



# TARN

THE TRAUMA AUDIT & RESEARCH NETWORK

Sample TU Hospital

## **CLINICAL REPORT ISSUE 2 - JULY 2017**

**I: CORE MEASURES FOR ALL PATIENTS**

**II: ORTHOPAEDIC INJURIES**

Created on 11/07/2017

## EXECUTIVE SUMMARY

Based on comparison between 14-15 and 15-16 core measures

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

### 2015-16 CORE section:

**Case Ascertainment is 50.2 - 66.1%**, this is **below** the target of 80%.  
This represents **a decrease of 42%** compared to previous year.

Meets target

Compared to previous year



**Data Accreditation is 93.3%**, this is **below** the target of 95%.  
This represents **no change** compared to previous year.



**The rate of survival is as expected**  
**Ws is 0.92**. 95% confidence intervals are **-0.92 to 2.76**



Compared to national average    Compared to previous year

**14% of ISS > 15 patients were seen by a Consultant within 5 minutes of arrival**, this is **below** the national average of 45% and has **remained at the same level** compared to previous year.



**0% of NICE criteria patients had a CT within 30 minutes**, this is **below** the national average of 54% and has **decreased by 12%** compared to previous year.



**5 days median length of stay for ISS > 15 patients**, this is **below** the national average of 8 days.  
This represents **a decrease of 4%** compared to previous year.



**Rehabilitation prescription was completed for 0% of patients with ISS >8**, this is **below** the national average of 63%. This has **remained at the same level** compared to previous year.



### 2015-16 THEMED section: Patients with orthopaedic injuries

**0% of BOAST4 patients received Surgical Stabilisation within the target of 24 hours**, this is **below** the national average of 54%. This represents **a decrease of 27%** compared to previous year.



**0% of BOAST4 patients received Soft Tissue Coverage within the target of 72 hours**, this is **below** the national average of 40%. This represents **a decrease of 9%** compared to previous year.



## BEST PRACTICE SPOTLIGHT

### Improving the management of BOAST4 injuries

**Mr Miguel Fernandez: University Hospitals Coventry & Warwickshire NHS Trust.**

**First Prize (joint): TARN Award for Improvements in Care. Trauma care conference 2016**

Data collected through TARN was utilised to implement changes in the treatment of open lower-limb fractures, taking the unit from one of the poorest performing centres for BOAST4 compliance, to one of the top performers, through the provision of definitive soft tissue coverage within 72 hours of injury for 70% of patients presenting with an open fracture (the national average being 45% of patients). The process not only produced a dramatic improvement in levels of service but also increased collaboration between specialities, with a weekly dedicated whole-day operating list set up for the management of open fractures by allocated senior plastic and orthopaedic surgeons. This, in turn, has led to the commissioning of an additional weekly operating session for surgery for open fractures. The model of dedicated cross-speciality operating sessions, with plastic and orthopaedic surgeons working together, has since been successfully applied to the hand trauma service at UHCW.

## Contents

This Report contains the following sections:

1. **CORE** - includes ALL injured patients admitted in the time frames indicated.
2. **Orthopaedic** - includes patients with severe pelvic injuries, open fractures and BOAST 4 eligible injuries .
3. **Appendix** - detailed information on individual patients (provided on request as a separate file).

### Core

- 1 - Case ascertainment & accreditation of patient data submission
- 2 - Accreditation breakdown
- 3 - Case mix standardised rate of survival
  - Breakdown
  - Caterpillar plots
  - Funnel plots
  - Comparison against other network hospitals
- 4 - ISS & injury mechanism
- 5 - Pre-hospital care
- 6 - Number of patients with a GCS < 9 (pre-hospital or in the ED) and definitive airway management
- 7 - Most senior doctor attending patients within 5 minutes of arrival
- 8 - Most senior doctor attending patients within 30 minutes of arrival
- 9 - Most senior doctor attending patients in the emergency department
- 10 - Time to CT scanning
- 11 - Median time to CT scan per month for all patients
- 12 - Time to first operation
- 13 - Patient pathway & transfer between hospitals
- 14 - Length of stay in hospital
- 15 - Length of stay in, and readmissions to, critical care

### Orthopaedic

- 1 - Patients with BOAST 4 eligible injuries, stabilisation and cover
- 2 - Patients with BOAST 4 eligible injuries, grade of surgeon
- 3 - Patients with severe (AIS 4+) pelvic fractures
- 4 - Patients with open limb fractures

Some sections may not appear if there is insufficient data

## Glossary

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

<b>AIS</b>	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.
<b>BOAST 4</b>	British Orthopaedic Association Standard 4, setting out key markers for care of patients with high energy open lower limb fractures.
<b>Confidence interval</b>	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.
<b>Direct admissions</b>	Describes care in the first treating hospital.
<b>ED</b>	Emergency Department.
<b>GCS</b>	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.
<b>HES / HIPE / PEDW</b>	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.
<b>Interquartile range</b>	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.
<b>Intubation</b>	The insertion of a flexible plastic tube into the trachea to support a patient's airway.
<b>ISS</b>	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).
<b>Median</b>	The middle value in a range. Less easily distorted by very high or very low values than other aggregation methods, such as the mean.
<b>NICE</b>	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.
<b>Paediatric</b>	Patients under 16 years of age at time of admission.
<b>RTC</b>	Road traffic collision.
<b>STR</b>	Specialist Trainee.
<b>TARN fraction</b>	The proportion of TARN patients in each PS band. Used as a weight to standardise hospital outcome performance according to case mix.
<b>Thoracotomy</b>	A surgical incision made into the pleural space of the chest.
<b>W</b>	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.
<b>Ws</b>	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.

**Confidence and caution** Confidence interval data is generated for over than 80% of the most common rate of survival bands. Caution should be taken when interpreting the data for the remaining 20% of cases in the hospital episode statistics (HES).

**Expected** Expected is defined as the number of survivors (80-85%) expected to be seen in a hospital based on the overall TARN population. This is calculated using the hospital episode statistics (HES).

**Extreme** Extreme is data completeness. A hospital with a 100% data completeness for the rate of survival bands for the TARN equivalent cases in the hospital episode statistics (HES).



# TARN

THE TRAUMA AUDIT & RESEARCH NETWORK

Sample TU Hospital

## SECTION I

# 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.

Trust / Hospital	01 April 2016 to 31 December 2016				01 April 2015 to 31 March 2016			
	N	E	C (%)	A (%)	N	E	C (%)	A (%)
NHS Trust	112	158 - 185	60.5 - 70.8	89.8	188	210 - 246	76.4 - 89.4	90.6
NHS Foundation Trust	890	1000 - 1169	76.1 - 89	95.7	1145	1280 - 1497	76.5 - 89.4	93.9
NHS Foundation Trust	272	341 - 399	68.2 - 79.7	98.0	401	448 - 524	76.5 - 89.5	97.4
NHS Trust	151	397 - 458	33 - 38.1	97.9	280	536 - 622	45 - 52.2	97.5
<b>Sample TU Hospital NHS Trust</b>	<b>165</b>	<b>250 - 329</b>	<b>50.2 - 66.1</b>	<b>93.3</b>	<b>365</b>	<b>322 - 419</b>	<b>87.1 - 100+</b>	<b>94.6</b>
NHS Foundation Trust	93	235 - 275	33.8 - 39.5	97.4	238	310 - 362	65.7 - 76.9	97.3
NHS Foundation Trust	13	280 - 328	4 - 4.6	97.1	261	368 - 430	60.7 - 71	94.8
NHS Trust	117	288 - 347	33.7 - 40.7	82.5	326	373 - 450	72.4 - 87.4	90.6
NHS Foundation Trust	512	536	95.6	95.6	762	683	100+	94.5
NHS Foundation Trust	172	282	61	95.8	366	371	98.6	97.9
NHS Trust	20	217 - 254	7.9 - 9.2	93.8	266	265 - 310	85.8 - 100+	93.1
NHS Trust	130	180 - 210	61.9 - 72.4	96.9	228	231 - 270	84.4 - 98.7	98.0
NHS Trust	18	231 - 270	6.7 - 7.8	97.8	229	283 - 331	69.2 - 80.9	95.4

**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.

### Case ascertainment

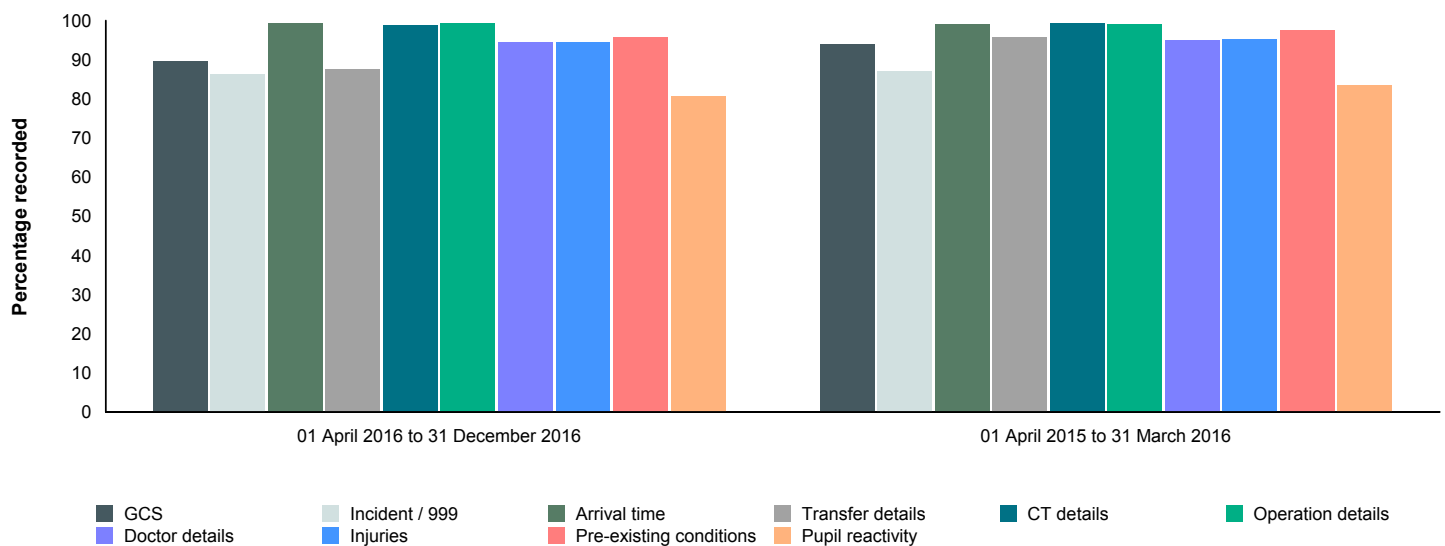
This is displayed as a percentage range and represents the number of patients submitted to TARN compared to the number of patients expected based on the HES dataset. The range represents the variance seen in the accuracy of the HES data. A single value is shown for hospitals that have provided feedback 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 April 2016 to 31 December 2016	01 April 2015 to 31 March 2016	Description
n	165	365	Number of patients
GCS	89.4%	93.9%	A GCS value or a recording of intubation / ventilation that can be used as part of the Ps calculation
Incident / 999 call details	86.4%	87.0%	Incident or 999 call date & time
Arrival time	99.4%	98.9%	Time of arrival at hospital
Transfer details	87.5%	95.7%	Reason for transfer & transfer request date
CT details	98.8%	99.2%	Date and time of recorded CT scan(s)
Operation details	99.3%	99.0%	Date and time, grade and speciality of surgeon and grade of anaesthetist for all recorded operations
Doctors in the ED	94.4%	95.0%	Date, time, grade and speciality of recorded ED doctor(s)
Injuries	94.4%	95.3%	Detailed injury descriptions
Pre-existing conditions	95.8%	97.5%	Information about pre-existing conditions
Pupil reactivity	80.6%	83.3%	Pupil reactivity for patients with AIS 3+ head injuries
<b>Accreditation Total</b>	<b>93.3%</b>	<b>94.6%</b>	



