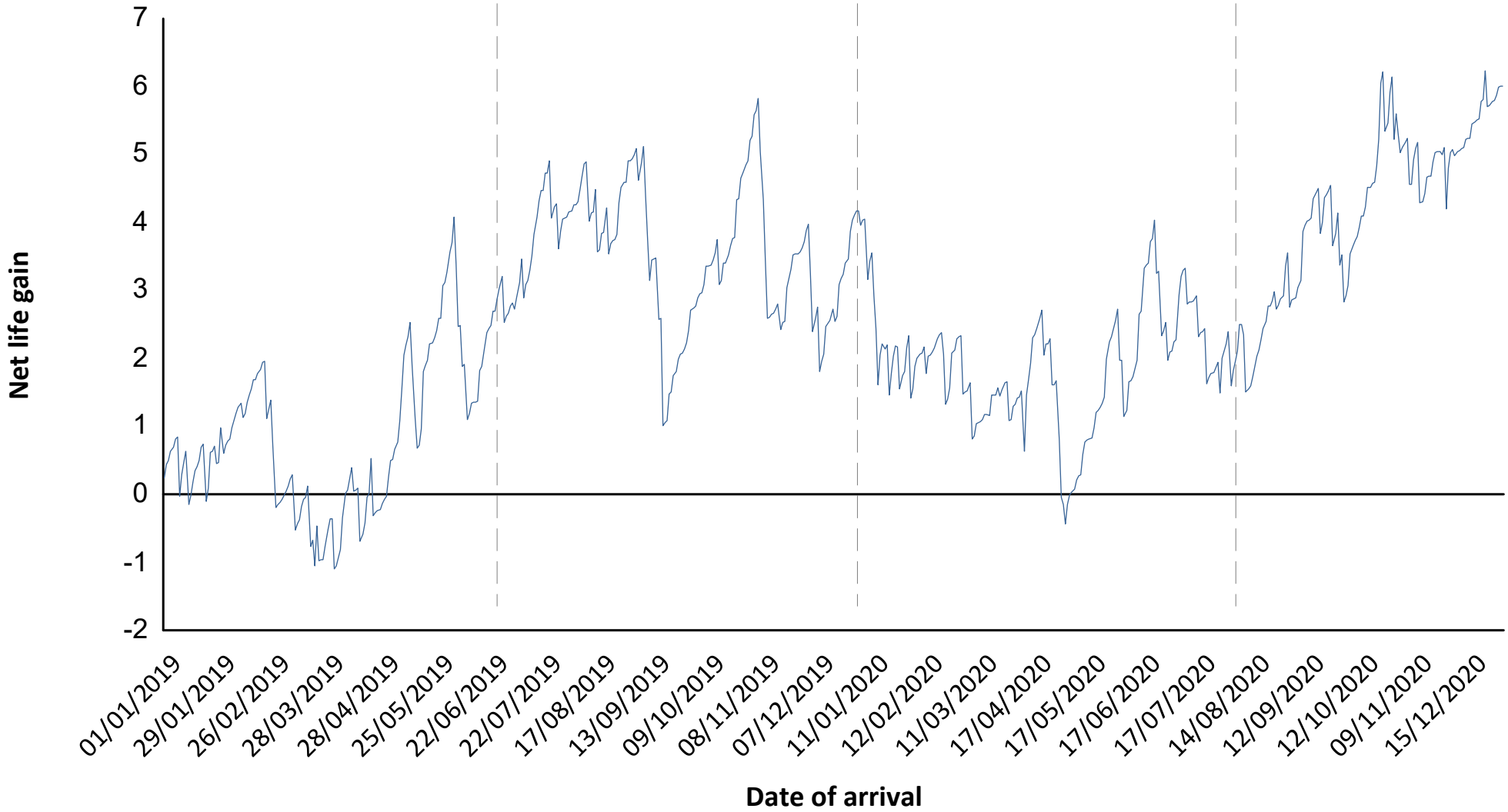
Example Hospital

Variable Life Adjusted Display (VLAD)

This chart must be reviewed in conjunction with the case ascertainment and SD ratio (where applicable) figures

Click **here** for information about how to interpret this chart.

Case ascertainment	100+	100+	99.7 - 100+	100+
Survivor:Death ratio	1.50	1.54	1.00	1.39
Outstanding PMs				

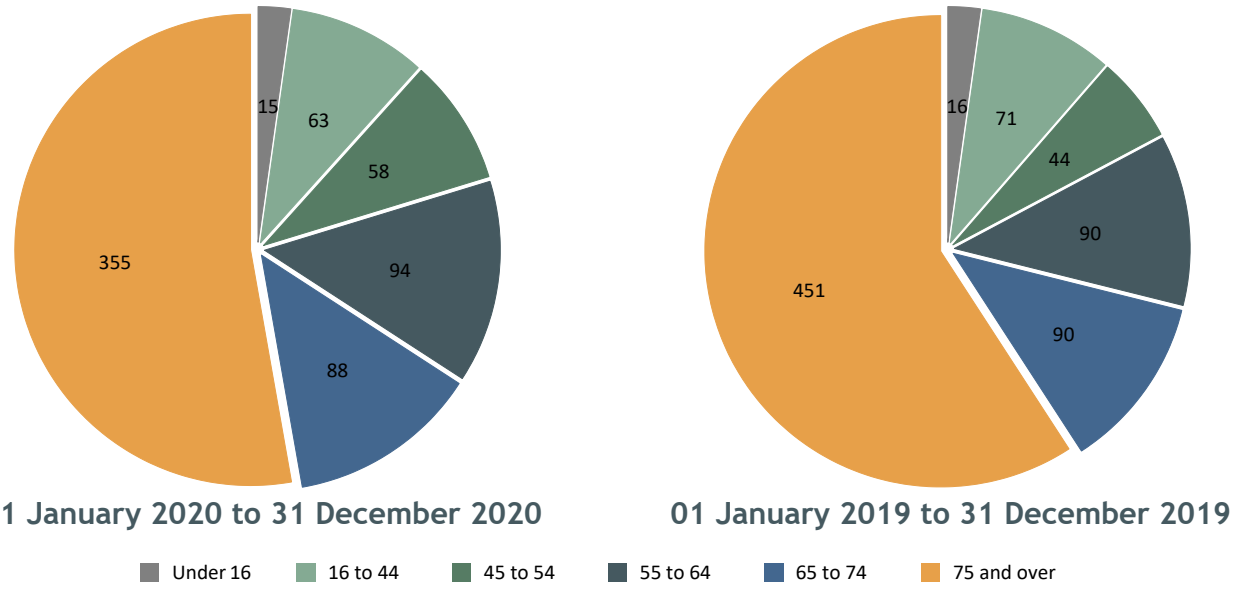


Example Hospital

Age & Injury Mechanism

(row percentages)

Mechanism	Under 16	16 to 44	45 to 54	55 to 64	65 to 74	75 and over	*Total*
01 January 2020 to 31 December 2020							
RTC	5 (4.9%)	26 (25.2%)	22 (21.4%)	17 (16.5%)	19 (18.4%)	14 (13.6%)	103
Fall < 2m	6 (1.3%)	11 (2.3%)	27 (5.8%)	58 (12.4%)	58 (12.4%)	309 (65.9%)	469
Fall > 2m	1 (1.6%)	10 (15.9%)	4 (6.3%)	13 (20.6%)	10 (15.9%)	25 (39.7%)	63
Shooting / Stabbing	0 (0.0%)	2 (66.7%)	1 (33.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3
Other	3 (8.6%)	14 (40.0%)	4 (11.4%)	6 (17.1%)	1 (2.9%)	7 (20.0%)	35
Total	**15 (2.2%)**	**63 (9.4%)**	**58 (8.6%)**	**94 (14.0%)**	**88 (13.1%)**	**355 (52.7%)**	**673**
TU average	**1%**	**9.5%**	**4.7%**	**11.4%**	**10.2%**	**63.2%**	
01 January 2019 to 31 December 2019							
RTC	1 (1.1%)	27 (28.4%)	10 (10.5%)	19 (20.0%)	16 (16.8%)	22 (23.2%)	95
Fall < 2m	11 (2.0%)	10 (1.8%)	24 (4.3%)	56 (9.9%)	59 (10.5%)	403 (71.6%)	563
Fall > 2m	1 (1.9%)	11 (21.2%)	5 (9.6%)	7 (13.5%)	12 (23.1%)	16 (30.8%)	52
Shooting / Stabbing	0 (0.0%)	3 (75.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (25.0%)	4
Other	3 (6.3%)	20 (41.7%)	5 (10.4%)	8 (16.7%)	3 (6.3%)	9 (18.8%)	48
Total	**16 (2.1%)**	**71 (9.3%)**	**44 (5.8%)**	**90 (11.8%)**	**90 (11.8%)**	**451 (59.2%)**	**762**
TU average	**1%**	**11.6%**	**5.8%**	**12.5%**	**11.5%**	**57.6%**	

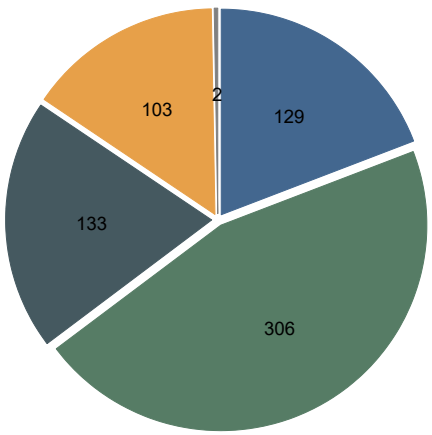


Example Hospital

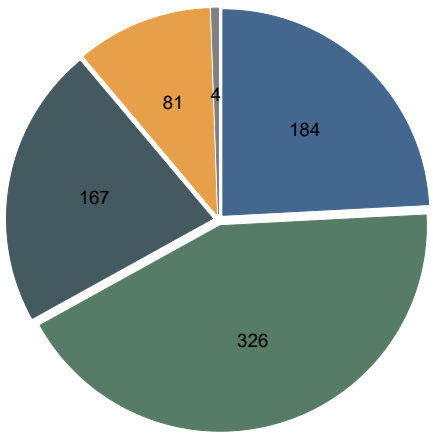
ISS & Injury Mechanism

(row percentages)

