Australian Trauma Registry

Completeness Report

1st January 2013 to 30th June 2015

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INTRODUCTION

The Australian Trauma Quality Improvement Program (AusTQIP), including the Australian Trauma Registry (ATR), was established in 2010 to develop a national approach to monitoring trauma quality activities. Funding was provided by Alfred Health, via the National Trauma Research Institute (NTRI), and the National Critical Care and Trauma Response Centre (NCCTRC) in Darwin. A Steering Committee was formed with representation from all states and territories, and other participating stakeholders. Reporting to this Steering Committee were the AusTQIP Management Committee, the Trauma Data Working Group and the Trauma Quality Systems Working Group.

At the same time a national trauma dataset was being developed to meet the needs of interested parties, including the National Road Trauma Advisory Council, the Royal Australasian College of Surgeons and the National Trauma Registry Consortium. This work resulted in development of the Bi-National Trauma Minimum Dataset, which was adopted in 2010 by AusTQIP and the ATR as the minimum standard for the collection of trauma data for national reporting.

In May 2014 the AusTQIP Collaboration Agreement was formalised and data submissions were received from the 26 collaborating sites for the period 1st January 2010 to the 31st December 2012. The inaugural report of the ATR was released in October 2014.

In January 2016, all participating sites were again contacted to establish their capacity and willingness to continue to participate according to the original collaboration agreement. All sites confirmed their commitment to the ATR. Human Research Ethics Committee (HREC) and site governance approvals were updated accordingly. Data collection resumed in June 2016.

ABOUT THIS REPORT

This report includes patients with a date of injury from the 1st January 2013 to the 30th June, 2015, and admitted to the 26 participating sites in Australia. The data that was previously collected and reported on in 2014 was for the calendar years 1st January 2010 to 31st December 2012. This and future reports will report on data for financial years in line with other statutory reporting timelines

The inclusion and exclusion criteria of the ATR are as follows:

INCLUSIONS

- ISS > 12 based on Abbreviated Injury Scale (AIS) coding
- Death following injury

EXCLUSIONS

- Delayed admission greater than 7 days after the date of injury.
- Poisoning or drug ingestion that does not cause injury.
- Foreign bodies that does not cause injury.
- Injuries secondary to medical procedures.
- Isolated neck of femur fracture.
- Pathology directly resulting in isolated injury.
- Patients ≥ 65 years of age who die with superficial injury only and/or had co-existing disease that precipitates injury or is precipitant to death (e.g. stroke, renal failure, heart failure, malignancy).

Critical to the resumption of data collection has been the move into production mode of a Microsoft™ SQL Server database that has been purpose built for the ATR. All data has been submitted according to the newly established protocol and template (see Appendices 1 and 2). This database will store the previously reported data for the 2010 to 2012 period and be the repository for all ATR submissions. Reports will be generated by SQL queries.

This report is a completeness report only and has been provided so that sites can determine the quality of their submitted data to date and benchmark against the complete ATR dataset. All of the fields have been reported for this initial report, however routine quarterly reports will only contain completeness of key variables. Some frequency counts and aggregate data have been included for interest. A more comprehensive statistical report is being prepared and will be released at a later date.

Sites are de-identified with a unique alphabetical code. Each site has been informed of their corresponding code. Three collaborating sites were unable to report any data for this reporting period, therefore they have not been included in the report. Two sites were unable to report data for the entire reporting period. However, they have been included as the completeness of their data can still be assessed.

NUMBER OF CASES REPORTED

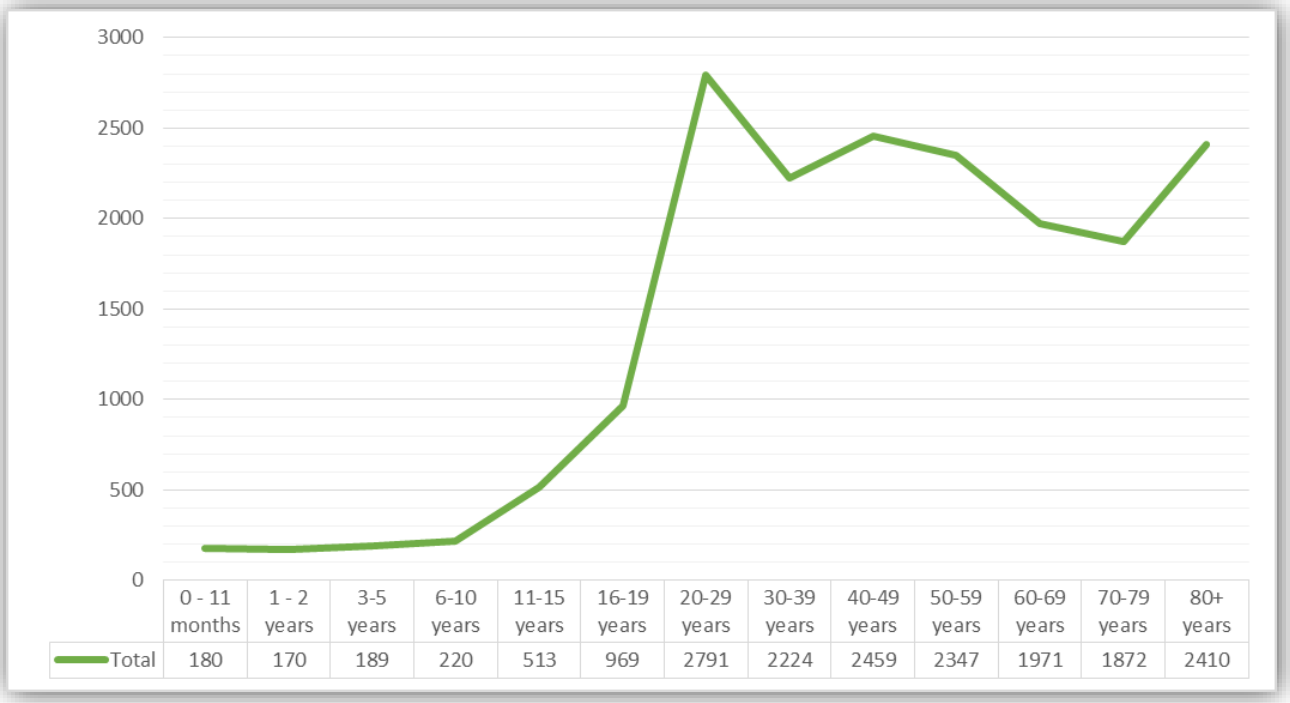
There have been 18265 cases reported with dates of injury between 1st January 2013 and 30th June 2015. This is a total reporting period of 10 quarters. The table below shows the average quarterly admissions per site.

Site	Average admissions per quarter	Site	Average admissions per quarter
A	135	N	96
B	10	O	116
C	88	P	11
D	89	R	17
E	114	S	13
F	17	T	97
G	122	U	51
H	72	V	10
I	47	W	227
J	13	X	14
K	192	Z	38
L	25	AA	64
M	275		

AGE DISTRIBUTION

Figure 2 shows the aggregate age distribution of all reported injury events for the entire reporting period. Future quarterly reports will show only the age distribution per quarter, thus enabling meaningful comparison over time.