## Sample TU Hospital

## Case mix standardised rate of survival (Ws) &amp; Ws Breakdown (Ps14)

01 April 2015 to 31 December 2016

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	287	284	282.29	0.59	0.72	0.43	
90 - 95	102	95	95.09	-0.09	0.12	-0.01	
80 - 90	42	37	36.22	1.86	0.07	0.12	
65 - 80	34	26	25.21	2.33	0.04	0.09	
45 - 65	8	4	4.46	-5.73	0.03	-0.15	
25 - 45	8	6	3.09	36.38	0.02	0.58	
0 - 25	8	0	1.01	-12.58	0.01	-0.15	
<b>Total</b>	<b>489</b>	<b>452</b>	<b>447.36</b>			<b>0.92</b>	<b>-0.92 to 2.76</b>

## Outcome at 30 days via ONS data linkage

PS Band	Number in band*	Observed Survivors	Expected Survivors	Difference*	TARN fraction	Ws	95% confidence interval
95 - 100	284	280	278.66	0.47	0.71	0.34	
90 - 95	85	81	78.79	2.60	0.11	0.29	
80 - 90	58	51	50.18	1.41	0.08	0.11	
65 - 80	35	28	25.79	6.32	0.04	0.27	
45 - 65	11	5	6.17	-10.61	0.03	-0.30	
25 - 45	8	6	3.02	37.19	0.02	0.61	
0 - 25	8	0	0.93	-11.62	0.01	-0.14	
<b>Total</b>	<b>489</b>	<b>451</b>	<b>443.53</b>			<b>1.18</b>	<b>-0.70 to 3.06</b>

\*The number of cases may be reduced due to missing NHS numbers preventing ONS linkage

$$\text{* Difference (W)} = \frac{\text{Observed} - \text{Expected}}{\text{Number of patients}} \times 100$$

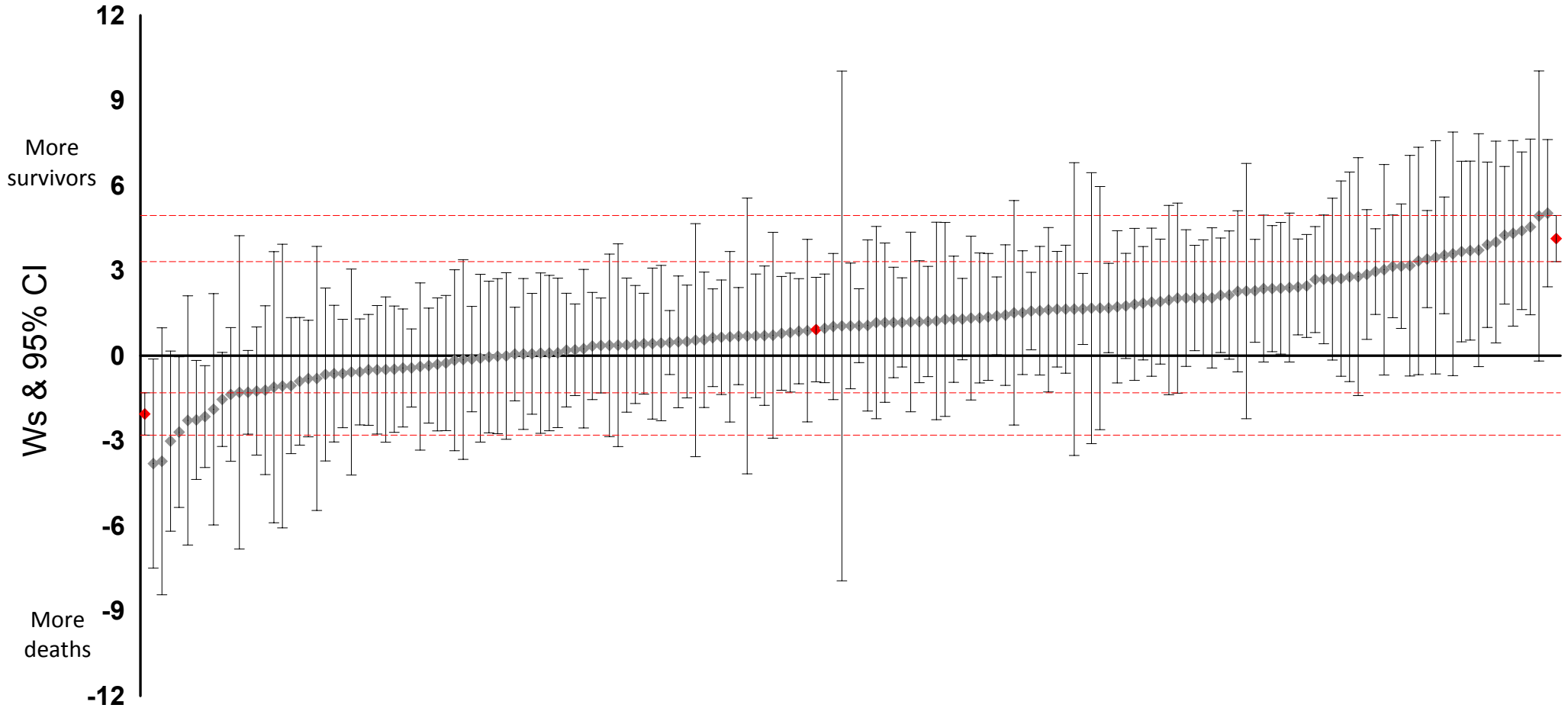
See glossary for further details of the variables included in the PS model.



Sample TU Hospital  
 TARN registered sites (excluding Major Trauma Centres)  
 Comparative Outcome Analysis - 01 April 2015 to 31 December 2016  
 Outcome at 30 days or discharge