Mechanism	1 - 8	9 - 15	16 - 24	25 - 45	>45	*Total*	>15
01 January 2020 to 31 December 2020							
RTC	12 (11.7%)	46 (44.7%)	21 (20.4%)	23 (22.3%)	1 (1.0%)	103	45 (43.7%)
Fall < 2m	103 (22.0%)	219 (46.7%)	94 (20.0%)	53 (11.3%)	0 (0.0%)	469	147 (31.3%)
Fall > 2m	8 (12.7%)	25 (39.7%)	15 (23.8%)	14 (22.2%)	1 (1.6%)	63	30 (47.6%)
Shooting / Stabbing	0 (0.0%)	2 (66.7%)	0 (0.0%)	1 (33.3%)	0 (0.0%)	3	1 (33.3%)
Other	6 (17.1%)	14 (40.0%)	3 (8.6%)	12 (34.3%)	0 (0.0%)	35	15 (42.9%)
Total	**129 (19.2%)**	**306 (45.5%)**	**133 (19.8%)**	**103 (15.3%)**	**2 (0.3%)**	**673**	**238 (35.4%)**
TU average	**22%**	**57.5%**	**13.1%**	**7.4%**	**0.1%**		**20.5%**
01 January 2019 to 31 December 2019							
RTC	19 (20.0%)	38 (40.0%)	25 (26.3%)	11 (11.6%)	2 (2.1%)	95	38 (40.0%)
Fall < 2m	143 (25.4%)	257 (45.6%)	111 (19.7%)	52 (9.2%)	0 (0.0%)	563	163 (29.0%)
Fall > 2m	8 (15.4%)	13 (25.0%)	22 (42.3%)	7 (13.5%)	2 (3.8%)	52	31 (59.6%)
Shooting / Stabbing	0 (0.0%)	2 (50.0%)	0 (0.0%)	2 (50.0%)	0 (0.0%)	4	2 (50.0%)
Other	14 (29.2%)	16 (33.3%)	9 (18.8%)	9 (18.8%)	0 (0.0%)	48	18 (37.5%)
Total	**184 (24.1%)**	**326 (42.8%)**	**167 (21.9%)**	**81 (10.6%)**	**4 (0.5%)**	**762**	**252 (33.1%)**
TU average	**22.5%**	**55.3%**	**14.4%**	**7.7%**	**0.1%**		**22.2%**



01 January 2020 to 31 December 2020



01 January 2019 to 31 December 2019

1 - 8 9 - 15 16 - 24 25 - 45 >45

Example Hospital

Pre-hospital care

Figures in blue represent the TU average

Direct admissions, 01 January 2020 to 31 December 2020

Number of patients: 643

Number of patients with pre-hospital data: 513

Level of personnel on scene

Doctor	Paramedic	Not recorded
6 (1.2%)	506 (98.6%)	1 (0.2%)
1.3%	96.0%	2.7%

Mode of transport to hospital

Ambulance	Helicopter	Self-presented	Not recorded*
520 (80.9%)	20 (3.1%)	103 (16.0%)	0 (0.0%)
83.6%	0.9%	15.5%	0.0%

Direct admissions, 01 January 2019 to 31 December 2019

Number of patients: 720

Number of patients with pre-hospital data: 613

Level of personnel on scene

Doctor	Paramedic	Not recorded
7 (1.1%)	606 (98.9%)	0 (0.0%)
1.6%	96.0%	2.3%

Mode of transport to hospital

Ambulance	Helicopter	Self-presented	Not recorded*
608 (84.4%)	11 (1.5%)	101 (14.0%)	0 (0.0%)
80.7%	0.9%	18.4%	0.0%

*Mode of transport not recorded may include patients that self-presented.

Patients with GCS < 9 pre-hospital or in the ED and definitive airway management pre-hospital or in the ED

n	Definitive airway management	Pre-hospital	ED	Date & time recorded	Recorded within 30 mins of incident	Median time from incident (hours)
Direct admissions, 01 January 2020 to 31 December 2020						
21	8 (38.1%)	1 (4.8%)	7 (33.3%)	6 (75.0%)	0 (0.0%)	1.6
	44.2%	8.9%	35.3%	80.0%	0.4%	1.72
Direct admissions, 01 January 2019 to 31 December 2019						
21	10 (47.6%)	0 (0.0%)	10 (47.6%)	10 (100.0%)	0 (0.0%)	1.6
	49.8%	12.2%	37.6%	82.3%	0.2%	1.62

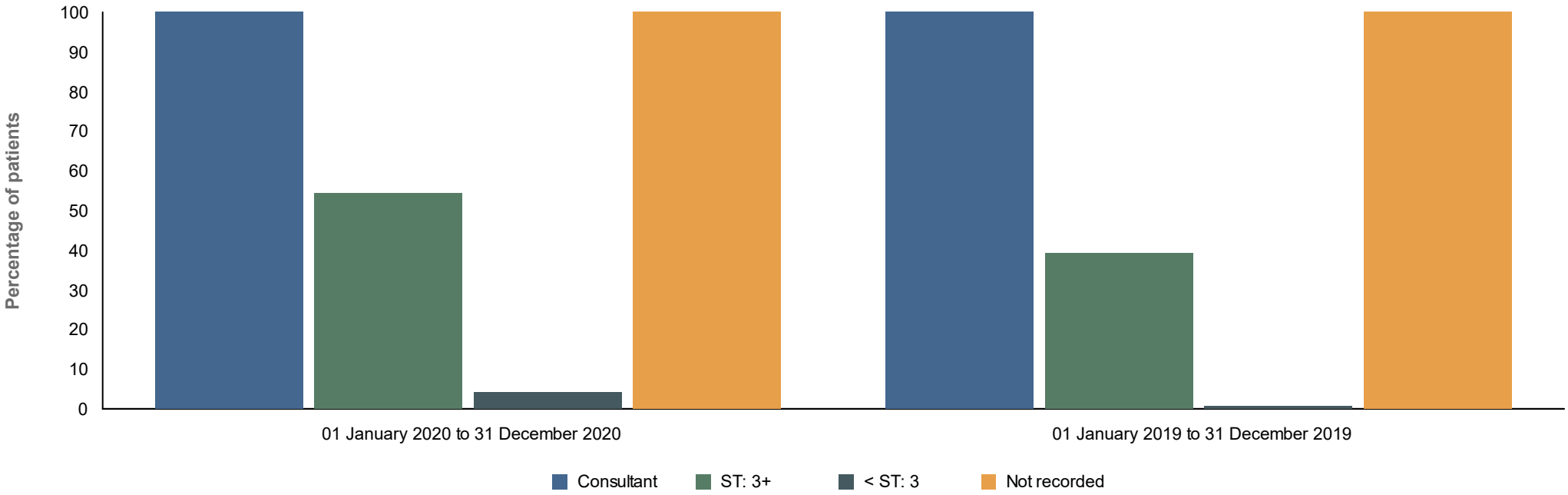
Definitive airway management is defined as the management of an airway using intubation, tracheostomy or cricothyroidotomy.

Example Hospital

Most senior doctor seeing patients within 5 minutes of arrival

All patients directly admitted, all specialities

Category	Total	Consultant	TU average consultant	ST: 3+	< ST: 3	Not recorded
01 January 2020 to 31 December 2020						
All patients	643	163 (25.3%)	7.6%	80 (12.4%)	7 (1.1%)	393 (61.1%)
ISS > 15 patients	230	64 (27.8%)	11.1%	31 (13.5%)	4 (1.7%)	131 (57.0%)
Trauma team activated	49	35 (71.4%)	34.8%	8 (16.3%)	0 (0.0%)	6 (12.2%)
Trauma team not activated	594	128 (21.5%)	3.9%	72 (12.1%)	7 (1.2%)	387 (65.2%)
01 January 2019 to 31 December 2019						
All patients	720	142 (19.7%)	7.7%	64 (8.9%)	2 (0.3%)	512 (71.1%)
ISS > 15 patients	235	65 (27.7%)	11.5%	22 (9.4%)	0 (0.0%)	148 (63.0%)
Trauma team activated	33	22 (66.7%)	38%	4 (12.1%)	0 (0.0%)	7 (21.2%)
Trauma team not activated	687	120 (17.5%)	3.9%	60 (8.7%)	2 (0.3%)	505 (73.5%)