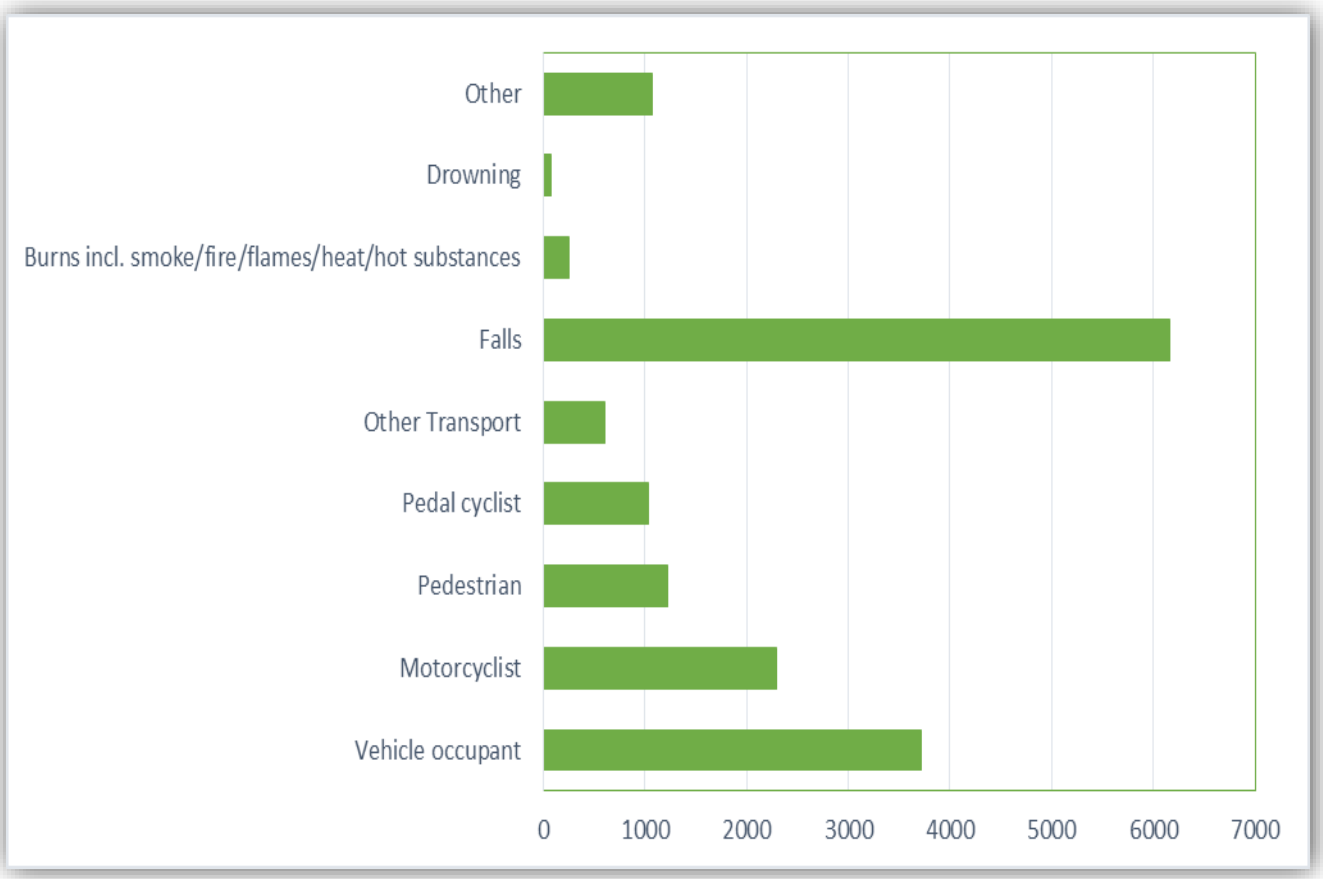
Figure 2: Aggregate age distribution for the period 1/1/2013 to 30/6/2015.



CAUSE AND/OR INTENT OF INJURY EVENTS

Figure 3 shows the aggregate cause of injury events as reported by the sites as an ICD10-AM code in the Injury Cause field. These causes are specific to non-intentional events.

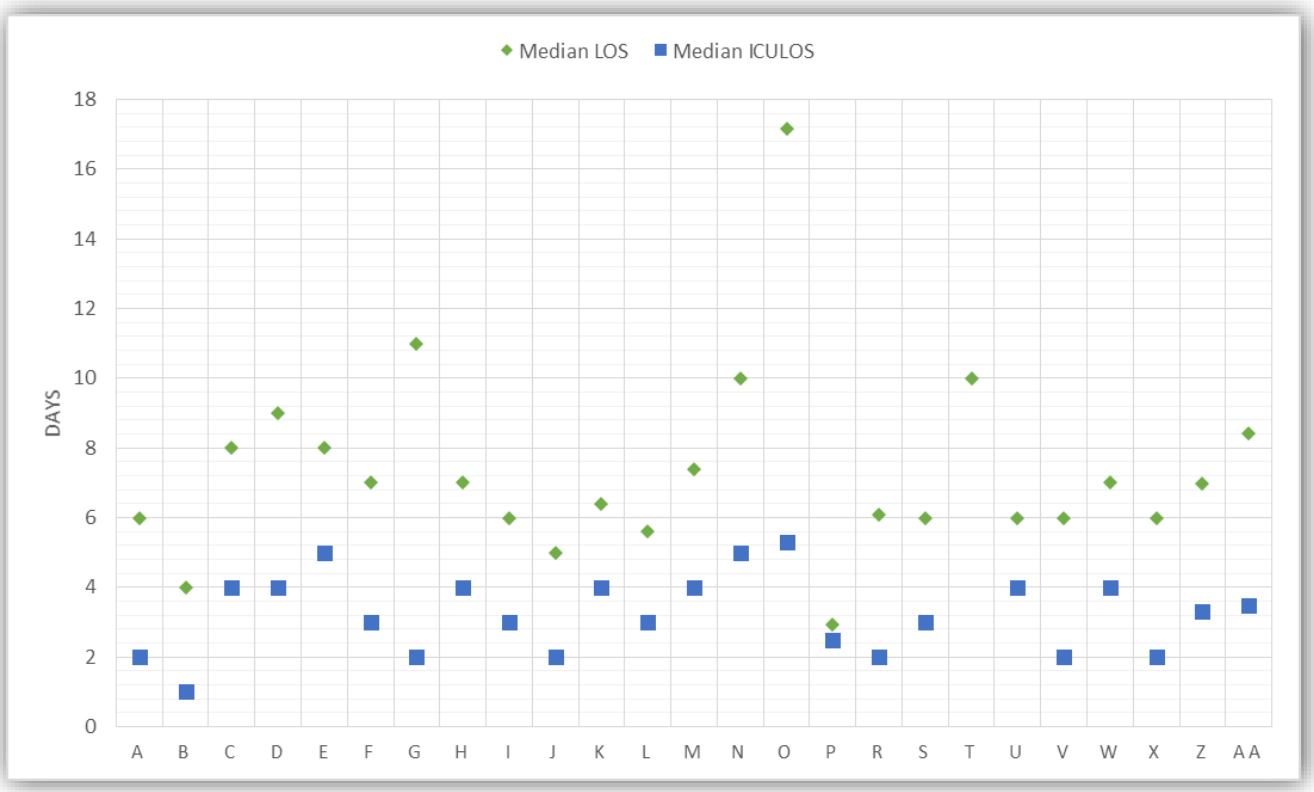
Figure 3: Aggregate cause of non-intentional injury events.



LENGTH OF HOSPITAL STAY AND DAYS IN THE INTENSIVE CARE UNIT

The length of the stay in hospital and the number of days spent in the Intensive Care Unit are both important indicators of the resources consumed by the definitive care of the patient, and also the quality of the care itself. Figure 4 demonstrates these two measures per site as the median over the entire reporting period. Some sites show a prolonged length of stay and/or an ICU length of stay that appears to be an anomaly. In these cases, sites should cross reference these fields with the completeness report. They should also undertake their own quality checks to ensure that the reporting is accurate.

Figure 4: Median length of hospital and ICU stay per site.

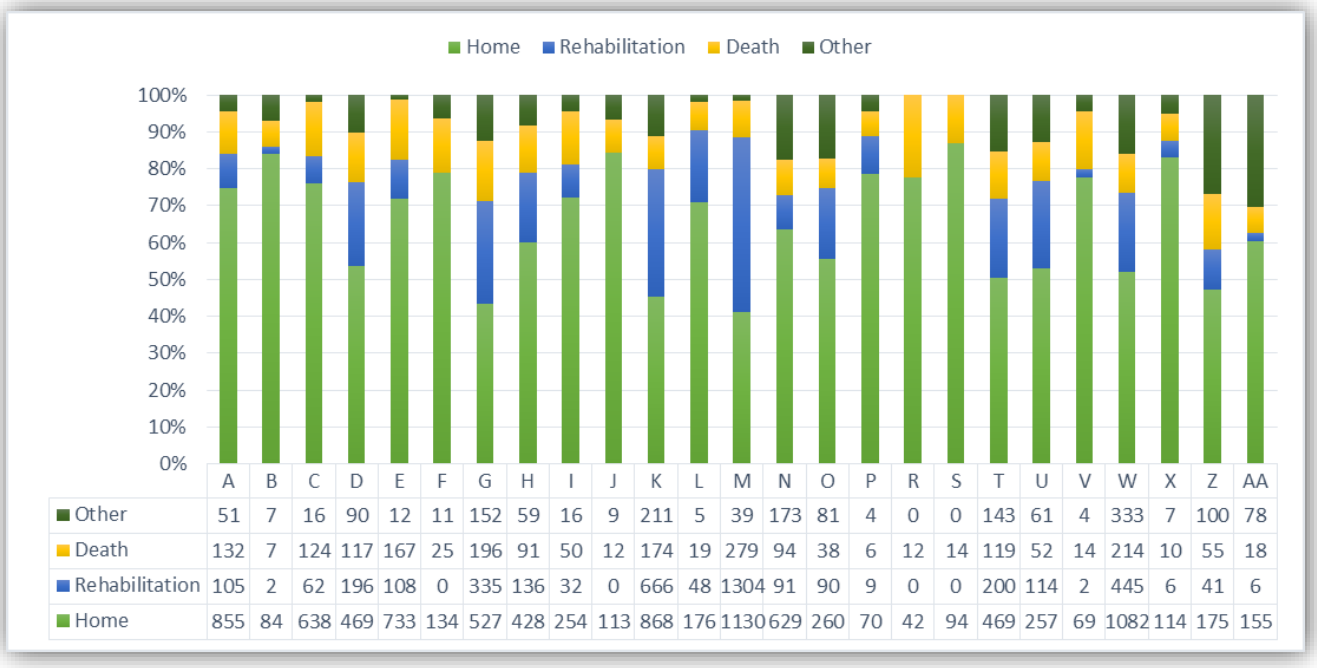


DISCHARGE DESTINATION

Figure 5 shows the contribution that the three main outcomes for trauma patients make to the overall discharge status of each site. The 'Other' series includes those outcomes that are not discharged to home, rehabilitation or are deceased.