Sample TU Hospital is highlighted

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

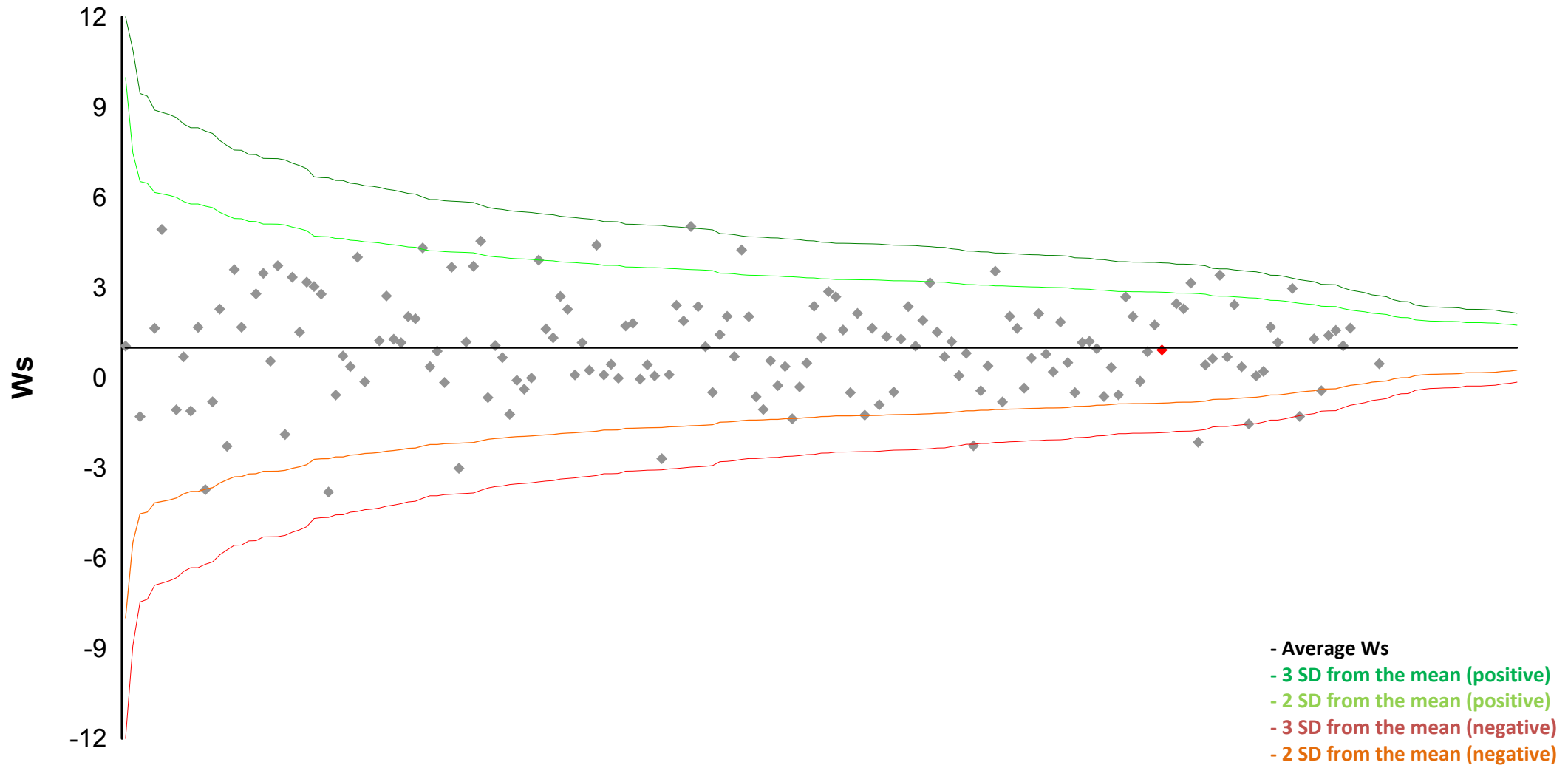


The highlighted points at either end of the chart and dashed horizontal lines indicate the combined Ws for the top and bottom 10 hospitals of the dataset.

**TARN registered sites (excluding Major Trauma Centres)  
Comparative Outcome Analysis - 01 April 2015 to 31 December 2016  
Outcome at 30 days or discharge**

**Sample TU Hospital is highlighted**

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

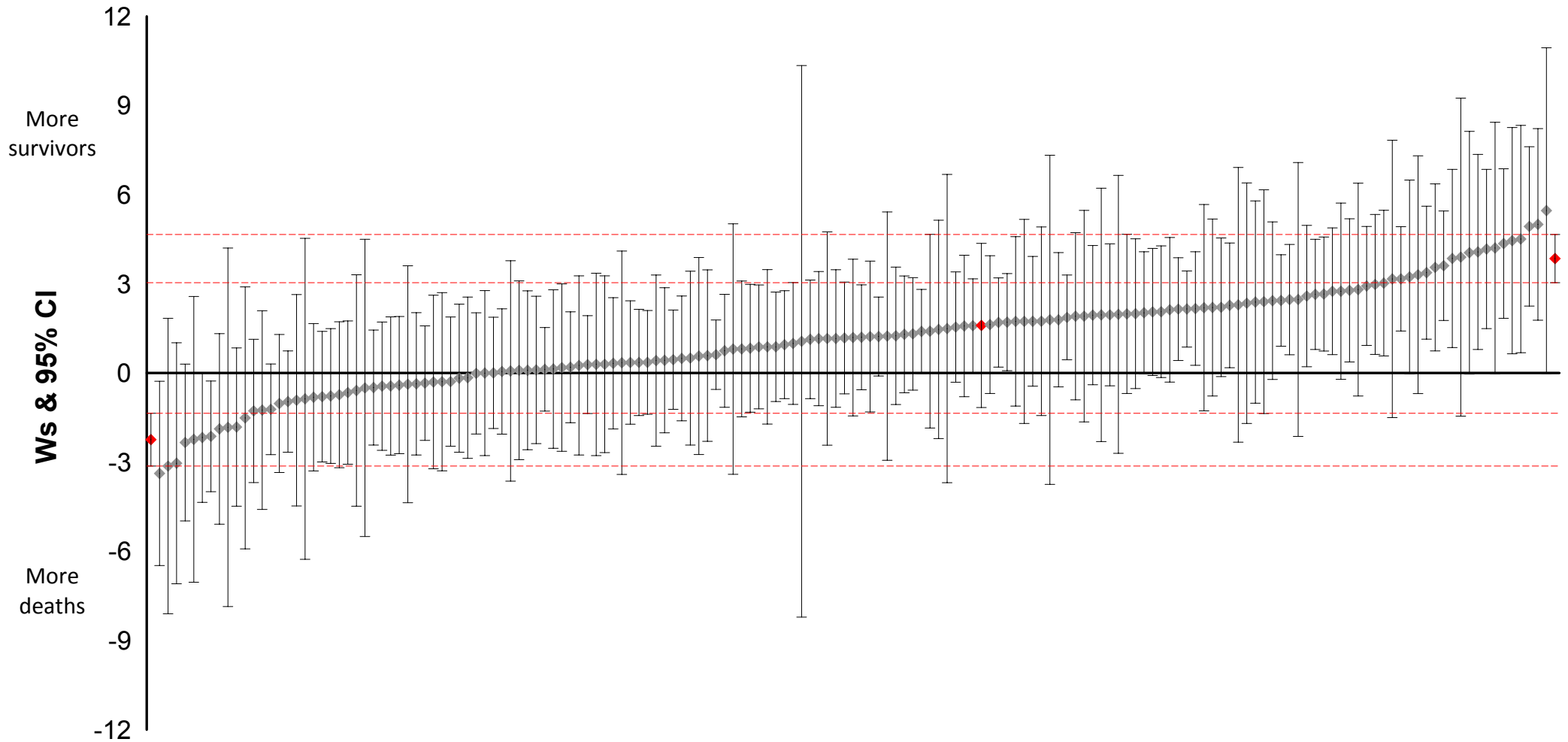


Hospitals are plotted in order of precision (1 / standard error).

Sample TU Hospital  
 TARN registered sites (excluding Major Trauma Centres)  
 Comparative Outcome Analysis - 01 April 2015 to 31 December 2016  
 True Outcome at 30 days via ONS data linkage

Sample TU Hospital is highlighted

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

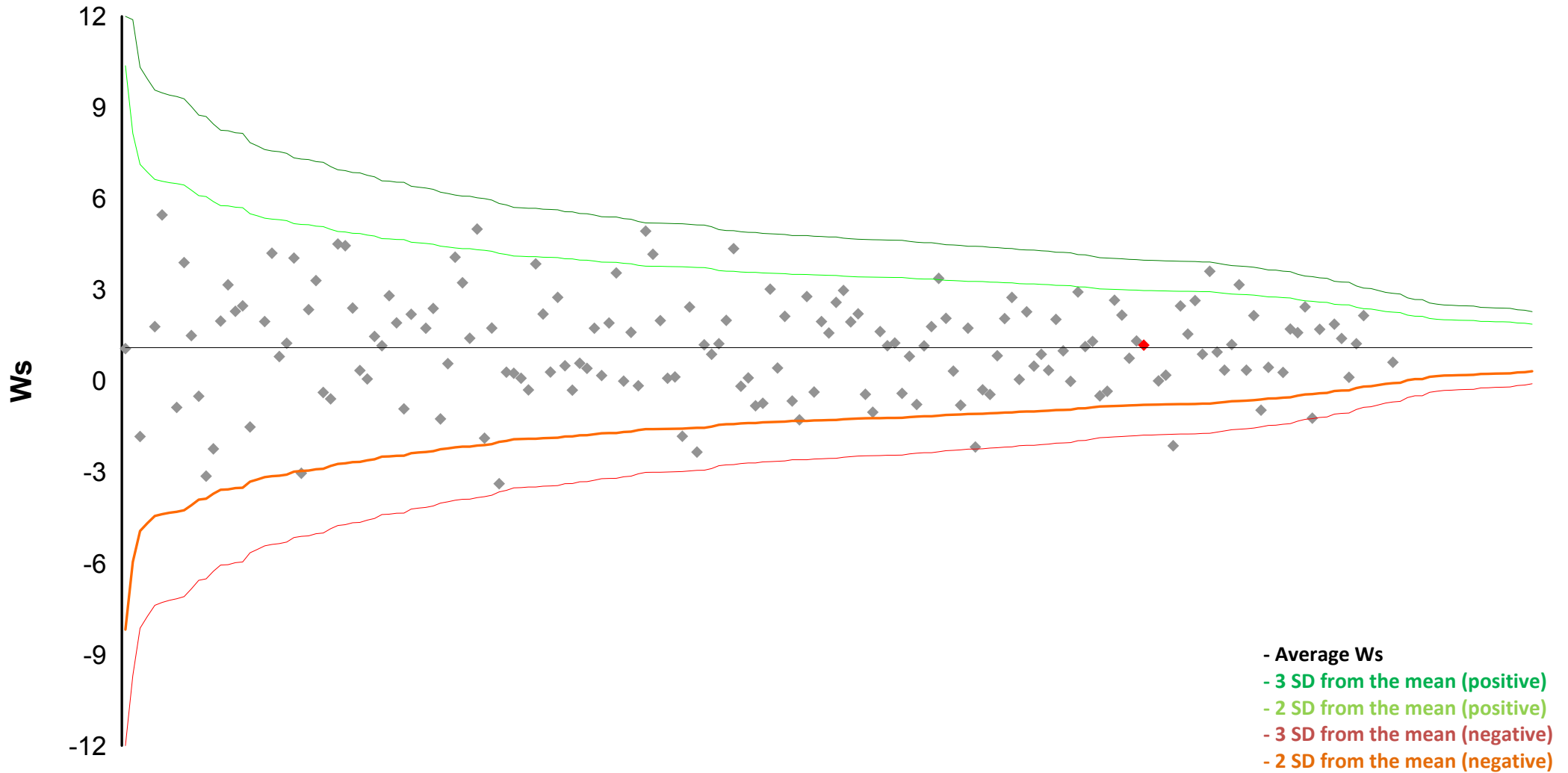


The highlighted points at either end of the chart and dashed horizontal lines indicate the combined Ws for the top and bottom 10 hospitals of the dataset.