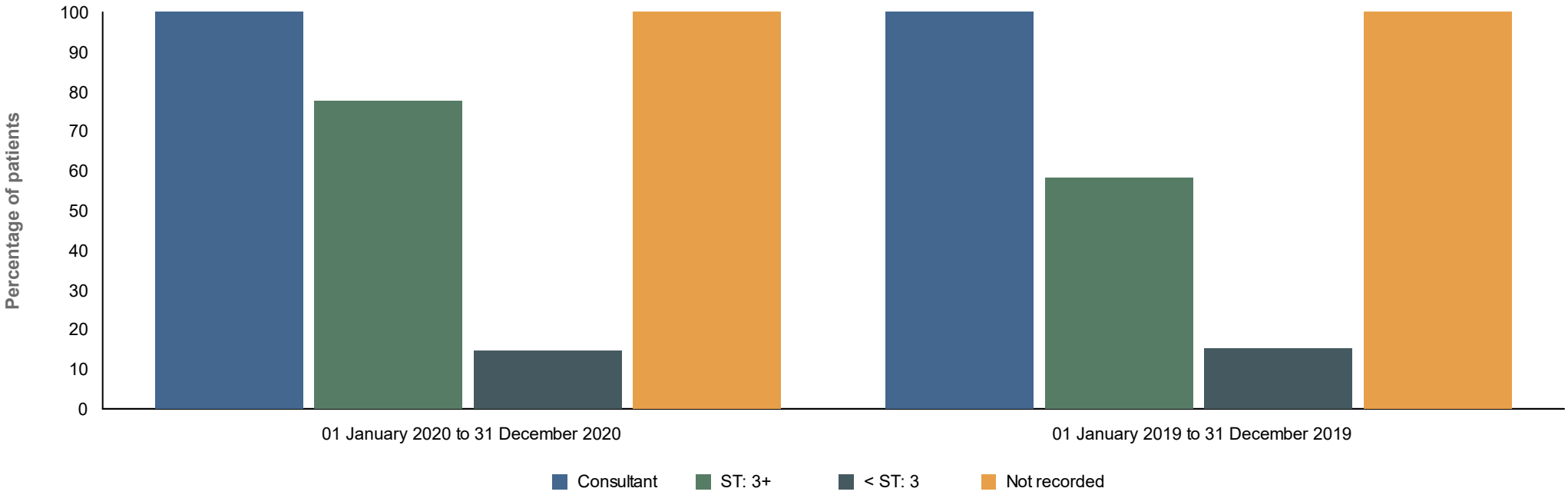


Example Hospital

Most senior doctor seeing patients within 30 minutes of arrival

All patients directly admitted, all specialities

Category	Total	Consultant	TU average consultant	ST: 3+	< ST: 3	Not recorded
01 January 2020 to 31 December 2020						
All patients	643	249 (38.7%)	**13.9%**	138 (21.5%)	32 (5.0%)	224 (34.8%)
ISS > 15 patients	230	88 (38.3%)	**17.7%**	45 (19.6%)	10 (4.3%)	87 (37.8%)
Trauma team activated	49	39 (79.6%)	**45.8%**	7 (14.3%)	0 (0.0%)	3 (6.1%)
Trauma team not activated	594	210 (35.4%)	**9.4%**	131 (22.1%)	32 (5.4%)	221 (37.2%)
01 January 2019 to 31 December 2019						
All patients	720	270 (37.5%)	**13.1%**	126 (17.5%)	31 (4.3%)	293 (40.7%)
ISS > 15 patients	235	100 (42.6%)	**17.2%**	39 (16.6%)	15 (6.4%)	81 (34.5%)
Trauma team activated	33	30 (90.9%)	**46.3%**	2 (6.1%)	0 (0.0%)	1 (3.0%)
Trauma team not activated	687	240 (34.9%)	**8.8%**	124 (18.0%)	31 (4.5%)	292 (42.5%)

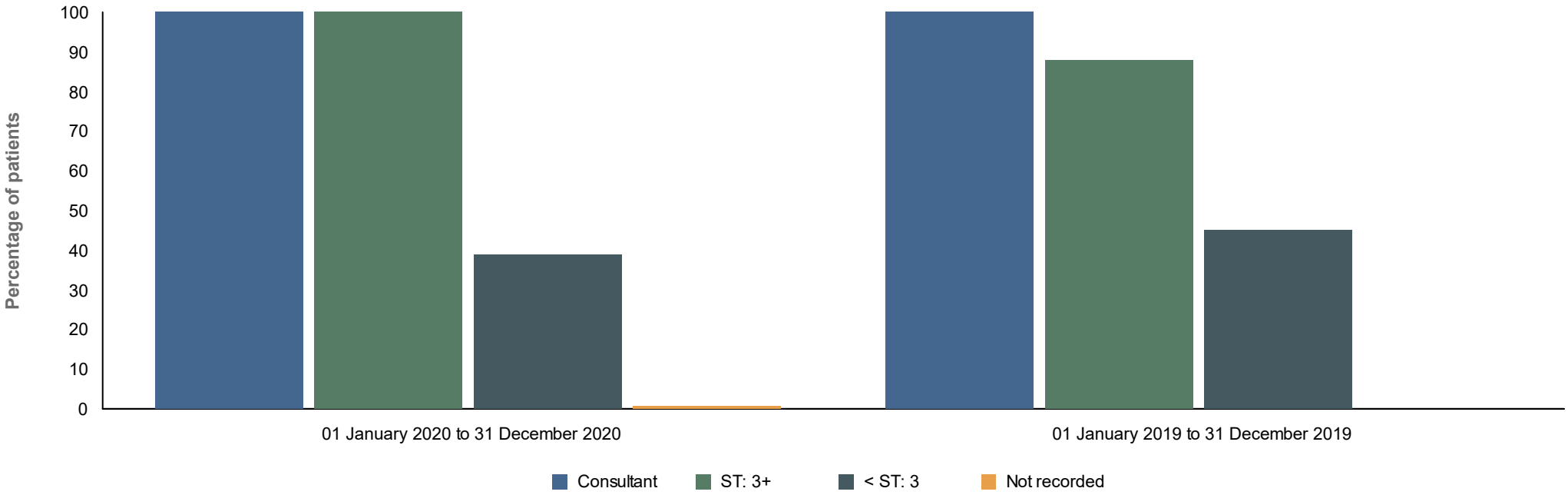


Example Hospital

Most senior doctor seeing patients in the Emergency Department

All patients directly admitted to the ED, all specialities

Category	Total	Consultant	TU average consultant	ST: 3+	< ST: 3	Not recorded
01 January 2020 to 31 December 2020						
All patients	611	320 (52.4%)	32.4%	204 (33.4%)	85 (13.9%)	2 (0.3%)
ISS > 15 patients	214	128 (59.8%)	37.8%	65 (30.4%)	21 (9.8%)	0 (0.0%)
Trauma team activated	49	42 (85.7%)	54.8%	7 (14.3%)	0 (0.0%)	0 (0.0%)
Trauma team not activated	562	278 (49.5%)	29.2%	197 (35.1%)	85 (15.1%)	2 (0.4%)
01 January 2019 to 31 December 2019						
All patients	657	372 (56.6%)	33.3%	182 (27.7%)	103 (15.7%)	0 (0.0%)
ISS > 15 patients	219	136 (62.1%)	38.5%	55 (25.1%)	28 (12.8%)	0 (0.0%)
Trauma team activated	33	31 (93.9%)	55.8%	2 (6.1%)	0 (0.0%)	0 (0.0%)
Trauma team not activated	624	341 (54.6%)	30.4%	180 (28.8%)	103 (16.5%)	0 (0.0%)



Example Hospital

Time to CT scan

Direct Admissions

(excluding patients with a time difference greater than 24 hours or taken directly to theatre)

Patient category	n (CT with date and time rec)	Median minutes to*			TU median minutes to	
		CT	Provisional report	Final report	CT	Final report
01 January 2020 to 31 December 2020						
All Patients	446	122 (65 - 200)	52 (36 - 76)	460 (172 - 760)	**130 (69 - 234)**	**112 (57 - 543)**
AIS 3+ Head Injury	126	90 (51 - 168)	45 (33 - 65)	454 (148 - 792)	**105 (59 - 178)**	**112 (54 - 556)**
NICE head injury criteria	29	62 (43 - 104)	41 (30 - 62)	338 (199 - 707)	**61 (38 - 98)**	**108 (58 - 495)**
01 January 2019 to 31 December 2019						
All Patients	435	112 (54 - 232)	59 (41 - 85)	592 (211 - 822)	**149 (74 - 273)**	**109 (55 - 591)**
AIS 3+ Head Injury	133	76 (45 - 152)	51 (41 - 80)	650 (263 - 822)	**116 (62 - 204)**	**110 (51 - 609)**
NICE head injury criteria	24	44 (30 - 70)	60 (50 - 80)	539 (343 - 707)	**56 (34 - 96)**	**88 (53 - 417)**

Median time to CT
Time from hospital arrival to first CT scan

Median time to provisional report
Time from first CT scan to the provisional report being produced

Median time to final report
Time from first CT scan to the review of the provisional report by a consultant

*** N/A means there are not enough cases to calculate the median and interquartile range**

Example Hospital

Time to first operation (emergency operations only)

Direct Admissions (excluding patients with a time difference greater than 24 hours)

Patient category	n	Median minutes to operation*	TU median minutes to operations
01 January 2020 to 31 December 2020			
All Patients	25	710 (354 - 1029)	**943 (478 - 1204)**
Facial operations	2	N/A	**372 (322 - 1006)**
Spinal operations	3	N/A	**729 (491 - 1011)**
Chest operations	2	N/A	**453 (279 - 1005)**
Abdominal operations	3	N/A	**266 (164 - 497)**
Limb operations	1	N/A	**1088 (838 - 1278)**
BOAST4 operations	7	1045 (1017 - 1176)	**955 (619 - 1176)**
Skin operations	6	355 (350 - 1018)	**978 (585 - 1190)**
General operations	1	N/A	**123 (104 - 626)**
01 January 2019 to 31 December 2019			
All Patients	14	433 (294 - 901)	**880 (404 - 1182)**
Facial operations	1	N/A	**729 (361 - 1103)**
Spinal operations	3	N/A	**800 (665 - 1154)**
Chest operations	1	N/A	**359 (215 - 721)**
Abdominal operations	4	N/A	**264 (136 - 480)**
Limb operations	2	N/A	**1085 (795 - 1265)**
BOAST4 operations	1	N/A	**934 (422 - 1140)**
Skin operations	2	N/A	**894 (478 - 1168)**

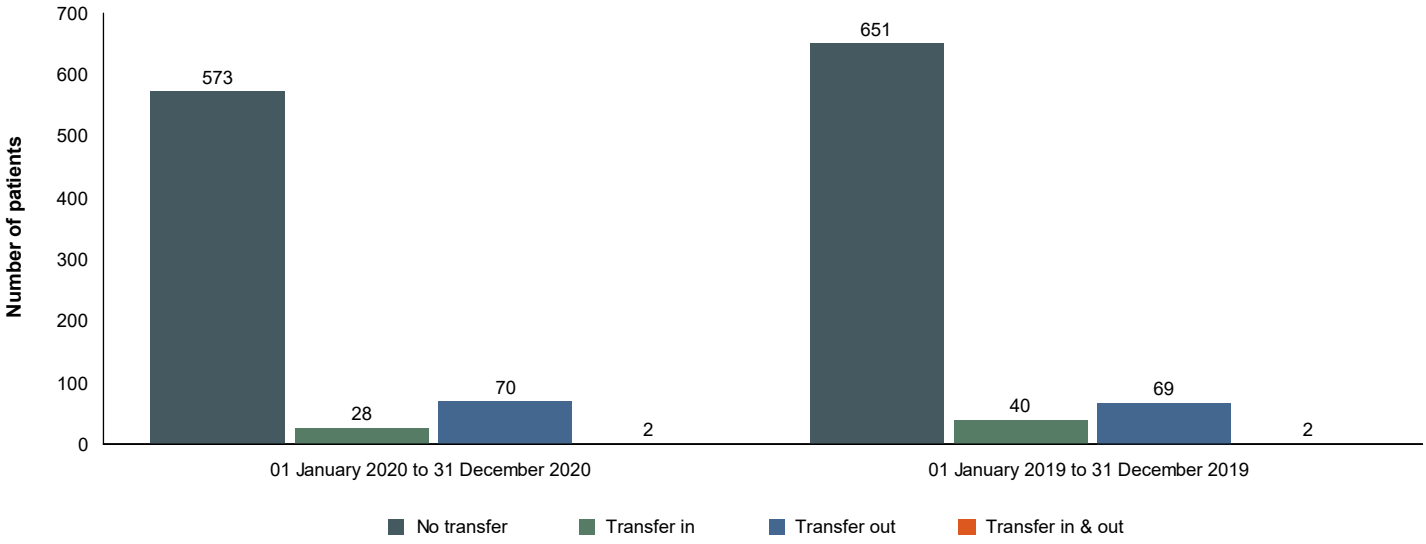
A list of the procedures defined as emergency operations is available from TARN on request.