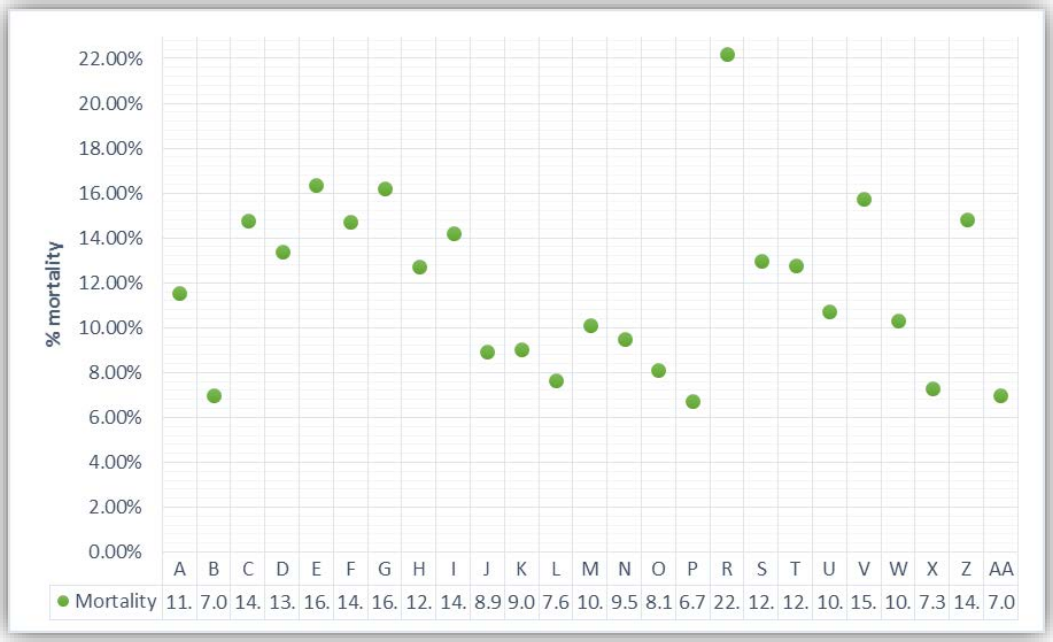
The average mortality for all the sites is 11.64 percent. Sites are again encouraged to cross reference these results with their own quality checks, with particular reference to the reporting of an unknown/inadequately described value.

Figure 5a: Discharge status per site.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	R	S	T	U	V	W	X	Z	AA
Other	51	7	16	90	12	11	152	59	16	9	211	5	39	173	81	4	0	0	143	61	4	333	7	100	78
Death	132	7	124	117	167	25	196	91	50	12	174	19	279	94	38	6	12	14	119	52	14	214	10	55	18
Rehabilitation	105	2	62	196	108	0	335	136	32	0	666	48	1304	91	90	9	0	0	200	114	2	445	6	41	6
Home	855	84	638	469	733	134	527	428	254	113	868	176	1130	629	260	70	42	94	469	257	69	1082	114	175	155

Figure 5b: Mortality



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	R	S	T	U	V	W	X	Z	AA
Mortality	11.	7.0	14.	13.	16.	14.	16.	12.	14.	8.9	9.0	7.6	10.	9.5	8.1	6.7	22.	12.	12.	10.	15.	10.	7.3	14.	7.0

DATA COMPLETENESS

Complete data is an aim for all clinical quality registries as missing data can result in bias and limit the analyses that can be performed to answer research questions. Routine quarterly completeness reports will show completeness for key fields only. However, for this initial report, completeness of all the fields is shown. The Completeness by Site tables have been categorised into relevant sections for easy reading and quality checking. This data has been cleaned to ensure that all cases met the ATR inclusion criteria.

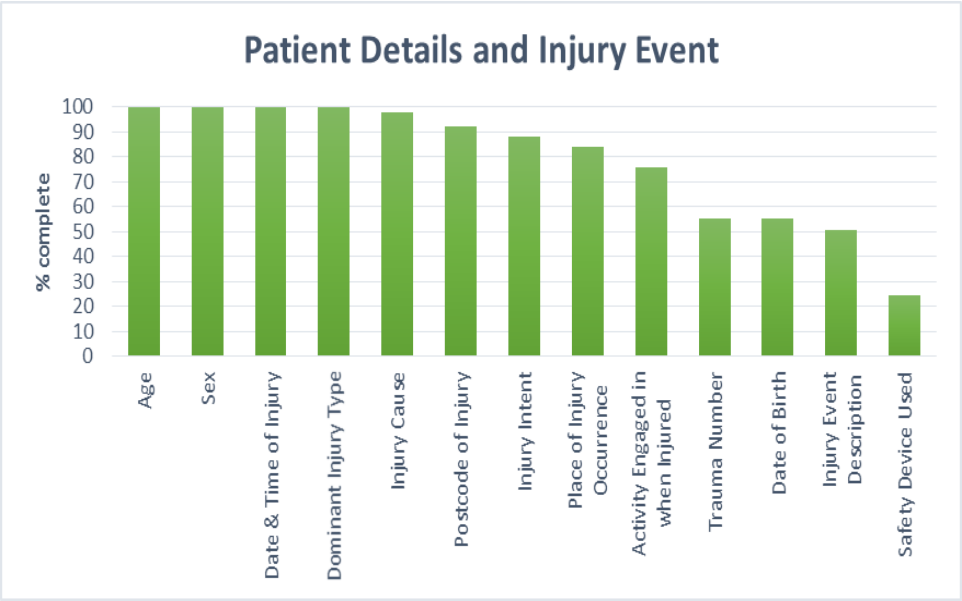
Completeness was considered to be where the field: a) contained a permissible value, as defined in the Bi-National Trauma Minimum Dataset (BNTMDS) dictionary; b) was not blank; and c) was not populated with a system default value. Sites should assess their completeness for each field to identify gaps in their data collection and determine the quality of their data. An eligible field was considered to be where the field required a value, according to the validation rules in the dictionary. For example, referring hospital data was required when patients were transferred, thus eligibility was determined by the transfer status. Each site's completeness is referenced against the eligible records for that field.

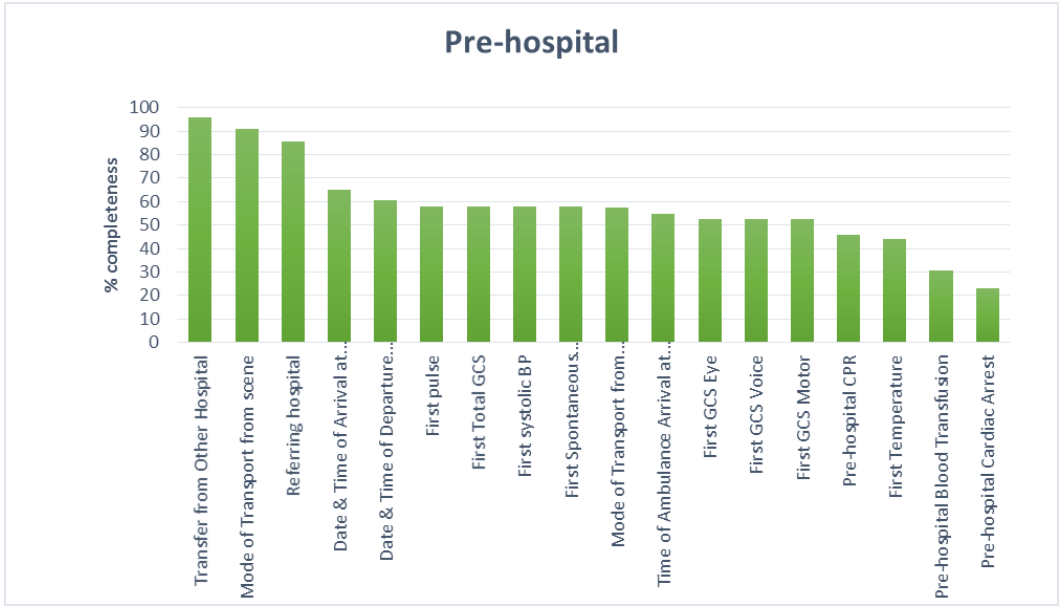
Incident Number has been excluded from the report as this field is the unique key that identifies each record and no record can be inserted into the database without it. Thus its completeness is always 100%. Comorbidities and Severe Complications have been excluded from the analysis as many patients would have neither comorbidities nor complications, and blank fields are permitted. Thus it is not possible to assess the completeness of the field. However, this is important information and each site should conduct their own checks accordingly.