**TARN registered hospitals (excluding Major Trauma Centres)  
Comparative Outcome Analysis - 01 April 2015 to 31 December 2016  
True Outcome at 30 days via ONS data linkage**

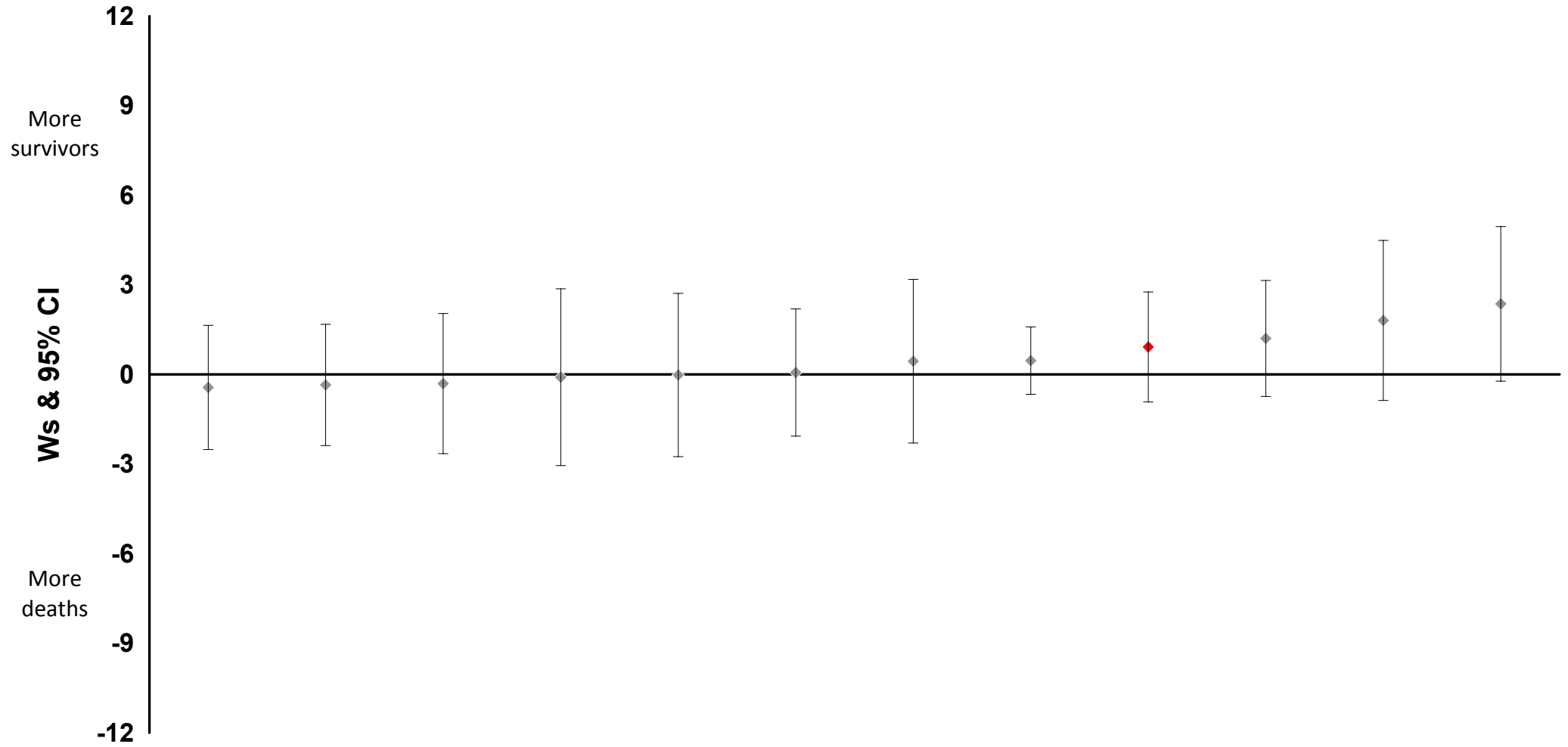
**Sample TU Hospital is highlighted**

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



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

Sample Trauma Network (excluding Major Trauma Centres)  
**Comparative Outcome Analysis - 01 April 2015 to 31 December 2016**  
**Outcome at 30 days or discharge**  
**Sample TU Hospital is highlighted**



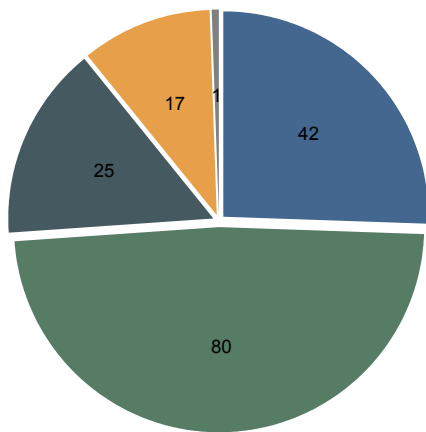
### ISS & Injury Mechanism

(row percentages)

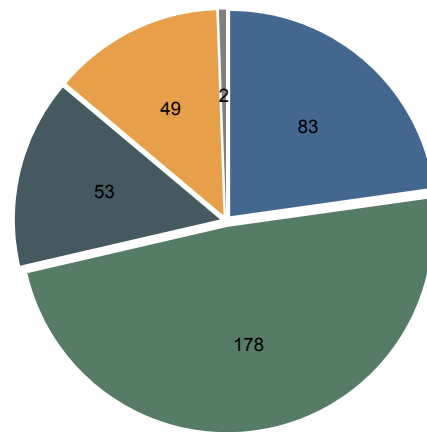
Mechanism	1 - 8	9 - 15	16 - 24	25 - 45	>45	Total	>15
<b>01 April 2016 to 31 December 2016</b>							
RTC	4 (16.0%)	7 (28.0%)	10 (40.0%)	3 (12.0%)	1 (4.0%)	25	14 (56.0%)
Fall < 2m	25 (24.0%)	59 (56.7%)	10 (9.6%)	10 (9.6%)	0 (0.0%)	104	20 (19.2%)
Fall > 2m	7 (30.4%)	11 (47.8%)	4 (17.4%)	1 (4.3%)	0 (0.0%)	23	5 (21.7%)
Shooting / Stabbing	0 (0.0%)	2 (50.0%)	1 (25.0%)	1 (25.0%)	0 (0.0%)	4	2 (50.0%)
Other	6 (66.7%)	1 (11.1%)	0 (0.0%)	2 (22.2%)	0 (0.0%)	9	2 (22.2%)
<b>Total</b>	<b>42 (25.5%)</b>	<b>80 (48.5%)</b>	<b>25 (15.2%)</b>	<b>17 (10.3%)</b>	<b>1 (0.6%)</b>	<b>165</b>	<b>43 (26.1%)</b>

**01 April 2015 to 31 March 2016**

RTC	13 (20.3%)	29 (45.3%)	10 (15.6%)	11 (17.2%)	1 (1.6%)	64	22 (34.4%)
Fall < 2m	55 (23.5%)	122 (52.1%)	32 (13.7%)	25 (10.7%)	0 (0.0%)	234	57 (24.4%)
Fall > 2m	12 (30.8%)	13 (33.3%)	7 (17.9%)	6 (15.4%)	1 (2.6%)	39	14 (35.9%)
Shooting / Stabbing	0 (0.0%)	2 (50.0%)	1 (25.0%)	1 (25.0%)	0 (0.0%)	4	2 (50.0%)
Other	3 (12.5%)	12 (50.0%)	3 (12.5%)	6 (25.0%)	0 (0.0%)	24	9 (37.5%)
<b>Total</b>	<b>83 (22.7%)</b>	<b>178 (48.8%)</b>	<b>53 (14.5%)</b>	<b>49 (13.4%)</b>	<b>2 (0.5%)</b>	<b>365</b>	<b>104 (28.5%)</b>



01 April 2016 to 31 December 2016



01 April 2015 to 31 March 2016

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

## Pre-hospital care

### Direct admissions, 01 April 2016 to 31 December 2016

Number of patients: 141

Number of patients with pre-hospital data: 114

#### Level of personnel on scene

Doctor	Paramedic	Not recorded
2 (1.8%)	110 (96.5%)	2 (1.8%)

#### Mode of transport to hospital

Ambulance	Helicopter	Self-presented	Not recorded*
112 (79.4%)	3 (2.1%)	0 (0.0%)	26 (18.4%)

### Direct admissions, 01 April 2015 to 31 March 2016

Number of patients: 326

Number of patients with pre-hospital data: 253

#### Level of personnel on scene

Doctor	Paramedic	Not recorded
3 (1.2%)	245 (96.8%)	5 (2.0%)

#### Mode of transport to hospital

Ambulance	Helicopter	Self-presented	Not recorded*
252 (77.3%)	2 (0.6%)	0 (0.0%)	72 (22.1%)

\*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)
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### Direct admissions, 01 April 2016 to 31 December 2016

6	4 (66.7%)	1 (16.7%)	3 (50.0%)	3 (75.0%)	0 (0.0%)	1.2
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### Direct admissions, 01 April 2015 to 31 March 2016

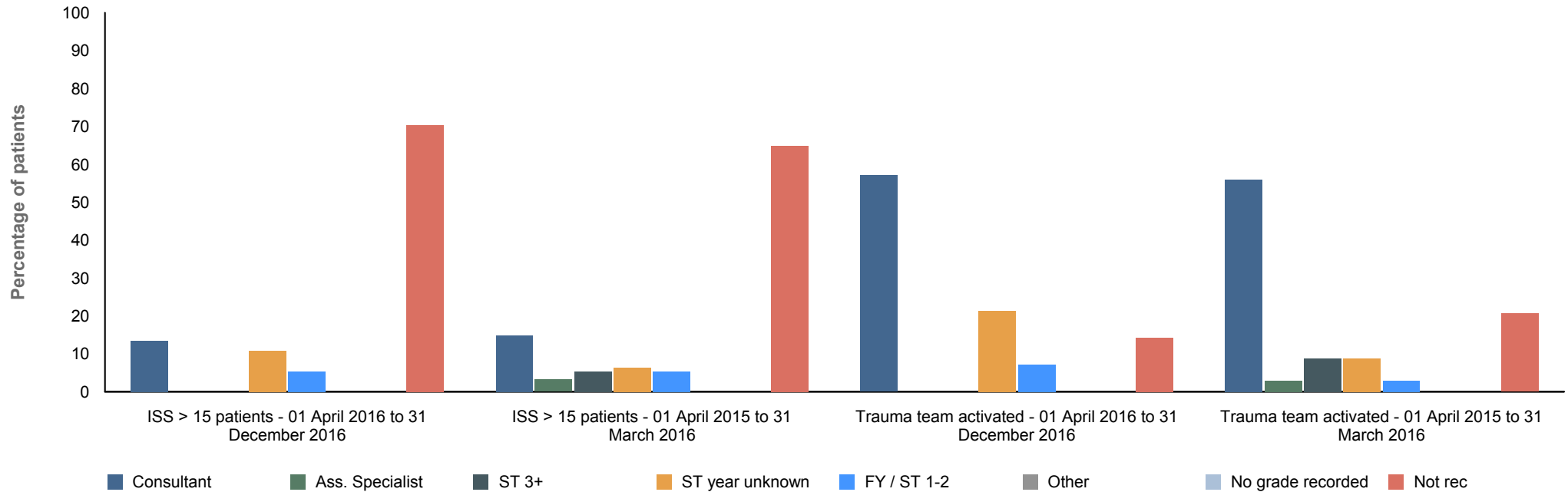
19	7 (36.8%)	1 (5.3%)	6 (31.6%)	2 (28.6%)	0 (0.0%)	1.4
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Definitive airway management is defined as the management of an airway using intubation, tracheostomy or cricothyroidotomy.