*** N/A means there are not enough cases to calculate the median and interquartile range**

Example Hospital

Transfer between hospitals

Date range	No transfer	Transfer in	Transfer out	Transfer in & out
01 January 2020 to 31 December 2020	573 (85.1%)	28 (4.2%)	70 (10.4%)	2 (0.3%)
01 January 2019 to 31 December 2019	651 (85.4%)	40 (5.2%)	69 (9.1%)	2 (0.3%)

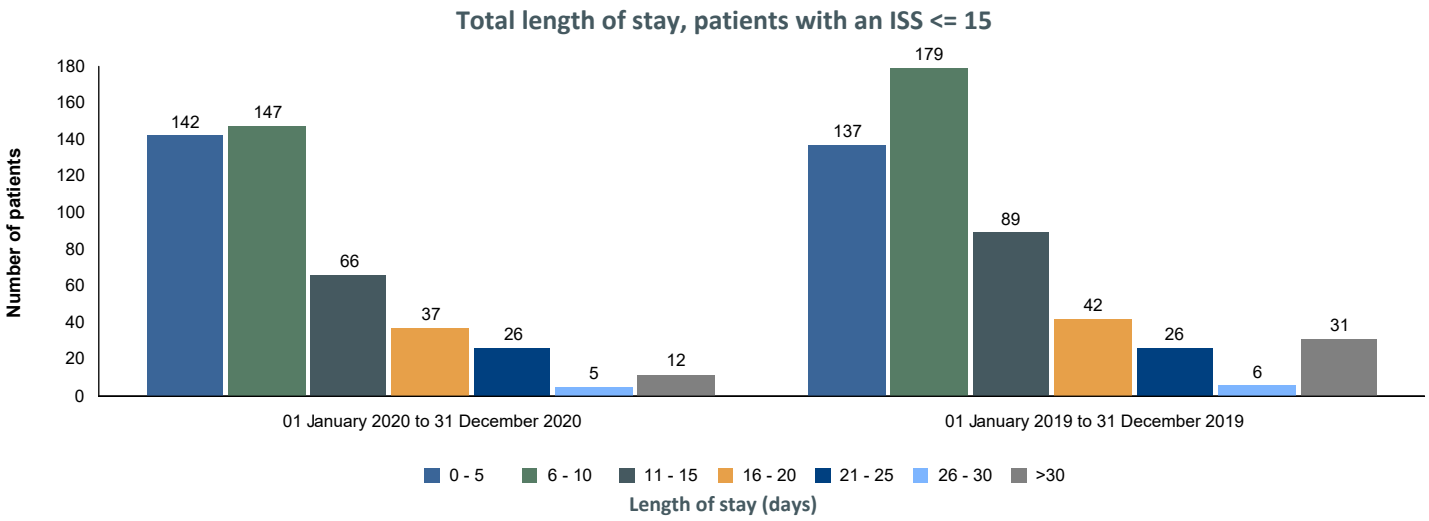


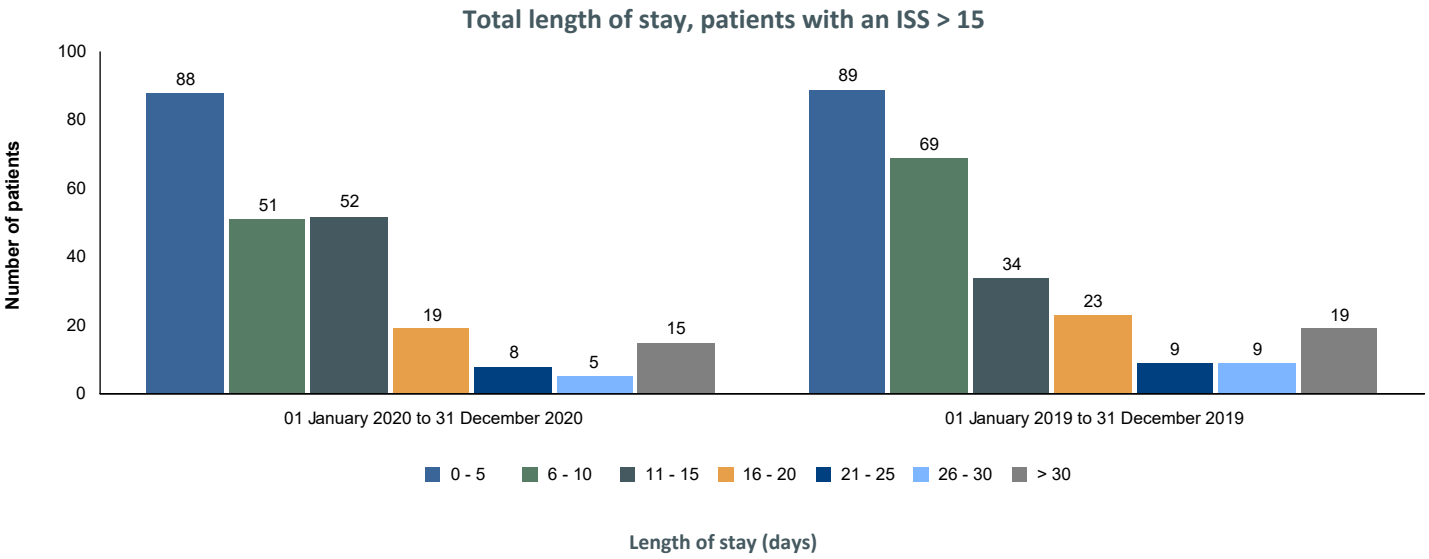
Example Hospital

Length of stay (LOS) in hospital

Date range	All patients			ISS <= 15			ISS > 15		
	n	Median LOS	Total days	n	Median LOS	Total days	n	Median LOS	Total days
01 January 2020 to 31 December 2020	673	8 (4 - 14)	6955	435	8 (5 - 13)	4360	238	8 (3 - 14)	2595
TU average		8 (4 - 14)			8 (5 - 14)			7 (3 - 14)	
01 January 2019 to 31 December 2019	762	9 (5 - 14)	8797	510	9 (5 - 14)	5976	252	8 (4 - 15)	2821
TU average		8 (4 - 16)			9 (5 - 16)			7 (3 - 15)	

All values are median number of days (interquartile range)