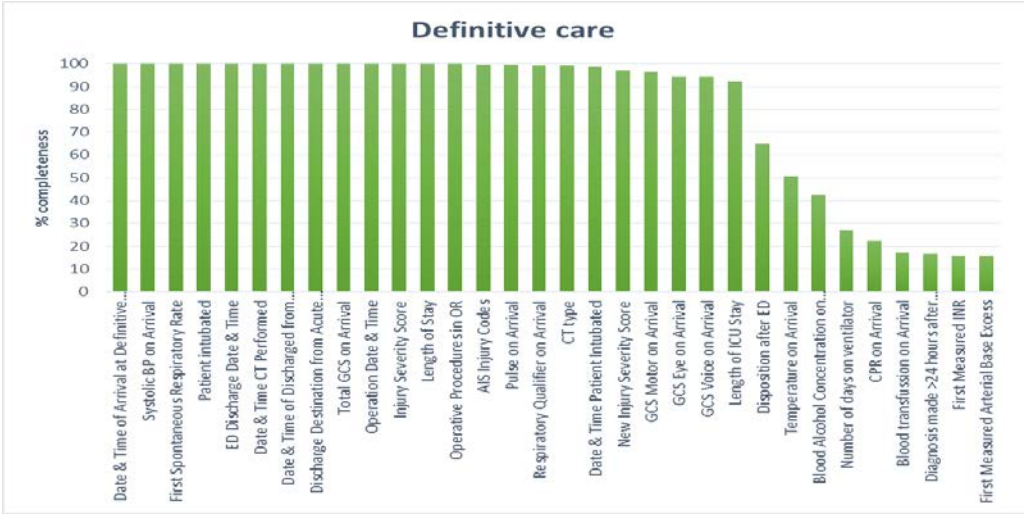
All other fields have been reported so that each site can scrutinise their result and assess their data collection accordingly. The ATR welcomes feedback on quality issues and will assist in this process in any way possible.

OVERALL COMPLETENESS

The following charts are provided so that each site can benchmark their performance against the overall completeness of each field. They have been divided into three categories that approximate the sections where completeness has been reported by site.







COMPLETENESS BY SITE

The following tables report the completeness of each field per site. The first table in each section is the number of records that met the completeness criteria. The second table reports the percentages to which that count equates. Sites will need to evaluate for themselves where and how the gaps have occurred and what can be done to improve those fields that are problematic.

The percentages have been colour coded to assist with identifying fields that have suboptimal completeness. The legend is as follows:

100% complete 90 – 99% complete 80-89% complete < 80% complete

Patient section: As is to be expected, completeness of the basic patient identifiers, *Age* and *Sex*, was 100%. *Date of Birth* and *Trauma Number* are considered to be more specific patient identifiers, thus some sites have chosen to exclude them from the data extracts. Where the submission of *Date of Birth* has varied, the site may be vulnerable to inconsistent data collection and may wish to check their practices accordingly.

	A (n)	B (n)	C (n)	D (n)	E (n)	F (n)	G (n)	H (n)	I (n)	J (n)	K (n)	L (n)	M (n)	N (n)	O (n)	P (n)	R (n)	S (n)	T (n)	U (n)	V (n)	W (n)	X (n)	Z (n)	AA (n)
Trauma Number	0	0	0	0	0	0	0	0	0	0	1919	248	2752	988	0	0	0	0	965	507	97	2271	137	0	257
Date of Birth	0	0	0	0	0	0	0	0	0	0	1919	248	2752	819	469	60	30	73	965	507	97	1911	95	0	178
Age	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	988	469	89	54	109	965	507	97	2271	137	376	257
Sex	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	988	469	89	54	109	965	507	97	2271	137	376	257

	A (%)	B (%)	C (%)	D (%)	E (%)	F (%)	G (%)	H (%)	I (%)	J (%)	K (%)	L (%)	M (%)	N (%)	O (%)	P (%)	R (%)	S (%)	T (%)	U (%)	V (%)	W (%n)	X (%)	Z (%)	AA (%)
Trauma Number	0	0	0	0	0	0	0	0	0	0	100	100	100	100	0	0	0	0	100	100	100	100	100	0	100
Date of Birth	0	0	0	0	0	0	0	0	0	0	100	100	100	82.9	100	67.4	55.6	67	100	100	100	84.2	69.3	0	69.3
Age	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Sex	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Injury Event section: The completeness of these fields provides moderately comprehensive information about the information event, however the two fields of concern are *Injury Event Description* and *Safety Devices Used*. *Injury Event Description* validates the coded fields and can be used for cross referencing information. *Safety Devices Used* is an important question for researchers and may inform public health policy and practices. The ATR would therefore encourage sites to collect these routinely.

	A (n)	B (n)	C (n)	D (n)	E (n)	F (n)	G (n)	H (n)	I (n)	J (n)	K (n)	L (n)	M (n)	N (n)	O (n)	P (n)	R (n)	S (n)	T (n)	U (n)	V (n)	W (n)	X (n)	Z (n)	AA (n)
Date & Time of Injury	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	988	469	89	54	109	965	507	97	2271	137	376	257
Injury Cause	1349	103	876	887	1137	171	1221	725	474	134	1848	239	2678	988	469	0	54	0	964	507	95	2271	137	360	257
Dominant Injury Type	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	988	469	89	54	109	965	507	97	2271	137	376	257
Postcode of Injury	1312	100	864	877	1025	165	1194	708	441	134	1919	248	2752	986	379	66	40	61	832	496	81	1850	92	0	224
Injury Intent	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	988	469	89	54	109	0	0	0	2271	137	0	0
Place of Injury Occurrence	1349	103	876	887	1137	171	1221	725	474	134	1850	239	2706	0	469	0	54	0	965	507	97	1286	101	0	0
Activity Engaged in when Injured	1349	103	876	887	1137	171	1221	725	473	134	1848	239	2671	0	469	0	54	0	965	500	97	0	0	0	0
Injury Event Description	0	0	0	0	0	0	0	0	0	0	1919	248	2752	988	469	89	54	109	0	0	0	2271	137	0	257
Safety Device Used	0	0	0	0	0	0	0	0	0	0	0	0	0	988	465	89	54	22	946	487	44	1038	49	0	257

	A (%)	B (%)	C (%)	D (%)	E (%)	F (%)	G (%)	H (%)	I (%)	J (%)	K (%)	L (%)	M (%)	N (%)	O (%)	P (%)	R (%)	S (%)	T (%)	U (%)	V (%)	W (%n)	X (%)	Z (%)	AA (%)
Date & Time of Injury	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Injury Cause	100	100	100	100	100	100	100	100	100	100	96.3	96.34	97.3	100	100	0	100	0	99.9	100	97.9	100	100	95.7	100
Dominant Injury Type	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Postcode of Injury	97.3	97.1	98.6	98.9	90.2	96.5	97.8	97.7	93	100	100	100	100	99.8	80.8	74.2	74.1	56	86.2	97.8	83.5	81.5	67.2	0	87.2
Injury Intent	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	0	0	100	100	0	0
Place of Injury Occurrence	100	100	100	100	100	100	100	100	100	100	96.4	96.4	98.3	0	100	0	100	0	100	100	100	56.6	73.7	0	0
Activity Engaged in when Injured	100	100	100	100	100	100	100	100	99.8	100	96.3	96.4	97.1	0	100	0	100	0	100	98.6	100	0	0	0	0
Injury Event Description	0	0	0	0	0	0	0	0	0	0	100	100	100	100	100	100	100	100	0	0	0	100	100	0	100
Safety Device Used	0	0	0	0	0	0	0	0	0	0	0	0	0	100	99.2	100	100	20.2	98.0	96.1	45.4	45.7	35.8	0	100

Pre-hospital section: *Mode of Transport from Scene* and *Time of Ambulance Arrival at Patient* are arguably the most important pieces of information in this section and the former is pleasingly almost 100% complete. It is more difficult to collect ambulance times, which is reflected in the drop in completeness of this field. However, both of these are important indicators of the efficacy of trauma systems in Australia and thus an effort should be made to collect them consistently. The completeness of the referring hospital fields depends on whether or not the patient was transferred to definitive care from a first hospital, or admitted directly from the scene. Where the completeness exceeds 100%, highlighted in blue, the field has been reported with the dictionary defined default value, regardless of the patient's transfer status. This result is an anomaly and will be checked in future data submissions. .