### Most senior doctor seeing patients within 5 minutes of arrival

All patients directly admitted, all specialities

Category	Total	Consultant	Associate specialist	ST: 3+	ST: Year unknown	FY / ST: 1-2	Other	No grade recorded	No doctor recorded
<b>01 April 2016 to 31 December 2016</b>									
All patients	141	10 (7.1%)	0 (0.0%)	1 (0.7%)	6 (4.3%)	8 (5.7%)	0 (0.0%)	0 (0.0%)	116 (82.3%)
ISS > 15 patients	37	5 (13.5%)	0 (0.0%)	0 (0.0%)	4 (10.8%)	2 (5.4%)	0 (0.0%)	0 (0.0%)	26 (70.3%)
Trauma team activated	14	8 (57.1%)	0 (0.0%)	0 (0.0%)	3 (21.4%)	1 (7.1%)	0 (0.0%)	0 (0.0%)	2 (14.3%)
Trauma team not activated	127	2 (1.6%)	0 (0.0%)	1 (0.8%)	3 (2.4%)	7 (5.5%)	0 (0.0%)	0 (0.0%)	114 (89.8%)
<b>01 April 2015 to 31 March 2016</b>									
All patients	326	23 (7.1%)	12 (3.7%)	5 (1.5%)	12 (3.7%)	16 (4.9%)	0 (0.0%)	1 (0.3%)	257 (78.8%)
ISS > 15 patients	94	14 (14.9%)	3 (3.2%)	5 (5.3%)	6 (6.4%)	5 (5.3%)	0 (0.0%)	0 (0.0%)	61 (64.9%)
Trauma team activated	34	19 (55.9%)	1 (2.9%)	3 (8.8%)	3 (8.8%)	1 (2.9%)	0 (0.0%)	0 (0.0%)	7 (20.6%)
Trauma team not activated	292	4 (1.4%)	11 (3.8%)	2 (0.7%)	9 (3.1%)	15 (5.1%)	0 (0.0%)	1 (0.3%)	250 (85.6%)

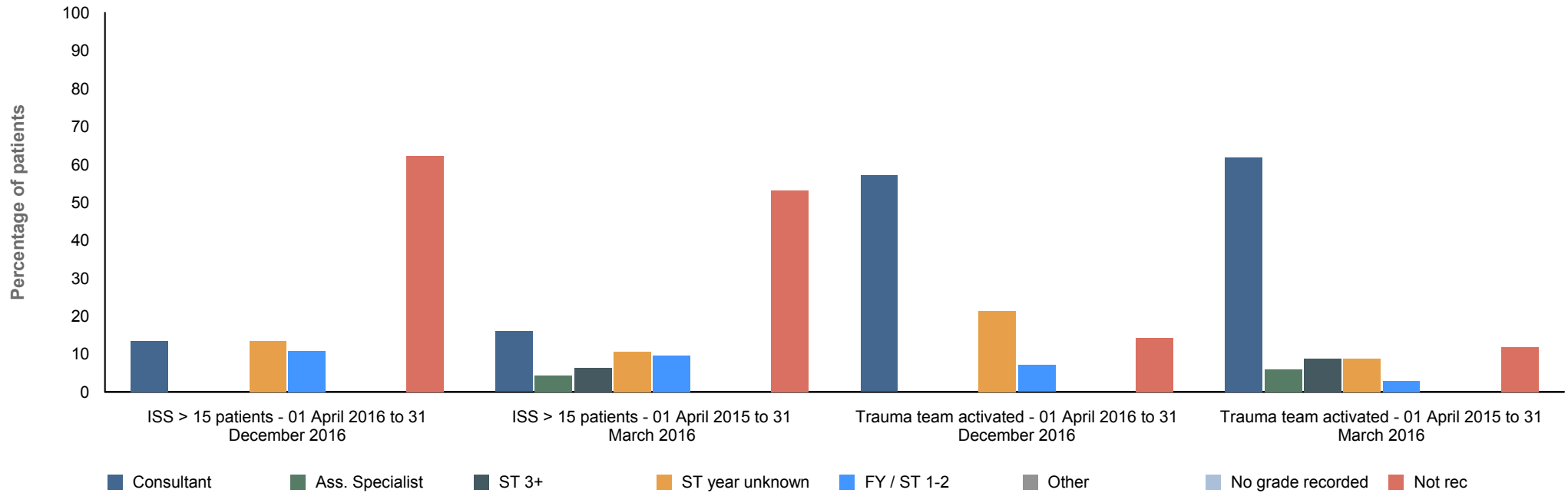




### Most senior doctor seeing patients within 30 minutes of arrival

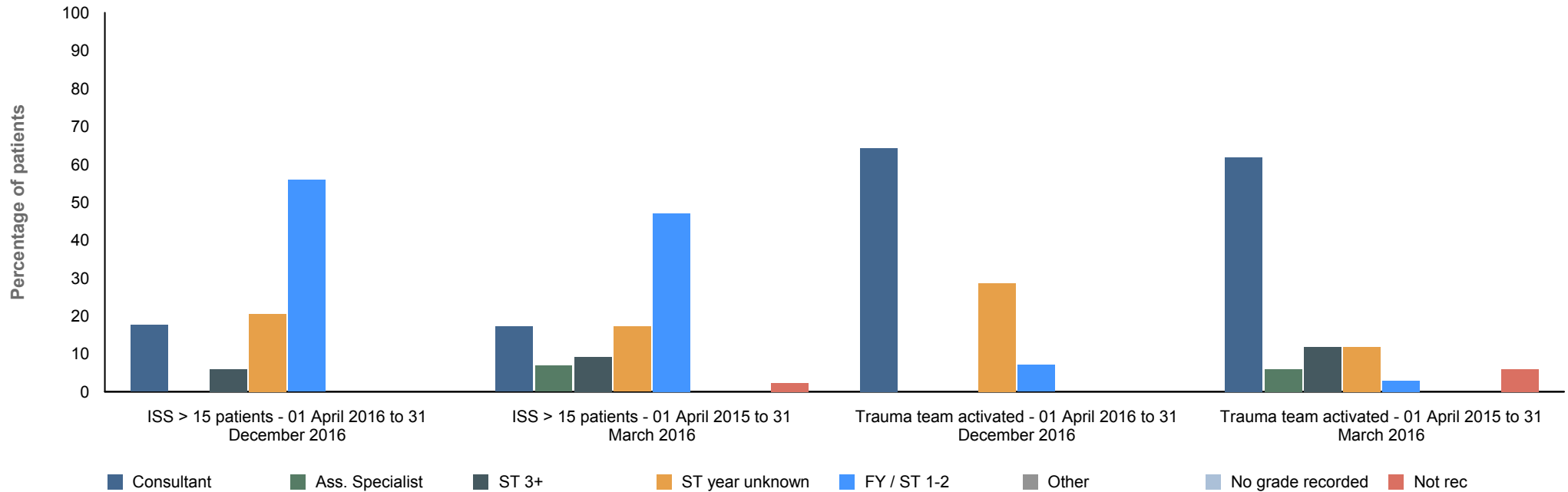
All patients directly admitted, all specialities

Category	Total	Consultant	Associate specialist	ST: 3+	ST: Year unknown	FY / ST: 1-2	Other	No grade recorded	No doctor recorded
<b>01 April 2016 to 31 December 2016</b>									
All patients	141	10 (7.1%)	0 (0.0%)	2 (1.4%)	12 (8.5%)	13 (9.2%)	0 (0.0%)	0 (0.0%)	104 (73.8%)
ISS > 15 patients	37	5 (13.5%)	0 (0.0%)	0 (0.0%)	5 (13.5%)	4 (10.8%)	0 (0.0%)	0 (0.0%)	23 (62.2%)
Trauma team activated	14	8 (57.1%)	0 (0.0%)	0 (0.0%)	3 (21.4%)	1 (7.1%)	0 (0.0%)	0 (0.0%)	2 (14.3%)
Trauma team not activated	127	2 (1.6%)	0 (0.0%)	2 (1.6%)	9 (7.1%)	12 (9.4%)	0 (0.0%)	0 (0.0%)	102 (80.3%)
<b>01 April 2015 to 31 March 2016</b>									
All patients	326	26 (8.0%)	21 (6.4%)	8 (2.5%)	20 (6.1%)	35 (10.7%)	0 (0.0%)	2 (0.6%)	214 (65.6%)
ISS > 15 patients	94	15 (16.0%)	4 (4.3%)	6 (6.4%)	10 (10.6%)	9 (9.6%)	0 (0.0%)	0 (0.0%)	50 (53.2%)
Trauma team activated	34	21 (61.8%)	2 (5.9%)	3 (8.8%)	3 (8.8%)	1 (2.9%)	0 (0.0%)	0 (0.0%)	4 (11.8%)
Trauma team not activated	292	5 (1.7%)	19 (6.5%)	5 (1.7%)	17 (5.8%)	34 (11.6%)	0 (0.0%)	2 (0.7%)	210 (71.9%)