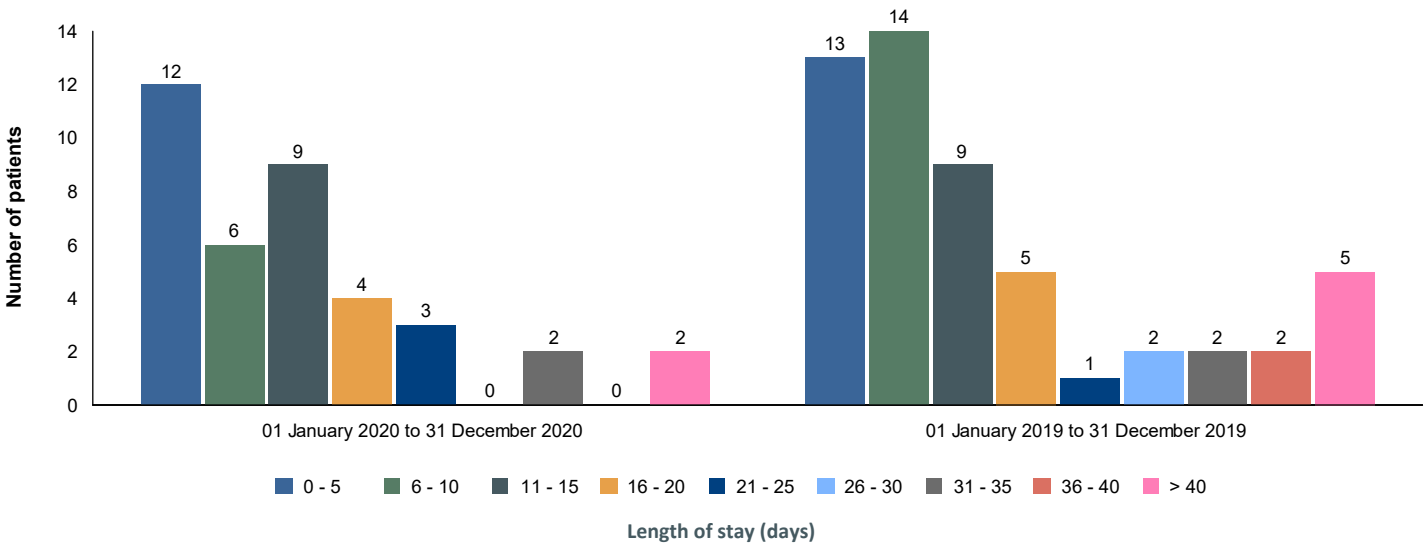


Example Hospital

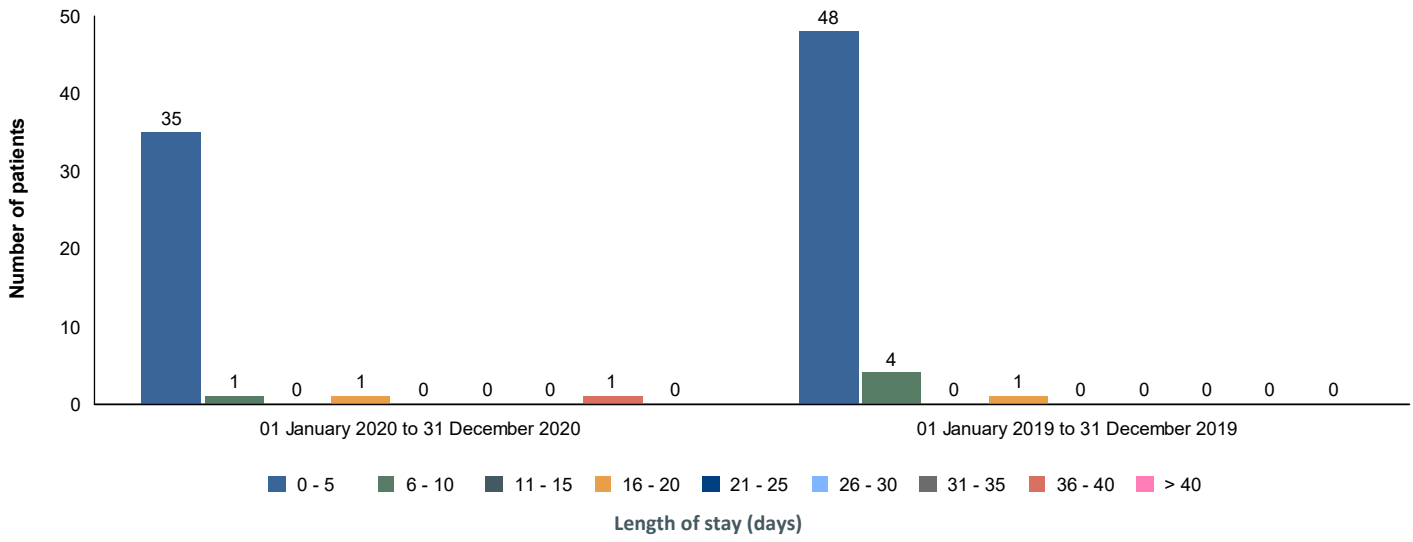
Critical Care Information

Date range	Patients that went to critical care	Median total LOS for critical care patients (days)	Median LOS in critical care (days)	Multiple stays in critical care area*	Multiple stays in critical care area with dates recorded*	Multiple stays in critical care area within 48 hours*
01 January 2020 to 31 December 2020	38	11 (5 - 17)	1 (1 - 4)	0 (0.0%)	N/A	N/A
TU average		10 (5 - 19)	2 (1 - 5)	4.1%	0.9%	0.4%
01 January 2019 to 31 December 2019	53	10 (6 - 18)	1 (1 - 3)	0 (0.0%)	N/A	N/A
TU average		10 (5 - 21)	2 (1 - 5)	4.3%	1.7%	0.3%

Total hospital length of stay for patients that went to critical care



Total length of stay in critical care



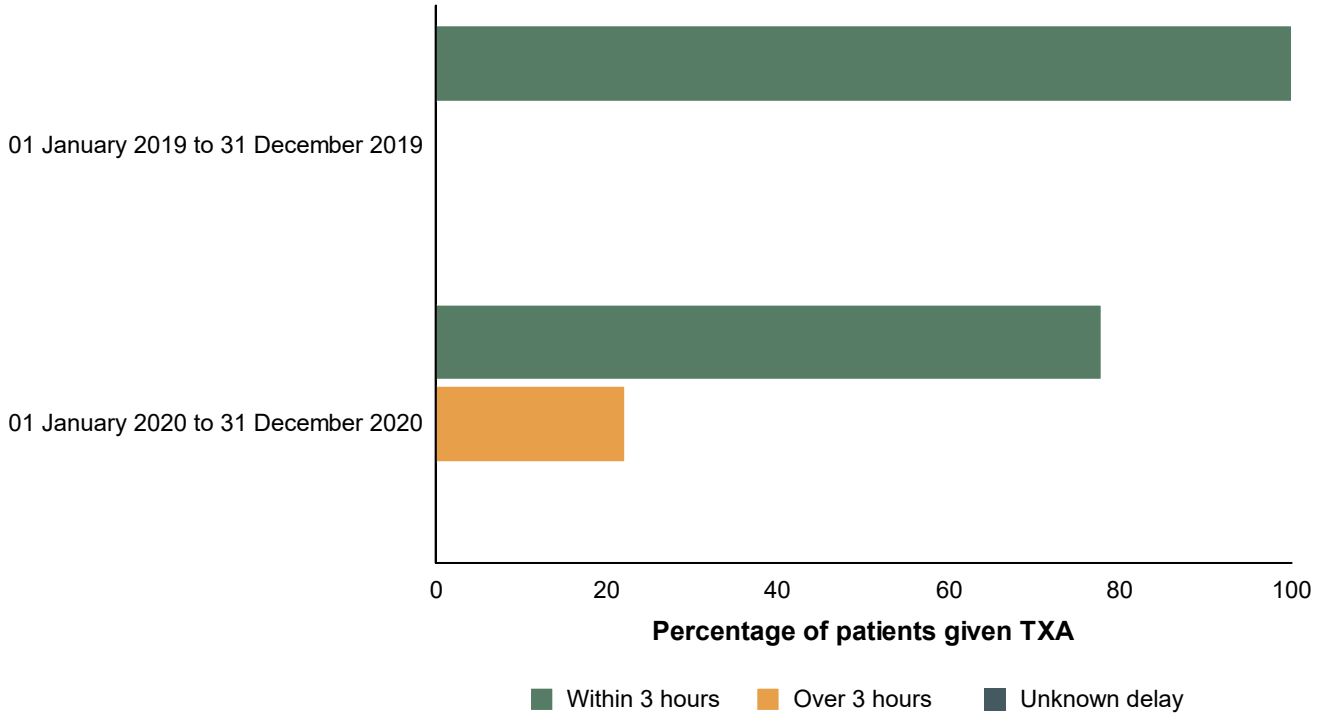
*** Multi stays also includes step downs (i.e. ICU -> HDU) within critical care area**

Example Hospital

Patients receiving Tranexamic Acid

All patients who receive blood products within 6 hours of the incident.

Date Range	n	Received TXA	TXA within 3 hours of incident	TXA over 3 hours from incident	TXA, unknown delay
01 January 2019 to 31 December 2019	11	9	9 (100.0%)	0 (.0%)	0 (0.0%)
TU average			75.9%	20.2%	3.9%
01 January 2020 to 31 December 2020	10	9	7 (77.8%)	2 (22.2%)	0 (0.0%)
TU average			67.7%	25.7%	6.6%



Example Hospital

NICE Quality Standards

Figures in blue represent the TU average

1: Airway Management

Rapid sequence induction (RSI) of anaesthesia and intubation within 45 minutes of the initial call to the emergency services.

n	Definitive airway	At scene	ED	Recorded within 45 minutes of initial call
Direct admissions, 01 January 2020 to 31 December 2020				
21	8 (38.1%)	1 (4.8%)	7 (33.3%)	0 (0.0%)
	43.9%	**9.1%**	**34.8%**	**0.9%**
Direct admissions, 01 January 2019 to 31 December 2019				
20	9 (45.0%)	0 (0.0%)	9 (45.0%)	0 (0.0%)
	49.6%	**12.5%**	**37.1%**	**2.3%**

Definitive airway management is defined as the management of an airway using intubation, tracheostomy or cricothyroidotomy.
Patient are eligible for this standard if they have a GCS < 9 pre-hospital or in the ED.

2: Imaging

People who have had urgent 3D imaging for major trauma have a provisional written radiology report within 60 minutes of the scan.

Number of patients undergoing 3D imaging	Provisional written report within 60 minutes
Direct admissions, 01 January 2020 to 31 December 2020	
357	209 (58.5%)
	81.7%
Direct admissions, 01 January 2019 to 31 December 2019	
330	176 (53.3%)
	85.5%

Patients are eligible for this standard when they have undergone urgent 3D imaging (CT or MRI within 4 hours of arrival).
People who have had urgent 3D imaging for major trauma have a provisional written radiology report within 60 minutes of the scan.

3: Fixation & soft tissue cover of open long bone fractures

People with open fractures of long bones have fixation and definitive soft tissue cover within 72 hours of injury

n	Stabilisation & fixation	Definitive soft tissue cover	Stabilisation, fixation & definitive soft tissue cover
Direct admissions, 01 January 2020 to 31 December 2020			
28	22 (78.6%)	10 (35.7%)	9 (32.1%)
	71.9%	**25.6%**	**24.3%**
Direct admissions, 01 January 2019 to 31 December 2019			
23	23 (100.0%)	5 (21.7%)	5 (21.7%)
	71.9%	**25.6%**	**24.3%**

Patients are eligible for this standard when they have suffered from open fractures of the femur, tibia, fibula, humerus, radius & ulna