	A (n)	B (n)	C (n)	D (n)	E (n)	F (n)	G (n)	H (n)	I (n)	J (n)	K (n)	L (n)	M (n)	N (n)	O (n)	P (n)	R (n)	S (n)	T (n)	U (n)	V (n)	W (n)	X (n)	Z (n)	AA (n)
Mode of Transport from scene	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	988	469	89	54	109	942	495	92	725	89	376	257
Time of Ambulance Arrival at Patient	0	0	0	0	0	0	0	0	0	0	1675	169	2440	988	421	30	33	58	965	507	97	2270	137	0	257
Transfer from Other Hospital	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	988	469	89	54	109	576	182	55	2271	137	376	257
Referring hospital	0	0	0	0	0	0	0	0	0	0	498	101	965	285	117	50	30	42	965	507	97	1410	121	0	211
Date & Time of Arrival at Referring Hospital	0	0	0	0	0	0	0	0	0	0	498	101	965	285	117	0	0	0	387	110	49	1410	121	0	71
Date & Time of Departure from Referring Hospital	0	0	0	0	0	0	0	0	0	0	498	101	965	0	117	0	0	0	387	110	49	1410	121	0	71
Mode of Transport from Referring Hospital	0	0	0	0	0	0	0	0	0	0	498	101	965	0	469	0	0	0	0	0	0	1398	114	0	71

	A (%)	B (%)	C (%)	D (%)	E (%)	F (%)	G (%)	H (%)	I (%)	J (%)	K (%)	L (%)	M (%)	N (%)	O (%)	P (%)	R (%)	S (%)	T (%)	U (%)	V (%)	W (%n)	X (%)	Z (%)	AA (%)
Mode of Transport from scene	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	97.62	97.63	94.85	31.92	64.96	100	100
Time of Ambulance Arrival at Patient	0	0	0	0	0	0	0	0	0	0	87.3	68.2	88.7	100	89.8	33.7	61.1	53.2	100	100	100	99.9	100	0	100
Transfer from Other Hospital	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	59.7	36	56.7	100	100	100	100
Referring hospital	0	0	0	0	0	0	0	0	0	0	100	100	100	100	100	84.8	93.8	80	249.3	460.9	197.9	90.9	106.1	0	297.2
Date & Time of Arrival at Referring Hospital	0	0	0	0	0	0	0	0	0	0	100	100	100	100	100	0	0	0	100	100	100	90.9	106.1	0	100
Date & Time of Departure from Referring Hospital	0	0	0	0	0	0	0	0	0	0	100	100	100	0	100	0	0	0	100	100	100	90.9	106.1	0	100
Mode of Transport from Referring Hospital	0	0	0	0	0	0	0	0	0	0	100	100	100	0	400.9	0	0	0	0	0	0	90.1	100	0	100

Pre-hospital clinical section: The incomplete fields in this section indicate that some sites are unable to collect pre-hospital clinical data. Other sites have been able to collect the information consistently and completeness is good. *Pre-hospital CPR* and *Pre-hospital Cardiac Arrest* are both fields where the data domain is yes/no/unknown, which should be apparent from clinical notes and be readily to hand. Thus, where sites have collected most of the clinical fields and the information would appear to be available, they should be encouraged to improve the completeness of those fields also.

	A (n)	B (n)	C (n)	D (n)	E (n)	F (n)	G (n)	H (n)	I (n)	J (n)	K (n)	L (n)	M (n)	N (n)	O (n)	P (n)	R (n)	S (n)	T (n)	U (n)	V (n)	W (n)	X (n)	Z (n)	AA (n)
Pre-hospital Blood Transfusion	0	0	0	0	0	0	0	0	0	0	0	0	0	988	469	89	41	60	965	507	97	2271	137	0	0
Pre-hospital CPR	0	0	0	0	0	0	0	0	0	0	1675	169	2440	988	469	89	41	109	0	0	0	2271	137	0	0
Pre-hospital Cardiac Arrest	0	0	0	0	0	0	0	0	0	0	38	11	33	988	469	89	40	109	0	0	0	2271	137	0	0
First pulse	0	0	0	0	0	0	0	0	0	0	1919	248	2752	973	469	89	54	109	965	507	97	2271	137	0	0
First systolic BP	0	0	0	0	0	0	0	0	0	0	1919	248	2752	973	469	89	38	109	965	507	97	2271	137	0	0
First Spontaneous Respiratory Rate	0	0	0	0	0	0	0	0	0	0	1919	248	2752	969	469	89	37	109	965	507	97	2271	137	0	0
First Temperature	0	0	0	0	0	0	0	0	0	0	1919	248	2752	0	469	89	38	109	0	0	0	2271	137	0	0
First GCS Eye	0	0	0	0	0	0	0	0	0	0	1919	248	2752	1	469	89	54	109	965	507	97	2271	137	0	0
First GCS Voice	0	0	0	0	0	0	0	0	0	0	1919	248	2752	1	469	89	54	109	965	507	97	2271	137	0	0
First GCS Motor	0	0	0	0	0	0	0	0	0	0	1919	248	2752	1	469	89	54	109	965	507	97	2271	137	0	0
First Total GCS	0	0	0	0	0	0	0	0	0	0	1919	248	2752	976	469	89	40	109	965	507	97	2271	137	0	0

	A (%)	B (%)	C (%)	D (%)	E (%)	F (%)	G (%)	H (%)	I (%)	J (%)	K (%)	L (%)	M (%)	N (%)	O (%)	P (%)	R (%)	S (%)	T (%)	U (%)	V (%)	W (%n)	X (%)	Z (%)	AA (%)
Pre-hospital Blood Transfusion	0	0	0	0	0	0	0	0	0	0	0	0	0	100	100	100	75.93	55.05	100	100	100	100	100	0	0
Pre-hospital CPR	0	0	0	0	0	0	0	0	0	0	87.29	68.15	88.66	100	100	100	75.93	100	0	0	0	100	100	0	0
Pre-hospital Cardiac Arrest	0	0	0	0	0	0	0	0	0	0	1.98	4.44	1.2	100	100	100	74.07	100	0	0	0	100	100	0	0
First pulse	0	0	0	0	0	0	0	0	0	0	100	100	100	98.48	100	100	100	100	100	100	100	100	100	0	0
First systolic BP	0	0	0	0	0	0	0	0	0	0	100	100	100	98.48	100	100	70.37	100	100	100	100	100	100	0	0
First Spontaneous Respiratory Rate	0	0	0	0	0	0	0	0	0	0	100	100	100	98.08	100	100	68.52	100	100	100	100	100	100	0	0
First Temperature	0	0	0	0	0	0	0	0	0	0	100	100	100	0	100	100	70.37	100	0	0	0	100	100	0	0
First GCS Eye	0	0	0	0	0	0	0	0	0	0	100	100	100	0.1	100	100	100	100	100	100	100	100	100	0	0
First GCS Voice	0	0	0	0	0	0	0	0	0	0	100	100	100	0.1	100	100	100	100	100	100	100	100	100	0	0
First GCS Motor	0	0	0	0	0	0	0	0	0	0	100	100	100	0.1	100	100	100	100	100	100	100	100	100	0	0
First Total GCS	0	0	0	0	0	0	0	0	0	0	100	100	100	98.79	100	100	74.07	100	100	100	100	100	100	0	0

Definitive care admission section: The completeness of most of the fields in this section is very good. However, *Diagnosis made > 24 hours after arrival?* shows that only five sites collect it routinely. The ATR understands that this information is difficult to collect and may be subjective and poorly documented. However, missed injuries has been named as one of the top five preferred clinical indicators for trauma clinicians, see Appendix 3, thus the sites should be encouraged to pursue collection of this data item and include it in their datasets.