### Most senior doctor seeing patients in the Emergency Department All patients directly admitted to the ED, all specialities

Category	Total	Consultant	Associate specialist	ST: 3+	ST: Year unknown	FY / ST: 1-2	Other	No grade recorded	No ED doctor recorded
<b>01 April 2016 to 31 December 2016</b>									
All patients	131	14 (10.7%)	0 (0.0%)	7 (5.3%)	27 (20.6%)	74 (56.5%)	0 (0.0%)	3 (2.3%)	6 (4.6%)
ISS > 15 patients	34	6 (17.6%)	0 (0.0%)	2 (5.9%)	7 (20.6%)	19 (55.9%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Trauma team activated	14	9 (64.3%)	0 (0.0%)	0 (0.0%)	4 (28.6%)	1 (7.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Trauma team not activated	117	5 (4.3%)	0 (0.0%)	7 (6.0%)	23 (19.7%)	73 (62.4%)	0 (0.0%)	3 (2.6%)	6 (5.1%)
<b>01 April 2015 to 31 March 2016</b>									
All patients	312	32 (10.3%)	43 (13.8%)	17 (5.4%)	42 (13.5%)	156 (50.0%)	0 (0.0%)	10 (3.2%)	12 (3.8%)
ISS > 15 patients	87	15 (17.2%)	6 (6.9%)	8 (9.2%)	15 (17.2%)	41 (47.1%)	0 (0.0%)	0 (0.0%)	2 (2.3%)
Trauma team activated	34	21 (61.8%)	2 (5.9%)	4 (11.8%)	4 (11.8%)	1 (2.9%)	0 (0.0%)	0 (0.0%)	2 (5.9%)
Trauma team not activated	278	11 (4.0%)	41 (14.7%)	13 (4.7%)	38 (13.7%)	155 (55.8%)	0 (0.0%)	10 (3.6%)	10 (3.6%)



## Sample TU Hospital

**Time to CT Scan****Direct Admissions (excluding patients taken directly to theatre)**

Patient category	n	n (with CT recorded)	n (CT with date and time rec)	Median time to (mins)		
				CT	Provisional report	Final report
<b>01 April 2016 to 31 December 2016</b>						
All Patients	141	79	79	159 (66 - 354)	0 (0 - 51)	
AIS 3+ Head Injury	28	27	27	97 (64 - 233)	0 (0 - 41)	
NICE head injury criteria	7	5	5	79 (79 - 89)		
<b>01 April 2015 to 31 March 2016</b>						
All Patients	326	191	187	134 (60 - 378)	63 (0 - 126)	
AIS 3+ Head Injury	75	74	72	102 (49 - 174)	93 (66 - 142)	
NICE head injury criteria	18	17	17	46 (37 - 81)		

**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

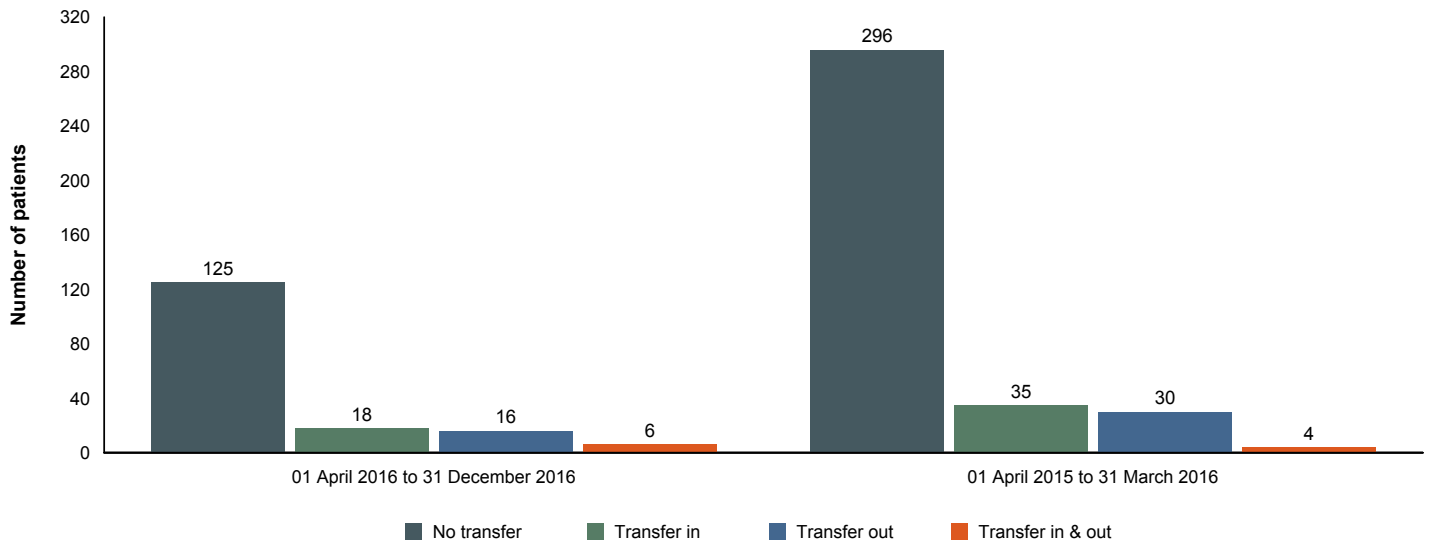
**Time to Operation****Direct Admissions (excluding patients with a time difference greater than 24 hours)**

Patient category	n	Median time to operation (mins)
<b>01 April 2016 to 31 December 2016</b>		
All Patients	23	900 (753 - 1225)
<b>01 April 2015 to 31 March 2016</b>		
All Patients	49	1083 (866 - 1205)
AIS 3+ Head Injury	1	

## Transfer between hospitals

### Transfer between hospitals

Date range	No transfer	Transfer in	Transfer out	Transfer in & out
01 April 2016 to 31 December 2016	125 (75.8%)	18 (10.9%)	16 (9.7%)	6 (3.6%)
01 April 2015 to 31 March 2016	296 (81.1%)	35 (9.6%)	30 (8.2%)	4 (1.1%)

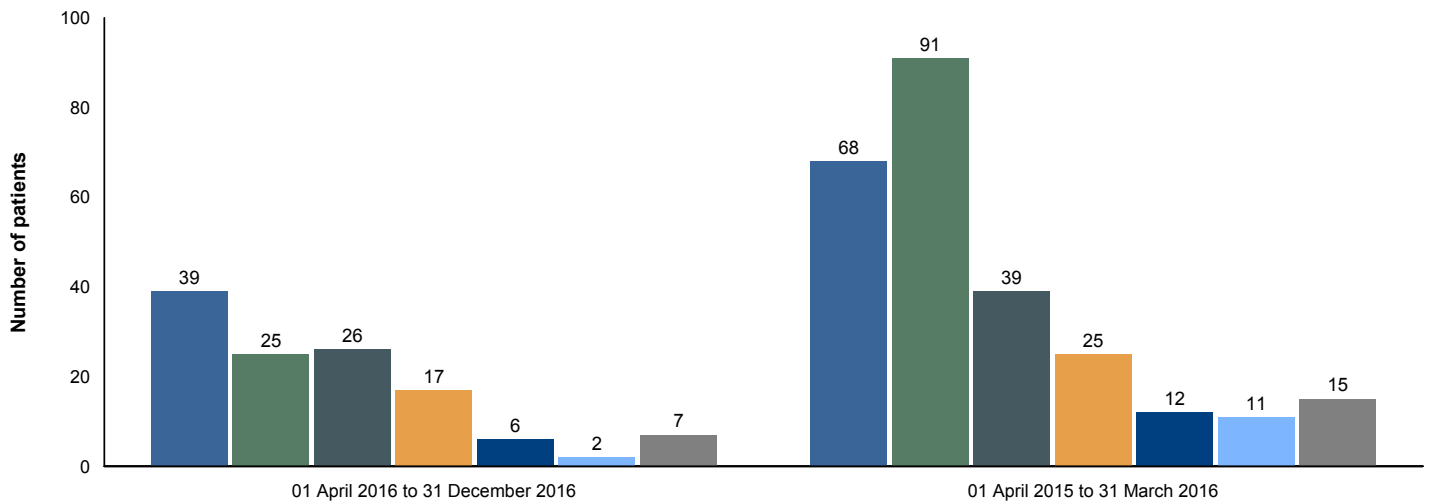


# Length of stay in hospital

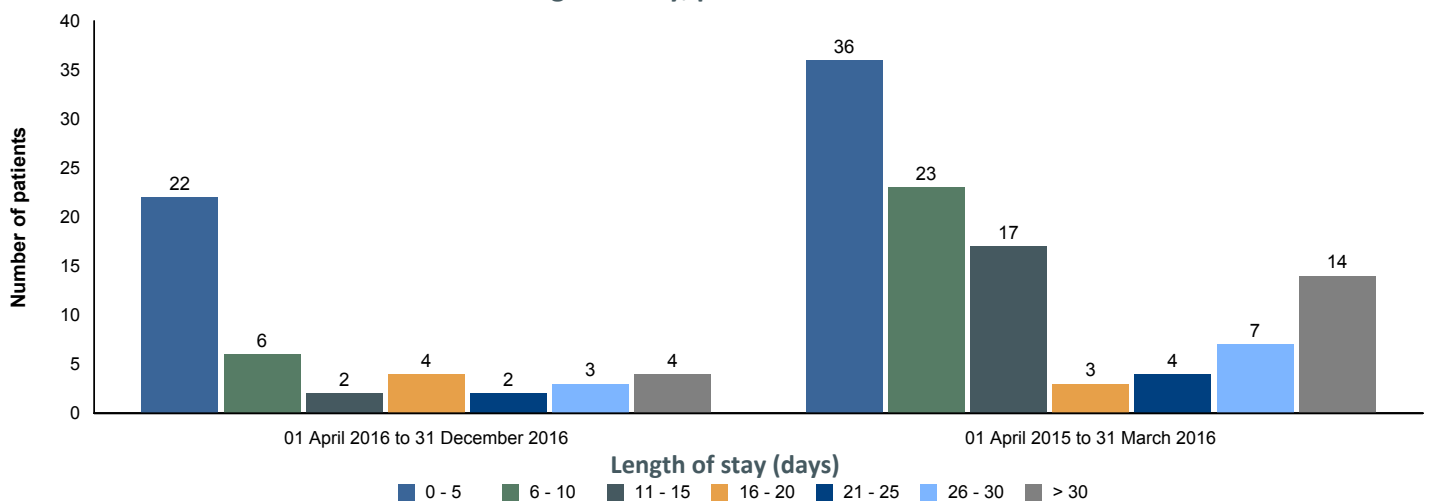
Date range	ISS <= 15			ISS > 15		
	n	Median length of stay	Total bed days	n	Median length of stay	Total bed days
01 April 2016 to 31 December 2016	122	10 (5 - 16)	1605	43	5 (3 - 18)	607
01 April 2015 to 31 March 2016	261	9 (5 - 15)	3169	104	9 (3 - 18)	1706