TARN

THE TRAUMA AUDIT & RESEARCH NETWORK

Section II

Patients with Thoracic Injuries

Patients with Abdominal Injuries

Patients with 3+ Rib Fractures

Patients in Shock

Example Hospital

Thoracic Injuries - Summary Information

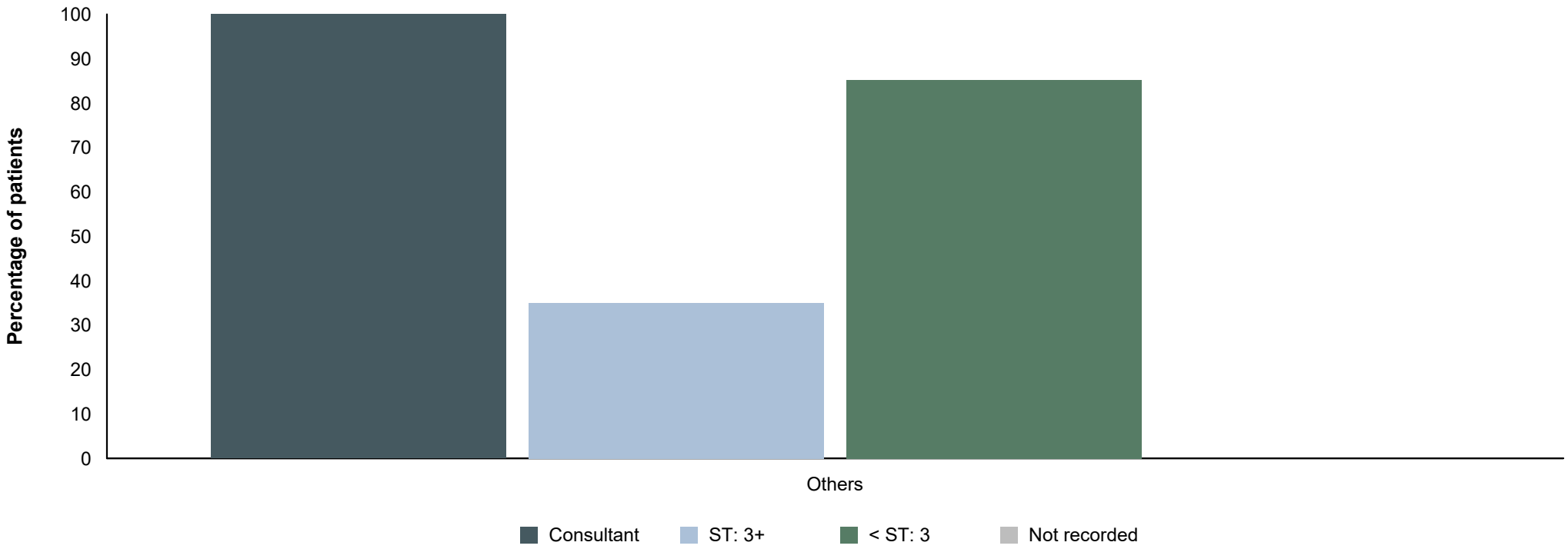
	Children (0 - 15)		Adults		Total
	Blunt	Penetrating	Blunt	Penetrating	
01 January 2020 to 31 December 2020					
Thoracic Injuries - All Severities					
Direct Admissions	1	0	227	1	229
Transfers In	0	0	12	0	12
Thoracic Injuries - AIS 3+					
Direct Admissions	0	0	173	1	174
Transfers In	0	0	7	0	7
01 January 2019 to 31 December 2019					
Thoracic Injuries - All Severities					
Direct Admissions	1	0	200	1	202
Transfers In	0	0	12	0	12
Thoracic Injuries - AIS 3+					
Direct Admissions	1	0	152	1	154
Transfers In	0	0	11	0	11

Example Hospital

Most senior doctor seeing patients with AIS 3+ thoracic injuries in the Emergency Department

Patients directly admitted, all specialities

Category	Total	Consultant	TU average consultant	ST: 3+	< ST: 3	Not recorded
01 January 2020 to 31 December 2020						
Isolated Thoracic Injuries	138	71 (51.4%)	36.2%	12 (8.7%)	47 (34.1%)	0 (0.0%)
Non-Isolated Thoracic Injuries	36	27 (75.0%)	47.8%	1 (2.8%)	7 (19.4%)	0 (0.0%)
01 January 2019 to 31 December 2019						
Isolated Thoracic Injuries	123	69 (56.1%)	37.3%	13 (10.6%)	31 (25.2%)	0 (0.0%)
Non-Isolated Thoracic Injuries	31	25 (80.6%)	51.8%	4 (12.9%)	2 (6.5%)	0 (0.0%)



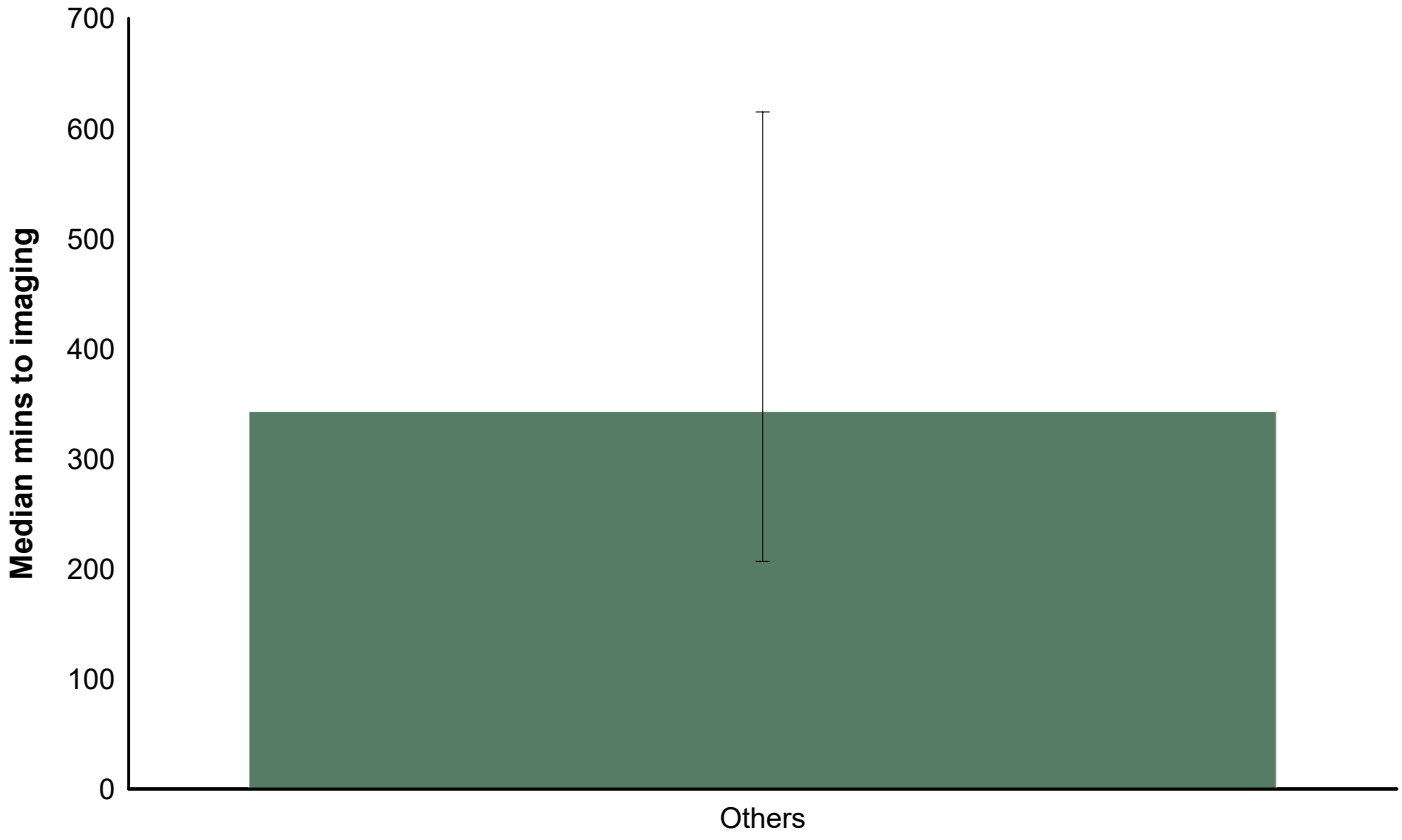
Example Hospital

Time to CT or MRI scan, patients with AIS3+ thoracic injuries

Direct Admissions

(excluding patients with a time difference greater than 24 hours or taken directly to theatre)

Category	n	Imaging recorded	Imaging with date & time	Mins to imaging* Median (IQR)	TU mins to imaging Median (IQR)
01 January 2020 to 31 December 2020					
Isolated Thoracic Injuries	127	127	127	134 (79 - 191)	140 (74 - 231)
Non-Isolated Thoracic Injuries	33	33	33	60 (38 - 123)	77 (45 - 144)
01 January 2019 to 31 December 2019					
Isolated Thoracic Injuries	107	107	107	111 (60 - 200)	155 (79 - 267)
Non-Isolated Thoracic Injuries	29	29	28	38 (30 - 101)	78 (43 - 151)



*** N/A means there are not enough cases to calculate the median / IQR**

Example Hospital

Abdominal Injuries - Summary Information

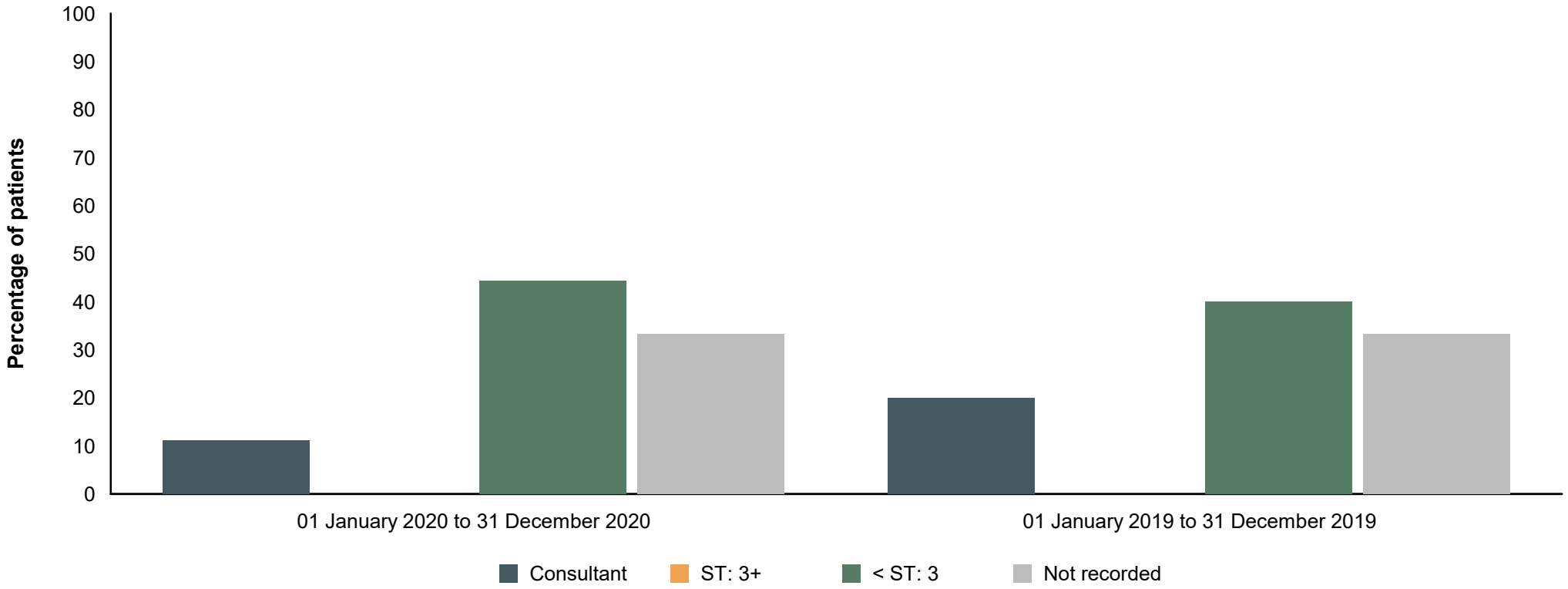
	Children		Adults		Total
	Blunt	Penetrating	Blunt	Penetrating	
01 January 2020 to 31 December 2020					
Abdominal Injuries - All Severities					
Direct Admissions	2	0	20	2	24
Transfers In	0	0	5	0	5
Abdominal Injuries - AIS 3+					
Direct Admissions	2	0	5	2	9
Transfers In	0	0	4	0	4
01 January 2019 to 31 December 2019					
Abdominal Injuries - All Severities					
Direct Admissions	3	0	23	3	29
Transfers In	0	0	3	0	3
Abdominal Injuries - AIS 3+					
Direct Admissions	2	0	10	3	15