	A (n)	B (n)	C (n)	D (n)	E (n)	F (n)	G (n)	H (n)	I (n)	J (n)	K (n)	L (n)	M (n)	N (n)	O (n)	P (n)	R (n)	S (n)	T (n)	U (n)	V (n)	W (n)	X (n)	Z (n)	AA (n)
Date & Time of Arrival at Definitive Care Hospital	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	988	469	89	54	109	965	507	97	2271	137	376	257
ED Discharge Date & Time	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	988	469	89	54	109	965	507	97	2271	137	376	257
Disposition after ED	0	0	0	296	0	64	492	299	0	49	1919	248	2752	980	469	89	0	0	964	503	89	2271	137	0	257
Diagnosis made >24 hours after arrival?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	469	89	5	109	0	0	0	2271	137	0	0
Number of days on ventilator	0	0	0	85	0	36	199	84	0	14	449	98	1007	0	469	0	0	109	0	0	0	2271	137	0	0
Date & Time of Discharged from Definitive Care	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	988	469	89	54	108	965	507	97	2271	137	376	257
Discharge Destination from Acute Care	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	987	469	89	54	108	965	507	97	2271	137	376	257
Length of Stay	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	988	469	89	54	108	950	506	90	2271	137	376	257
Length of ICU Stay	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	988	469	57	54	109	0	169	29	2271	137	376	257

	A (%)	B (%)	C (%)	D (%)	E (%)	F (%)	G (%)	H (%)	I (%)	J (%)	K (%)	L (%)	M (%)	N (%)	O (%)	P (%)	R (%)	S (%)	T (%)	U (%)	V (%)	W (%n)	X (%)	Z (%)	AA (%)
Date & Time of Arrival at Definitive Care Hospital	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
ED Discharge Date & Time	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Disposition after ED	0	0	0	33.4	0	37.4	40.3	41.2	0	36.6	100	100	100	99.2	100	100	0	0	99.9	99.2	91.8	100	100	0	100
Diagnosis made >24 hours after arrival?	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	100	9.26	100	0	0	0	100	100	0	0
Number of days on ventilator	0	0	0	9.6	0	21.1	16.3	11.6	0	10.5	23.4	39.5	36.6	0	100	0	0	100	0	0	0	100	100	0	0
Date & Time of Discharged from Definitive Care	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	99.1	100	100	100	100	100	100	100
Discharge Destination from Acute Care	100	100	100	100	100	100	100	100	100	100	100	100	100	99.9	100	100	100	99.1	100	100	100	100	100	100	100
Length of Stay	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	99.1	98.5	99.8	92.8	100	100	100	100
Length of ICU Stay	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	64.0	100	100	0	33.3	29.9	100	100	100	100

Definitive care clinical section: The submission of the clinical observation fields is generally very good, with the majority showing a high level of completeness. However, the submission of pathology results is disappointingly low. In particular, *Blood Alcohol Concentration on Arrival* is heavily researched and an important factor in determining the circumstances of injury. Sites should be encouraged to consider collecting and including pathology results in their data submissions to the ATR.

Sites are reminded that if any of the components of the Glasgow Coma Scale are invalid, then the total GCS score is also invalidated, thus skewing the completeness report of those fields. The ATR will monitor this in future quality checks and monitor the completeness accordingly.

	A (n)	B (n)	C (n)	D (n)	E (n)	F (n)	G (n)	H (n)	I (n)	J (n)	K (n)	L (n)	M (n)	N (n)	O (n)	P (n)	R (n)	S (n)	T (n)	U (n)	V (n)	W (n)	X (n)	Z (n)	AA (n)
Pulse on Arrival	1349	103	876	887	1137	171	1130	725	474	134	1919	248	2752	988	469	89	54	109	965	507	97	2271	137	376	257
Systolic BP on Arrival	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	988	469	89	54	109	965	507	97	2271	137	376	257
First Spontaneous Respiratory Rate	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	988	469	89	54	109	965	507	97	2271	137	376	257
Temperature on Arrival	0	0	0	0	0	0	0	0	0	0	1919	248	2752	988	469	89	49	109	0	0	0	2271	137	0	257
GCS Eye on Arrival	1349	103	876	77	1137	117	1089	722	474	121	1919	248	2752	988	469	89	50	109	965	507	97	2271	137	376	257
GCS Voice on Arrival	1349	103	876	77	1137	116	1090	721	474	121	1919	248	2752	988	469	89	50	109	965	507	97	2271	137	376	257
GCS Motor on Arrival	1349	103	876	351	1137	134	1134	723	474	124	1919	248	2752	988	469	89	50	109	965	507	97	2271	137	376	257
Total GCS on Arrival	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	988	469	89	50	109	965	507	97	2271	137	376	257
CPR on Arrival	0	0	0	0	0	0	0	0	0	0	0	0	0	988	469	89	49	109	0	0	0	2271	137	0	0
Blood Transfusion on Arrival	0	0	0	0	0	0	0	0	0	0	0	0	0	0	469	89	49	109	0	0	0	2271	137	0	0
Patient intubated	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	988	469	89	54	109	965	507	97	2271	137	376	257
Date & Time Patient Intubated	102	11	135	180	64	43	114	97	43	43	395	97	703	988	469	0	21	0	965	507	97	2271	137	23	40
Respiratory Qualifier on Arrival	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	988	469	89	50	0	965	507	97	2271	137	376	257
Blood Alcohol Concentration on Arrival	0	0	0	0	0	0	0	0	0	0	1919	248	2752	0	469	0	0	0	0	0	0	2271	137	0	0
First Measured Arterial Base Excess	0	0	0	0	0	0	0	0	0	0	0	0	0	0	469	0	0	0	0	0	0	2268	135	0	0
First Measured INR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	469	0	0	0	0	0	0	2271	137	0	0
AIS Injury Codes	1349	103	876	884	1137	165	1217	725	473	126	1919	248	2750	969	469	84	44	99	965	507	97	2268	133	372	255
Injury Severity Score	1349	103	876	887	1137	171	1221	725	474	134	1919	248	2752	969	469	88	54	109	965	507	97	2271	137	376	257
New Injury Severity Score	1349	103	876	887	1137	171	1221	725	474	134	1917	248	2750	988	469	0	0	109	965	507	97	2271	137	0	257

	A (%)	B (%)	C (%)	D (%)	E (%)	F (%)	G (%)	H (%)	I (%)	J (%)	K (%)	L (%)	M (%)	N (%)	O (%)	P (%)	R (%)	S (%)	T (%)	U (%)	V (%)	W (%n)	X (%)	Z (%)	AA (%)
Pulse on Arrival	100	100	100	100	100	100	92.6	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Systolic BP on Arrival	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
First Spontaneous Respiratory Rate	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Temperature on Arrival	0	0	0	0	0	0	0	0	0	0	100	100	100	100	100	100	90.7	100	0	0	0	100	100	0	100
GCS Eye on Arrival	100	100	100	8.7	100	68.4	89.2	99.6	100	90.3	100	100	100	100	100	100	92.6	100	100	100	100	100	100	100	100
GCS Voice on Arrival	100	100	100	8.7	100	67.8	89.3	99.5	100	90.3	100	100	100	100	100	100	92.6	100	100	100	100	100	100	100	100
GCS Motor on Arrival	100	100	100	39.6	100	78.	92.9	99.7	100	92.5	100	100	100	100	100	100	92.6	100	100	100	100	100	100	100	100
Total GCS on Arrival	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	92.6	100	100	100	100	100	100	100	100
CPR on Arrival	0	0	0	0	0	0	0	0	0	0	0	0	0	100	100	100	90.7	100	0	0	0	100	100	0	0
Blood Transfusion on Arrival	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	100	90.7	100	0	0	0	100	100	0	0
Patient intubated	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Date & Time Patient Intubated	7.6	10.7	15.4	20.3	5.6	25.2	9.3	13.4	9.1	32.1	20.6	39.1	25.6	100	100	0	38.9	0	100	100	100	100	100	6.1	15.6
Respiratory Qualifier on Arrival	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	92.6	0	100	100	100	100	100	100	100
Blood Alcohol Concentration on Arrival	0	0	0	0	0	0	0	0	0	0	100	100	100	0	100	0	0	0	0	0	0	100	100	0	0
First Measured Arterial Base Excess	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	99.9	98.5	0	0
First Measured INR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	100	100	0	0
AIS Injury Codes	100	100	100	99.7	100	96.5	99.7	100	99.8	94.0	100	100	99.9	98.1	100	94.4	81.5	90.8	100	100	100	99.9	97.1	98.9	99.2
Injury Severity Score	100	100	100	100	100	100	100	100	100	100	100	100	100	98.1	100	99	100	100	100	100	100	100	100	100	100
New Injury Severity Score	100	100	100	100	100	100	100	100	100	100	99.9	100	99.9	100	100	0	0	100	100	100	100	100	100	0	100

Treatment section: The completeness of the treatment fields was almost 100% for all sites, however there are significant gaps. The ATR has not reported specifically on the frequency of unknown values, which are acceptable values as defined in the dictionary, but will do so in future reports to determine the quality of the data. Clinicians have stated that the time to laparotomy is another of the top five preferred clinical indicators, thus it is vital that procedures and times are reported accurately.