All values are median number of days (interquartile range)

Total length of stay, patients with an ISS <= 15

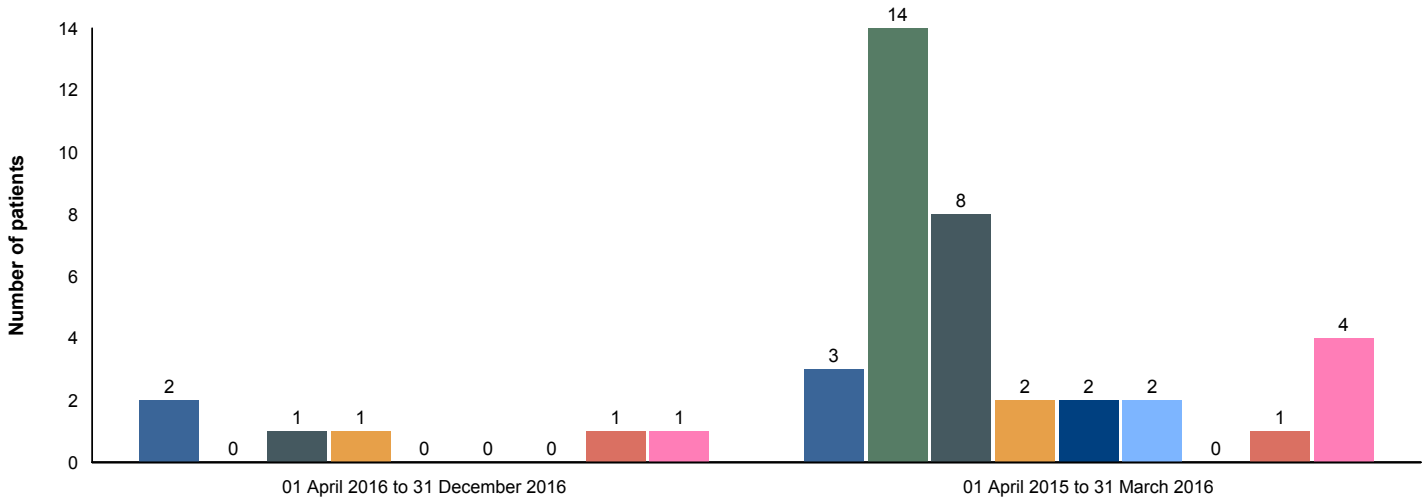


Total length of stay, patients with an ISS > 15

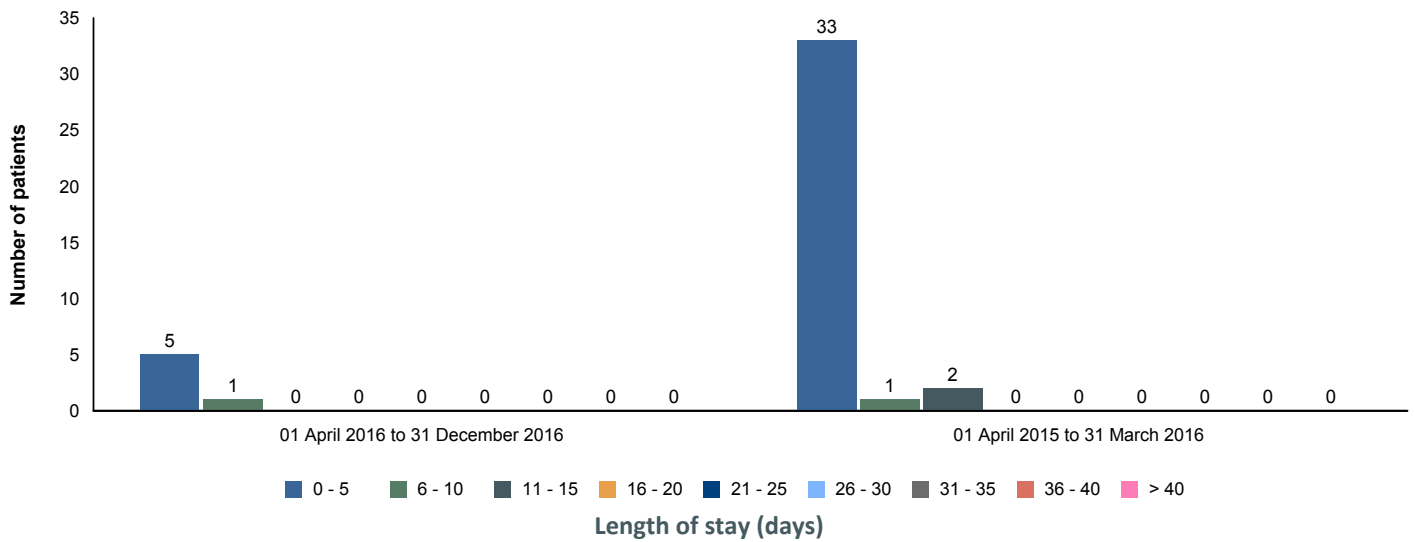


Date range	Patients that went to critical care	Median total length of stay (days)	Median length of stay in critical care (days)	Readmissions to critical care	Readmissions to critical care with dates recorded	Readmissions to critical care within 48 hours
01 April 2016 to 31 December 2016	6	15 (12 - 36)	1 (1 - 5)	0 (0.0%)	n/a	n/a
01 April 2015 to 31 March 2016	36	11 (7 - 17)	1 (1 - 3)	0 (0.0%)	n/a	n/a

**Total length of stay, patients that went to critical care**



**Total length of stay in critical care**





**TARN**

THE TRAUMA AUDIT & RESEARCH NETWORK

Sample TU Hospital

**SECTION II**

**PATIENTS WITH ORTHOPAEDIC INJURIES**



Sample TU Hospital

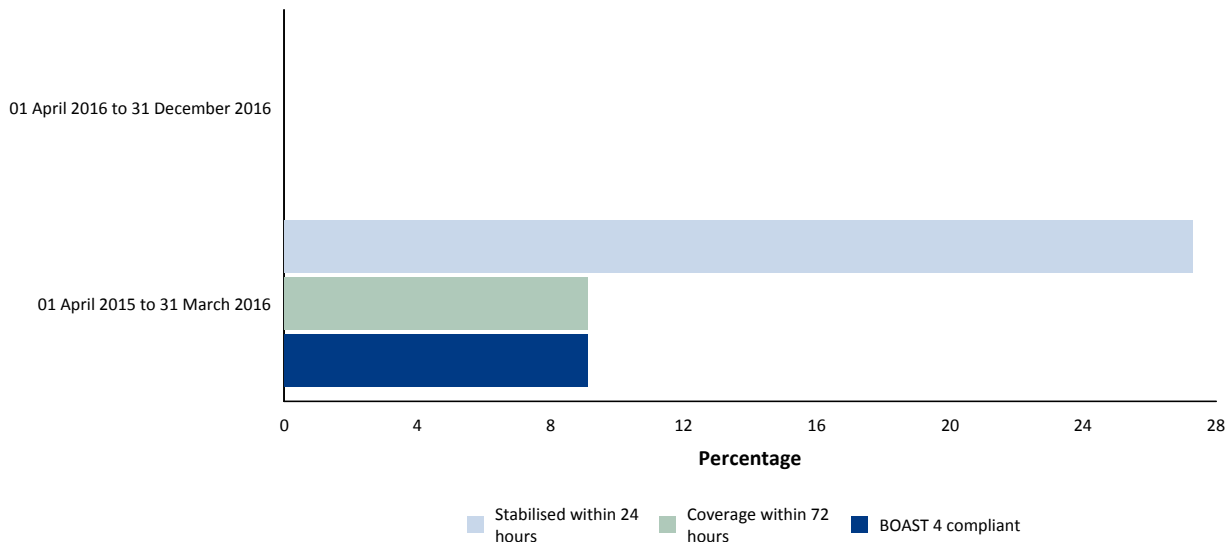
**Patients meeting the BOAST 4 injury criteria - stabilisation and cover**

The measures reported here reflect not only data recorded at this hospital but also others, where the patient was referred from or transferred to.

Patients with open fractures of the tibia, graded as Gustilo IIIB or IIIC are eligible for the BOAST 4 standard.

**BOAST 4 compliance**

Date range	Total	Stabilisation			Soft tissue cover			BOAST 4 compliant	
		Median hours to operation	Within 24 hours n	Within 24 hours %	Median hours to operation	Within 72 hours n	Within 72 hours %	n	%
01 April 2016 to 31 December 2016	1	48.9	0	0.0	123.3	0	0.0	0	0.0
01 April 2015 to 31 March 2016	11	18.5	3	27.3	94.7	1	9.1	1	9.1



In order to be BOAST 4 compliant patients need to be stabilised within 24 hours of injury and have soft tissue cover within 72 hours of injury.