Example Hospital

Presence and grade of general surgeon in the ED for patients with AIS 3+ abdominal injuries

Direct Admissions

Total	Consultant	TU average consultant	ST: 3+	< ST: 3	Not recorded
01 January 2020 to 31 December 2020					
9	1 (11.1%)	8.2%	0 (0.0%)	4 (44.4%)	3 (33.3%)
01 January 2019 to 31 December 2019					
15	3 (20.0%)	7.3%	0 (0.0%)	6 (40.0%)	5 (33.3%)

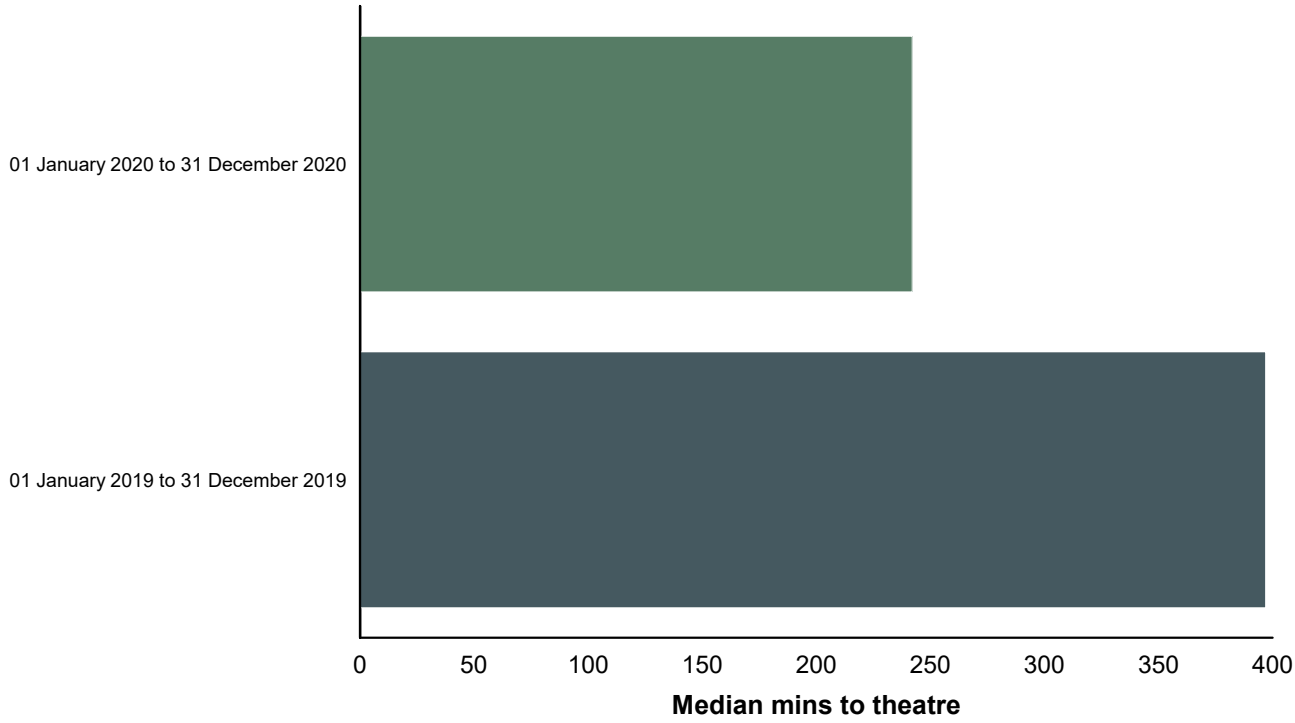


Example Hospital

Time to theatre (emergency operations), patients with AIS3+ abdominal injuries

Direct Admissions (excluding patients with a time difference greater than 24 hours)

Date Range	n	Operation recorded	Mins to theatre* Median (IQR)	TU mins to theatre Median (IQR)
01 January 2020 to 31 December 2020	9	3	242 (N/A)	252 (163 - 481)
01 January 2019 to 31 December 2019	15	3	397 (N/A)	249 (135 - 454)



A list of the procedures defined as emergency operations is available from TARN on request.

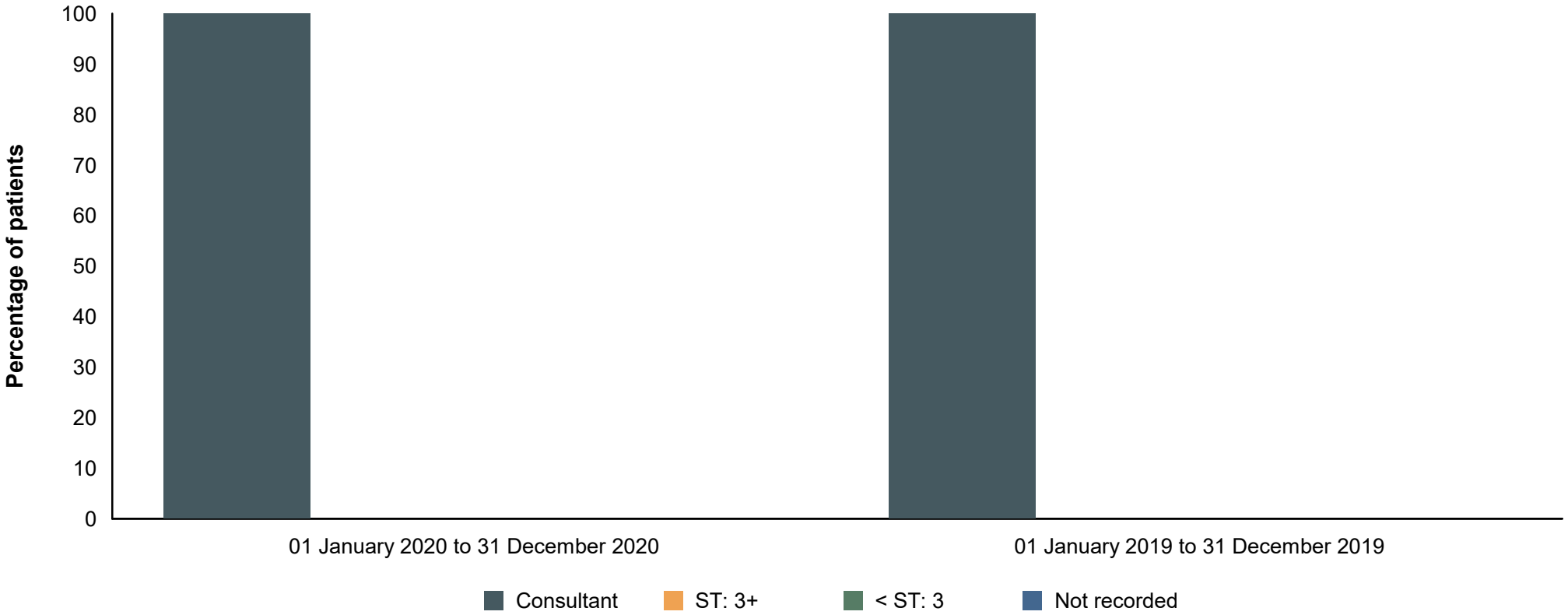
*** N/A means there are not enough cases to calculate the median and interquartile range**

Example Hospital

Grade of Surgeon during the initial operation for patients with AIS 3+ abdominal injuries

Direct Admissions

	Total	Consultant	TU average consultant	ST: 3+	< ST: 3	Not recorded
01 January 2020 to 31 December 2020	3	3 (100.0%)	98.3%	0 (0.0%)	0 (0.0%)	0 (0.0%)
01 January 2019 to 31 December 2019	3	3 (100.0%)	89.7%	0 (0.0%)	0 (0.0%)	0 (0.0%)