	A (n)	B (n)	C (n)	D (n)	E (n)	F (n)	G (n)	H (n)	I (n)	J (n)	K (n)	L (n)	M (n)	N (n)	O (n)	P (n)	R (n)	S (n)	T (n)	U (n)	V (n)	W (n)	X (n)	Z (n)	AA (n)
Date & Time CT Performed	263	11	496	712	566	114	0	529	438	83	1411	127	1447	712	455	35	29	70	749	475	77	1554	90	301	237
CT type	263	11	496	712	566	114	0	529	438	83	1411	127	1447	712	386	35	29	70	749	475	77	1554	90	301	237
Operative Procedures in OR	249	11	375	410	960	64	460	283	194	38	1775	224	2692	0	199	28	19	32	396	205	39	904	46	176	98
Operation Date & Time	249	11	375	410	960	64	460	283	194	38	1775	224	2692	0	199	28	19	33	396	205	39	910	46	176	98

	A (%)	B (%)	C (%)	D (%)	E (%)	F (%)	G (%)	H (%)	I (%)	J (%)	K (%)	L (%)	M (%)	N (%)	O (%)	P (%)	R (%)	S (%)	T (%)	U (%)	V (%)	W (%n)	X (%)	Z (%)	AA (%)
Date & Time CT Performed	100	100	100	100	100	100		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
CT type	100	100	100	100	100	100		100	100	100	100	100	100	100	84.8	100	100	100	100	100	100	100	100	100	100
Operative Procedures in OR	100	100	100	100	100	100	100	100	100	100	100	100	100		100	100	100	96.7	100	100	100	98.4	100	100	100
Operation Date & Time	100	100	100	100	100	100	100	100	100	100	100	100	100		100	100	100	100	100	100	100	99	100	100	100

CONCLUSION

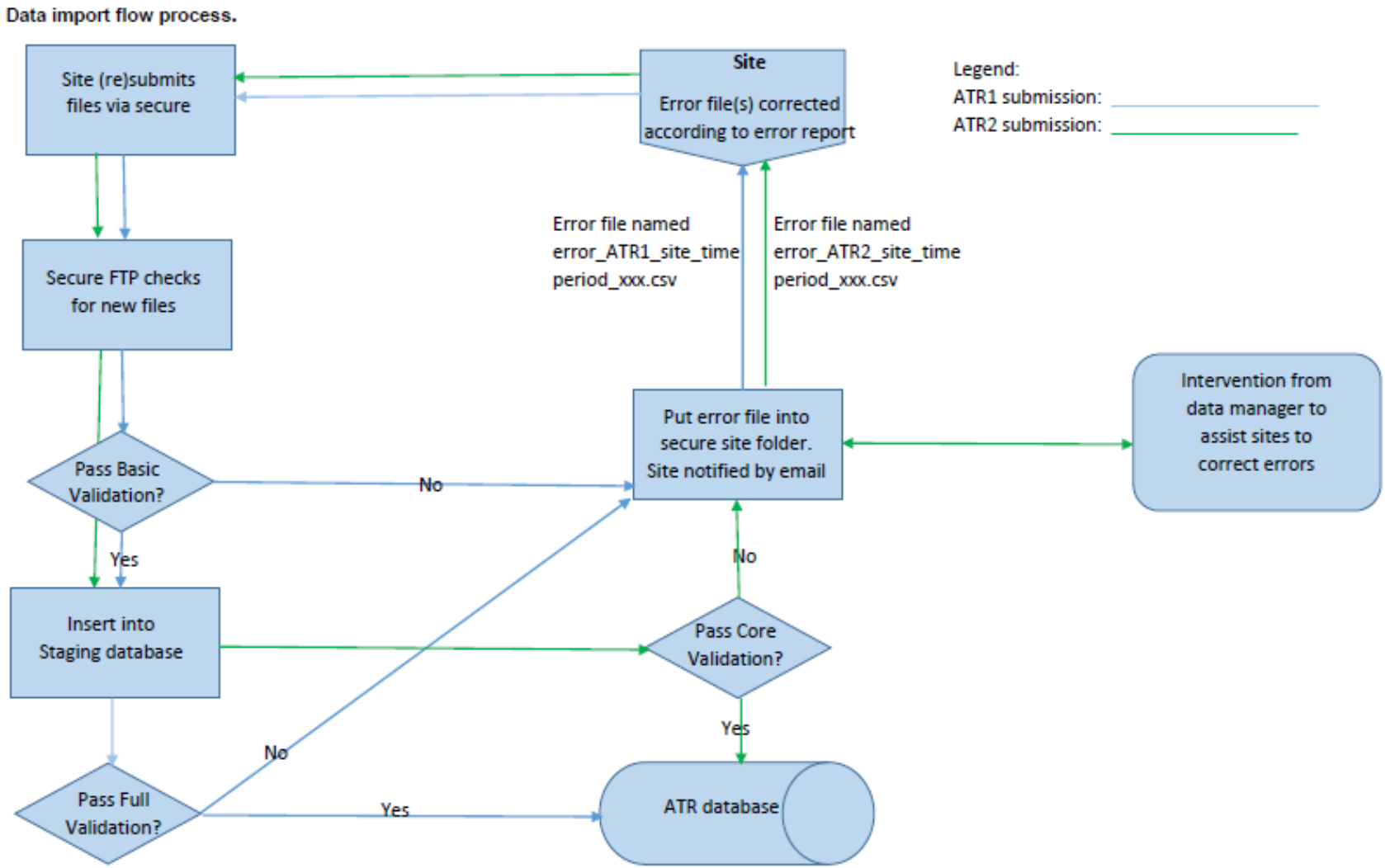
This first completeness report of ATR data since data collection resumed in June 2016 has examined fields that have been not collected by the sites and have therefore been left blank, or had a system default value inserted. Where sites have submitted an unknown value, which is acceptable as defined in the dictionary, this has been determined as a complete field. This report therefore has not attempted to determine quality as such, however it is an indicator thereof.

All fields have been included in this report. Future reports will provide completeness on key fields only. Sites should use this information about all the fields to assess the efficacy of their data capture and amend their practice if necessary. Particular fields of concern are *Injury Event Description; Safety Devices Used; Time of Ambulance Arrival at Patient; Diagnosis made > 24 hours after Arrival, Blood Alcohol Concentration on Arrival* and *Operation Date & Time.* In addition to these, the pre-hospital clinical fields were not fully collected by the majority of sites and data capture should be assessed for those also.

The fields that are only eligible for a subset of patients, particularly the referring hospital items, will be scrutinised in future completion reports to ensure that completeness is reported accurately. The GCS totals will be checked to ensure they match the relevant Eye, Verbal and Motor components and that completion rates are consistent.

The top five preferred clinical indicators as stated by clinicians can all be informed by data collected by the ATR. A table showing the indicators, and the relevant data items can be seen at Appendix 3. Thus completeness and quality of the data are critical to performance monitoring of trauma systems in Australia. The ATR is enormously grateful to the participating sites for their participation and is looking forward to ongoing collaboration.

Appendix 1: Data import flow process.



Appendix 2: Template.

File 1/3: Incident		Naming convention: ATR#_site_time-period_INC.csv							
		e.g.	ATR1_ALF_FY2013-2014_INC.csv						
Column Order	**Import File Column Name**	**RefId**	**Ref Name**	**Mandatory?**	**Type**	**Size**	**Import File Format**	**Example**	**Remarks**
1	InstitutionId	1.01	Institution	Y	Text	9	NNX[X]NNNNN	210000003	
2	TraumaNo	1.02	Trauma Number		Text	20	XXXXXX[X(14)]	1234	
3	IncidentNo	1.03	Incident Number	Y	Text	10	XXXXXX[X(4)]	029348	
4	DOB	2.01	Date of Birth		Text	8	DDMMYYYY	25101977	
5	Age	2.02	Age	Y	Number	3	N[NN]	100	
6	Sex	2.03	Sex	Y	Number	1	N		
7	Comorb	2.04	Pre-injury Co-morbidities		Text	9	ANN{.N[N]}	C65.1,C35.1	If more than one, separate with comma. No carraige returns.
8	DOIJ	3.01	Date & Time of Injury	Y	DateTime	13	DDMMYYYYThhmm	01011900T1021	
9	InjuryCause	3.02	Injury Cause	Y	Text	6	ANN{.N[N]}		
10	InjuryType	3.03	Dominant Injury Type	Y	Number	1	N	1	
11	InjuryPcode	3.04	Postcode of Injury		Number	4	NNNN	3000	
12	InjuryIntent	3.05	Injury Intent	Y	Number	2	NN	1	
13	InjuryPlace	3.06	Place of Injury Occurrence		Text	6	ANN{.N[N]}		
14	ActEngaged	3.07	Activity Engaged in when Injured		Text	10	ANN{.N[N]}		
15	InjuryEvent	3.08	Injury Event Description		Text	1000	[X(1000)]	Car vs tree	No carriage returns.
16	SafetyDevice	3.09	Safety Device Used		Number	2	NN	8,9,3,4	If more than one, separate with comma. No carriage returns.
17	TranspMode	4.01	Mode of Transport from scene	Y	Number	1	N	1	
18	AmbulanceArrDateTime	4.02	Date & Time of Ambulance Arrival at Patient		DateTime	13	DDMMYYYYThhmm	12052013T0355	
19	OtherHospTransfer	4.03	Transfer from Other Hospital	Y	Number	1	N		
20	RefHospId1	4.04	Referring hospital		Text	100	NNX[X]NNNNN	210000003	
21	RefHospArrDateTime1	4.05	Date & Time of Arrival at Referring Hospital		DateTime	13	DDMMYYYYThhmm		