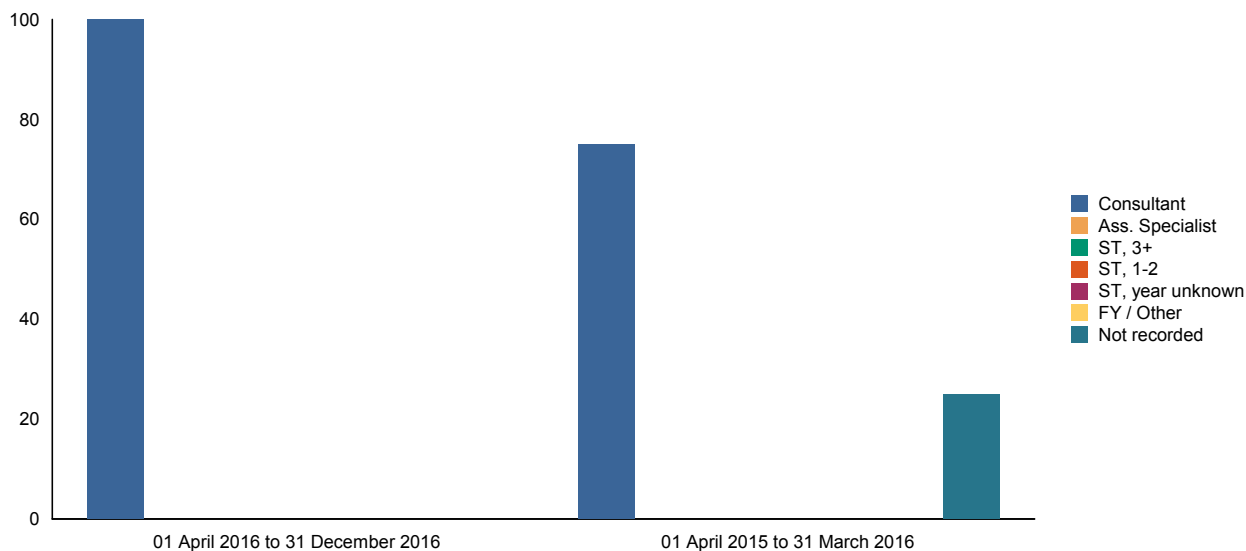
Sample TU Hospital

**Patients meeting the BOAST 4 injury criteria - grade of most senior surgeon providing stabilisation and cover**

The measures reported here reflect not only data recorded at this hospital but also others, where the patient was referred from or transferred to.

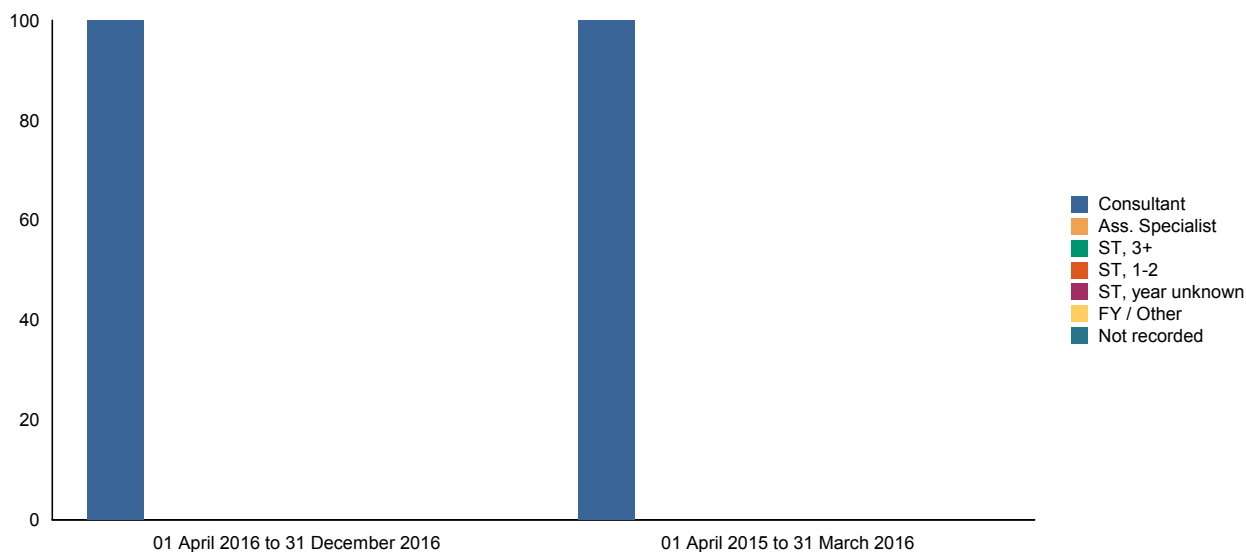
**Surgical stabilisation of the fracture**

Date range	Operation recorded	Consultant	Associate specialist	ST: 3+	ST: 1 - 2	ST: Year unknown	Foundation Year / Other	Not Recorded
01 April 2016 to 31 December 2016	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
01 April 2015 to 31 March 2016	4	3 (75.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (25.0)



**Soft tissue cover of the fracture**

Date range	Operation recorded	Consultant	Associate specialist	ST: 3+	ST: 1 - 2	ST: Year unknown	Foundation Year / Other	Not Recorded
01 April 2016 to 31 December 2016	1	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
01 April 2015 to 31 March 2016	4	4 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)



Sample TU Hospital  
**Patients with severe (AIS 4+) pelvic fractures**

Transfer Status	n	Imaging	Imaging date & time recorded	Median time to imaging (mins)	Interquartile range	Operation	Operation date & time recorded	Median time to operation (mins)	Interquartile range
<b>01 April 2016 to 31 December 2016</b>									
Direct Admissions	1	1	1	195		0	0		
<b>01 April 2015 to 31 March 2016</b>									
Direct Admissions	3	3	3	186		0	0		

Imaging includes CT scan, CT scan + contrast, MRI scan and AP & Judet Radiograph

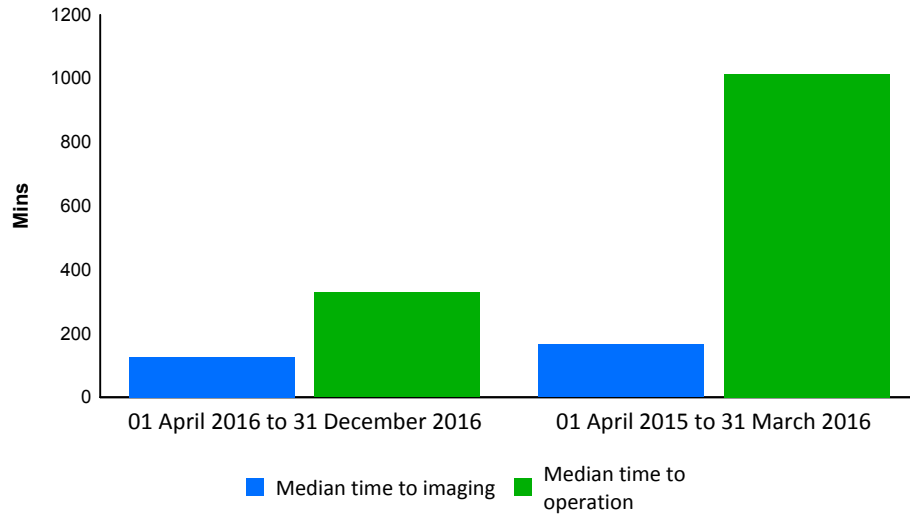
# Sample TU Hospital

## Patients with open fractures of the limbs

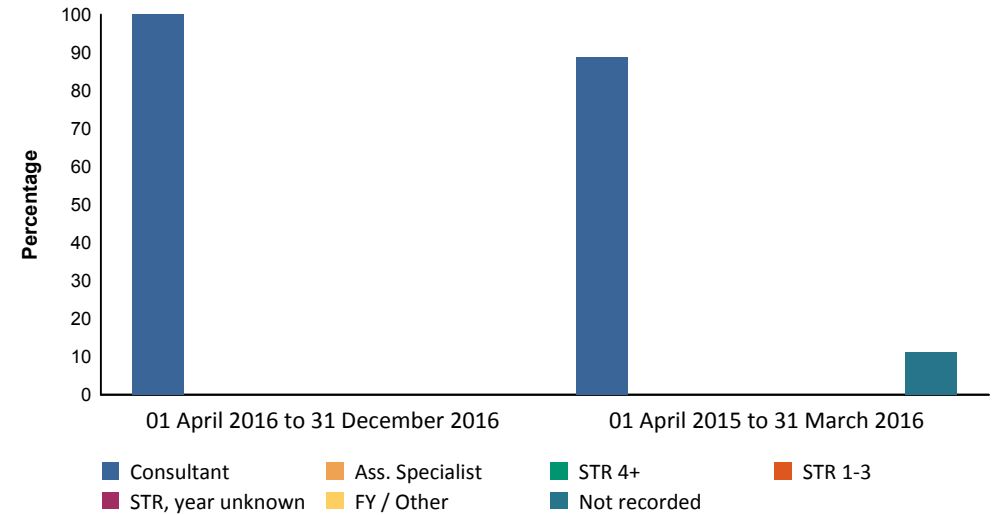
The measures reported here reflect not only data recorded at this hospital but also others, where the patient was referred from or transferred to.

Date range	Number of patients	Imaging with date & time recorded	Median mins to imaging (IQR)	Operation recorded	Operation with date & time recorded	Median mins to operation (IQR)	Grade of surgeon performing earliest operation						
							Consultant	Associate specialist	ST: 3+	ST: 1 - 2	ST: Year unknown	Foundation Year /	Not recorded
01 April 2016 to 31 December 2016	2	2	127	1	1	329	1 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
01 April 2015 to 31 March 2016	13	8	166 (128 - 193)	9	6	1014 (963 - 1335)	8 (88.9%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (11.1%)

Time to scanning & operations



Grade of surgeon performing earliest operation



Imaging includes CT scan, CT scan + contrast, MRI scan and AP & Judet Radiograph

## 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.

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
BOAST 4	BOAST4 = Yes
Severe pelvic fracture	AIS 4+ pelvic injury = Yes
Open limb fracture	Open limb fracture = Yes