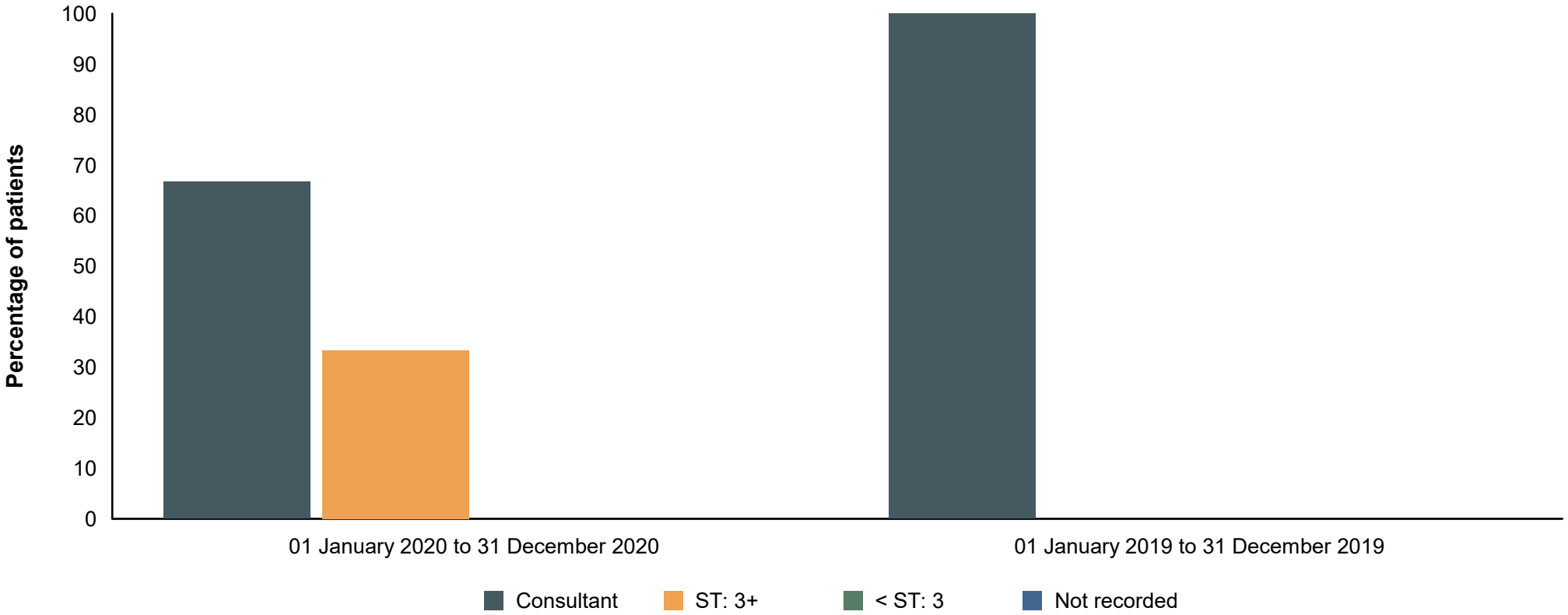


Example Hospital

Grade of Anaesthetist during the initial operation for patients with AIS 3+ abdominal injuries

Direct Admissions

	Total	Consultant	TU average consultant	ST: 3+	< ST: 3	Not recorded
01 January 2020 to 31 December 2020	3	2 (66.7%)	88.4%	1 (33.3%)	0 (0.0%)	0 (0.0%)
01 January 2019 to 31 December 2019	3	3 (100.0%)	83%	0 (0.0%)	0 (0.0%)	0 (0.0%)



Example Hospital

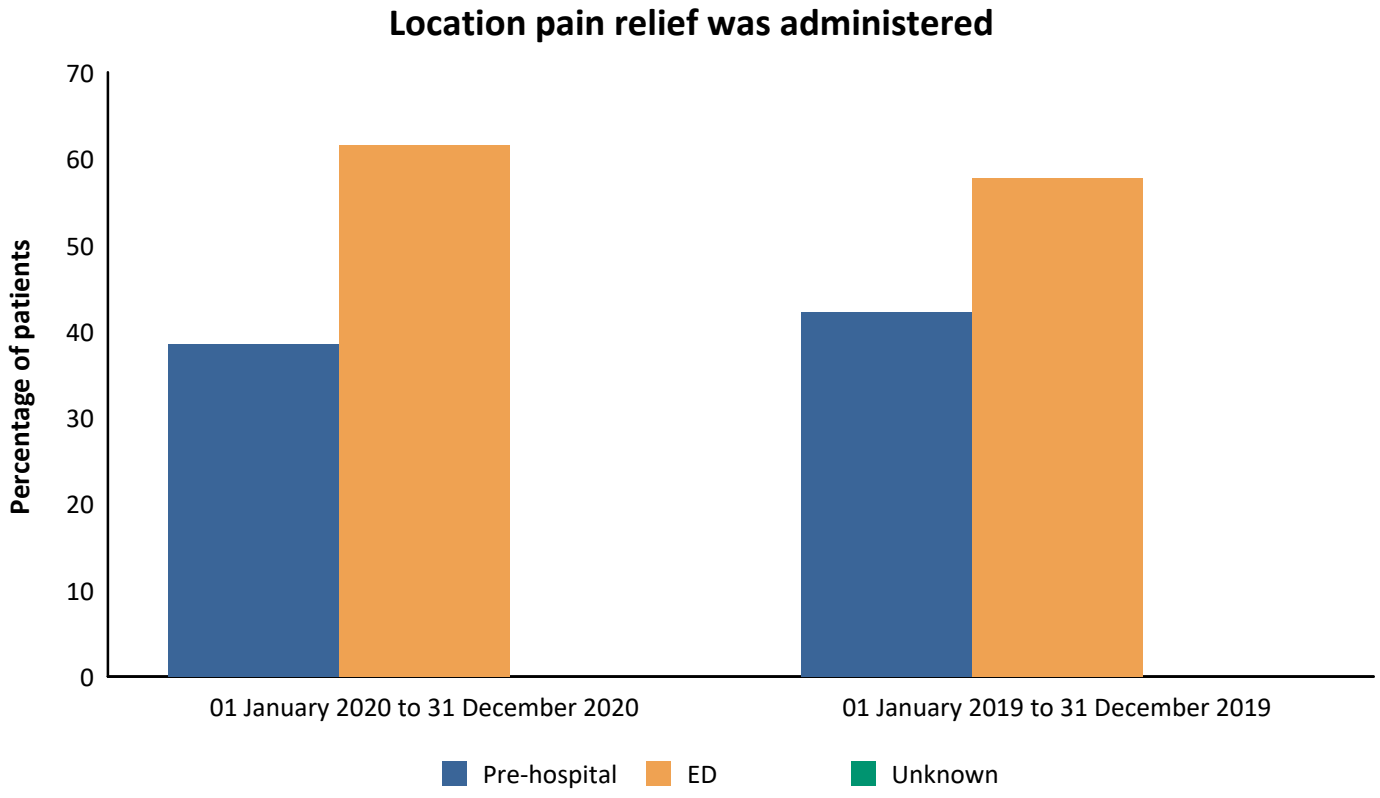
Management of chest wall injuries

Patients with 3+ rib fractures

Date range	Total	Transfers in	Rib fixation	Aged under 65	Aged 65 and over	Given pain relief*	Median LOS (IQR)	Median LOS CC (IQR)
01 January 2020 to 31 December 2020	149	6 (4%)	0 (0%)	45 (30.2%)	104 (69.8%)	65 (43.6%)	8 (5 - 15)	2 (1 - 5)
TU average		4.2%	0.5%	34.6%	65.4%	42.7%	7 (4 - 13)	3 (1 - 6)
01 January 2019 to 31 December 2019	137	9 (6.6%)	0 (0%)	35 (25.5%)	102 (74.5%)	64 (46.7%)	8 (5 - 12)	1 (1 - 5)
TU average		5.6%	0.7%	36.1%	63.9%	42.4%	7 (4 - 13)	3 (1 - 6)

Patients with 3+ rib fractures given pain relief

Date range	Total	Pain relief location			Minutes to pain relief Median (IQR)**
		Pre-hospital	ED	Unknown	
01 January 2020 to 31 December 2020	65	25 (38.5%)	40 (61.5%)	0 (0%)	170 (75 - 360)
TU average		29.9%	64.9%	5.3%	230 (96 - 395)
01 January 2019 to 31 December 2019	64	27 (42.2%)	37 (57.8%)	0 (0%)	154 (100 - 267)
TU average		28.2%	64.2%	7.7%	236 (100 - 415)



*** Pain relief includes the following analgesia types:**

Local anaesthetic patches, Local anaesthetic blockade (non epidural/paravertebral), Epidural block, Paravertebral block, Other

**** Excluding patients with a time difference greater than 24 hours**

Example Hospital

Management of shocked* patients

*Adults with SBP < 110 pre-hospital or in the ED & a blunt injury mechanism

Date Range	Transfer Type	n	Died
01 January 2020 to 31 December 2020	Direct Admissions	93	16 (17.2%)
	Transfers In	1	0 (0.0%)
01 January 2019 to 31 December 2019	Direct Admissions	100	17 (17.0%)

Direct Admissions

01 January 2020 to 31 December 2020

Grade of most senior doctor performing the inital operation on shocked patients

Category	Consultant	ST: 3+	< ST: 3+	Not recorded
Grade of Surgeon	39 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Grade of Anaesthetist	35 (89.7%)	0 (0.0%)	2 (5.1%)	2 (5.1%)

54 of the 93 patients directly admitted had no operation recorded.

01 January 2019 to 31 December 2019

Grade of most senior doctor performing the inital operation on shocked patients

Category	Consultant	ST: 3+	< ST: 3+	Not recorded
Grade of Surgeon	24 (72.7%)	1 (3.0%)	2 (6.1%)	6 (18.2%)
Grade of Anaesthetist	22 (66.7%)	0 (0.0%)	2 (6.1%)	9 (27.3%)

67 of the 100 patients directly admitted had no operation recorded.

Appendix Information

The appendix for this report is a separate Excel file, below are details of which filters to apply in order to select patients relevant to each page.

Please request your appendix by emailing support@tarn.ac.uk.

Page	Filter(s) to apply
Pre-hospital care	Direct admission = Yes
Most senior doctor (5 / 30 minutes & ED)	Direct admission = Yes ISS > 15 / Trauma Team = Yes or No for categories
Time to CT scan	Direct admission = Yes Head 3+ = Yes / NICE = Yes for categories
Time to CT scan by month	Direct admission = Yes, Month is based on arrival date
Time to Operation	Direct admission = Yes Head 3+ = Yes for category
Critical care information	ICU LOS > 0
Most senior doctor, AIS 3+ thoracic injuries	Direct admission = Yes, Thoracic injury severity >= 3
Time to CT or MRI scan, AIS 3+ thoracic injuries	Direct admission = Yes, Thoracic injury severity >= 3
Grade of ED general surgeon, AIS 3+ abdominal injuries	Direct admission = Yes, Abdominal injury severity >= 3
Time to theatre, AIS 3+ abdominal injuries	Direct admission = Yes, Abdominal injury severity >= 3
Surgeon / anaesthetist grade, AIS 3+ abdominal injuries	Direct admission = Yes, Abdominal injury severity >= 3
Management of shocked patients	Shocked = Yes, Direct admission = Yes for subsection
Patients receiving tranexamic acid	Blood within 6h = Yes