22	RefHospDeptDateTime1	4.06	Date & Time of Departure from Referring Hospital		DateTime	13	DDMMYYYYThhmm		
23	RefHospTranspMode1	4.07	Mode of Transport from Referring Hospital		Number	1	N	1	
24	RefHospId2	4.04	Referring hospital		Text	100	NNX[X]NNNNN	210000003	
25	RefHospArrDateTime2	4.05	Date & Time of Arrival at Referring Hospital		DateTime	13	DDMMYYYYThhmm		
26	RefHospDeptDateTime2	4.06	Date & Time of Departure from Referring Hospital		DateTime	13	DDMMYYYYThhmm		
27	RefHospTranspMode2	4.07	Mode of Transport from Referring Hospital		Number	1	N	1	
28	RefHospId3	4.04	Referring hospital		Text	100	NNX[X]NNNNN	210000003	
29	RefHospArrDateTime3	4.05	Date & Time of Arrival at Referring Hospital		DateTime	13	DDMMYYYYThhmm		
30	RefHospDeptDateTime3	4.06	Date & Time of Departure from Referring Hospital		DateTime	13	DDMMYYYYThhmm		
31	RefHospTranspMode3	4.07	Mode of Transport from Referring Hospital		Number	1	N	1	
32	PreHospBloodTransf	4.08	Pre-hospital Blood Transfusion		Number	1	N	1	
33	PreHospCPR	4.09	Pre-hospital CPR		Number	1	N	2	
34	PreHospCardArrest	4.10	Pre-hospital Cardiac Arrest		Number	1	N	1	
35	FirstPulse	4.11	First pulse		Number	3	N[NN]	123	
36	FirstSystolic	4.12	First systolic BP		Number	3	N[NN]	200	
37	FirstRespiRate	4.13	First Spontaneous Respiratory Rate		Number	3	N[NN]	20	
38	FirstTemp	4.14	First Temperature		Decimals	4	NN[.N]	20.5	
39	FirstGCSEye	4.15	First GCS Eye		Number	1	N	1	
40	FirstGCSVoice	4.16	First GCS Voice		Number	1	N	1	
41	FirstGCSMotor	4.17	First GCS Motor		Number	1	N	1	
42	FirstTotalGCS	4.18	First Total GCS		Number	2	N[N]	3	
43	ArrivalDateTime	5.01	Date & Time of Arrival at Definitive Care Hospital	Y	DateTime	13	DDMMYYYYThhmm	01011900T1021	
44	ArrivalPulse	5.02	Pulse on Arrival	Y	Number	3	N[NN]	100	
45	ArrivalSystolic	5.03	Systolic BP on Arrival	Y	Number	3	N[NN]	200	
46	ArrivalRespiRate	5.04	First Spontaneous Respiratory Rate	Y	Number	3	N[NN]	100	
47	ArrivalTemp	5.05	Temperature on Arrival		Decimals	4	NN[.N]	20.5	
48	ArrivalGCSEye	5.06	GCS Eye on Arrival	Y	Number	1	N	1	
49	ArrivalGCSVoice	5.07	GCS Voice on Arrival	Y	Number	1	N	1	

50	ArrivalGCSMotor	5.08	GCS Motor on Arrival	Y	Number	1	N	1	
51	ArrivalTotalGCS	5.09	Total GCS on Arrival	Y	Number	2	N[N]	99	
52	ArrivalCPR	5.10	CPR on Arrival		Number	1	N	1	
53	ArrivalBloodTransf	5.11	Blood Transfusion on Arrival		Number	1	N	1	
54	ArrivalPatIntubated	5.12	Patient intubated	Y	Number	1	N	1	
55	ArrivalPatIntubatedDateTime	5.13	Date & Time Patient Intubated		DateTime	13	DDMMYYYYThhmm	01011900T0000	
56	ArrivalRespiQualifier	5.14	Respiratory Qualifier on Arrival	Y	Number	1	N	1	
57	ArrivalBloodAlcoholCon	5.15	Blood Alcohol Concentration on Arrival		Number	5	N.NNN	0.086	
58	FirstBaseExcess	5.16	First Measured Arterial Base Excess		Number	2	[A]N	99	
59	FirstINR	5.17	First Measured INR		Number	3	N.N	2	
60	EDDischargeDateTime	5.18	ED Discharge Date & Time	Y	DateTime	13	DDMMYYYYThhmm	01011900T0000	
61	EDDisposition	5.19	Disposition after ED		Number	2	N[N]	6	
62	IsDiag24hr	6.01	Diagnosis made >24 hours after arrival?		Number	1	N	1	
63	VentDays	6.06	Number of days on ventilator		Number	3	N[NN]	200	
64	AISCode	7.01	AIS Injury Codes	Y	Text	9	NNNNNN.N		If more than one, separate with comma. No carriage returns.
65	DischargeDateTime	7.02	Date & Time of Discharged from Definitive Care	Y	DateTime	13	DDMMYYYYThhmm	01011900T0000	
66	DischargeDest	7.03	Discharge Destination from Acute Care	Y	Number	2	N[N]	1	
67	ISS	7.04	Injury Severity Score	Y	Number	2	N[N]	4	
68	NISS	7.05	New Injury Severity Score		Number	2	N[N]	99	
69	LOS	7.06	Length of Stay	Y	Number	6	[NN]N.NN	5	
70	ICULOS	7.07	Length of ICU Stay	Y	Number	6	[NN]N.NN	0.01	
71	SevereComp	7.08	Severe Complications?		Text	9	ANN{.N[N]}	1,2,3	If more than one, separate with comma. No carriage returns.
# File 2/3: CT Scans		Naming convention: ATR#_site_time-period_CT.csv							
		e.g	ATR1_ALF_FY2013-2014_CT.csv						

Column Order	Import File Column Name	Refld	Ref Name	Mand?	Type	Size	Import File Format	Example	Remarks
1	InstitutionId	1.01	Institution	Y	Text	9	NNX[X]NNNNN	210000003	
2	IncidentNo	1.03	Incident Number	Y	Text	10	XXXXXX[X(4)]	029348	
3	CTDateTime	6.02	Date & Time CT Performed	Y	DateTime	13	DDMMYYYYThhmm	01011900T0000	
4	CTType	6.03	CT type	Y	Number	2	N[N]	2	
File 3/3: Procedures		Naming convention: ATR#_site_time-period_OPPROC.csv							
		e.g	ATR1_ALF_FY2013-2014_OPPROC.csv						
Column Order	**Import File Column Name**	**Refld**	**Ref Name**	**Mand?**	**Type**	**Size**	**Import File Format**	**Example**	**Remarks**
1	InstitutionId	1.01	Institution	Y	Text	9	NNX[X]NNNNN	210000003	
2	IncidentNo	1.03	Incident Number	Y	Text	10	XXXXXX[X(4)]	029348	
3	OperativeProc	6.04	Operative Procedures in OR	Y	Text	500	NNNNN-NN	93984-33,93894-12,93893-13	If more than one, separate with comma.
4	OperationDateTime	6.05	Operation Date & Time	Y	DateTime	13	DDMMYYYYThhmm	01011900T0000	

Appendix 3: Top five preferences for clinical indicators.

Indicator	**ATR Data field**
Intubation if GCS<9	First GCS Patient intubated?
Time to laparotomy	Operative procedures in OR Operation date & time
Missed Injuries	Diagnosis made > 24 hours after arrival?
Complications	Severe complications
Risk adjusted mortality	Outcome