

# Trauma Capacity and Capability Questionnaire Analysis

*Prepared for the Major Trauma National Clinical Network, by Midland Regional Trauma System*

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## **Purpose**

To provide a summary of the key points observed in the Trauma Capacity and Capability Questionnaire responses.

## **Disclaimer**

This analysis is only as accurate as the responses given and recorded. There may be discrepancies depending on how each individual interpreted the questions in the questionnaire; however for the purpose of this analysis it is assumed questions have been understood and answered in a consistent manner. A number of obvious anomalies have been identified from the initial survey and returned to facilitators for interrogation. The results are incorporated into this report.

In saying this, there clearly are areas that need to be followed up on and corrected with respondents. It is recommended an action plan to correct data is agreed.

Respondents have been mentioned throughout the analysis where a response given may be specific to them. Respondents can be made anonymous if required for the final report.

## **Qualifications**

The questionnaires were completed by 23 hospitals between August 2012 and May 2013. The hospitals surveyed are:

- Auckland City Hospital
- Christchurch Hospital
- Dunedin Hospital
- Gisborne Hospital
- Grey Base Hospital
- Hawkes Bay Regional Hospital
- Hutt Valley Hospital
- Middlemore Hospital
- Nelson Hospital
- North Shore Hospital
- Northland Hospital
- Palmerston North Hospital
- Rotorua Hospital
- Southland Hospital
- Starship Childrens Hospital
- Taranaki Hospital
- Tauranga Hospital
- Timaru Hospital
- Waikato Hospital
- Wairarapa Hospital
- Wairau Hospital
- Wellington Regional Hospital
- Whanganui Hospital

### **Assumptions**

- The information provided is accurate.
- Questions have been understood and answered consistently by respondents.
- Answers requiring a yearly figure are assumed to have been provided for the same year by each respondent.
- The number of Emergency Department Presentations has been used as an indication of the hospitals size. Each chart displays the order of the hospitals relative to their assumed size; largest to smallest. This has been done to help add context to the response given by each hospital.

See Appendix 1 for more detailed assumptions.

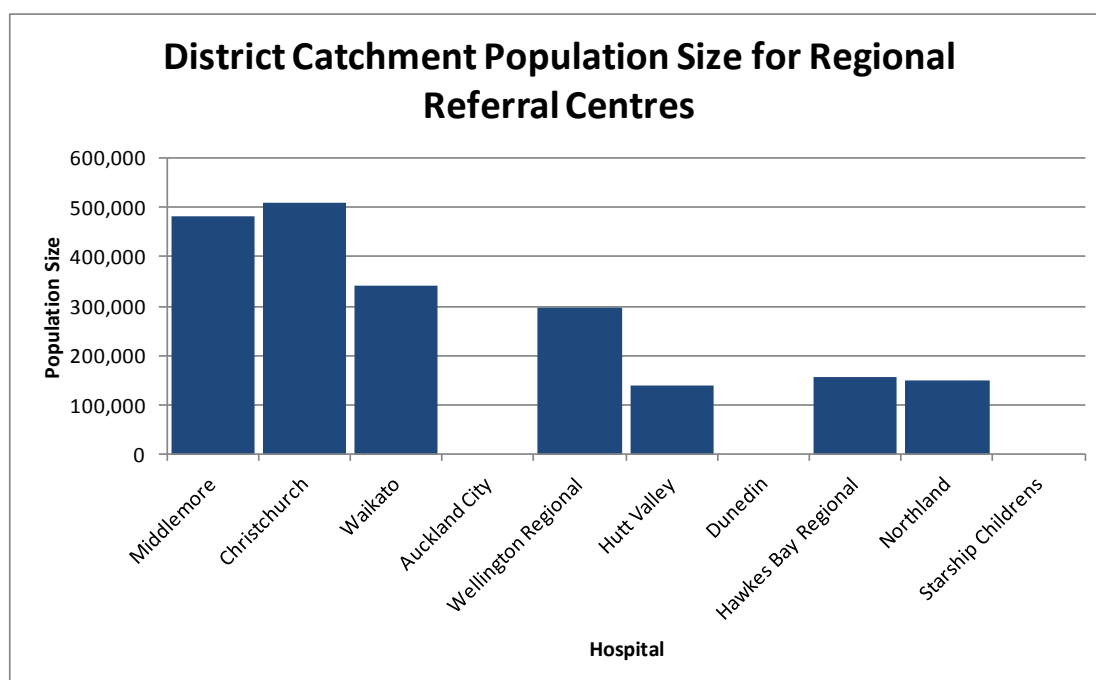
## Analysis

### Overview

Of the 23 hospitals surveyed:

- 10 (43%) reported they were the regional referral centre for trauma patients. Chart 1 highlight which hospitals these are and the size of the catchment populations.

Chart 1: The district catchment population of the hospitals who are the regional referral centres for trauma patients<sup>1</sup>.



- 4 (17%) are participating in the RACS Trauma Verification Program. Of these, one has a status of final; provisional level 1. The remainder are consultative.
- 20 (87%) have Trauma Triage Guidelines. 18 hospitals report the guidelines are routinely used.
- 3 (13%) are rural hospitals.
- 16 (70%) are district base hospitals.

<sup>1</sup> The regional catchment population size has not been used as there is an overlap amongst some district health boards. This is particularly noticeable amongst Auckland hospitals.

When asked what was good about their trauma service; respondents<sup>2</sup> primarily referred to:

- Relationships within the trauma team and across departments.
- Staff commitment and skill level.
- Quality assurance.

When asked what could be improved; respondents answered:

- Increase in FTE or developing the trauma team.
- Regional and national collaboration.
- Increased opportunities for training, research and education.
- Trauma database and data gathering.

When asked to list any major resource or system limitations not otherwise mentioned in the survey; respondents mentioned:

- Lack of dedicated resource or support for trauma.
- Resource limitations, however the Christchurch Hospital rebuild will address this.
- Training limitations due to clinical staff support and RMO availability.
- Access to real time trauma data.
- Hospital Emergency and ED Mass Casualty Plans require more work.
- No national or regional trauma system or co-ordination.

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<sup>2</sup> Respondents to this question include Auckland City, Christchurch, Grey Base, Hawkes Bay Regional, Hutt Valley, Middlemore, Nelson, North Shore, Palmerston North, Rotorua, Starship Childrens, Taranaki, Tauranga, Waikato, Wairau, and Whanganui Hospitals.

## Emergency Department

Chart 2: The number of Emergency Department presentations<sup>3</sup>.

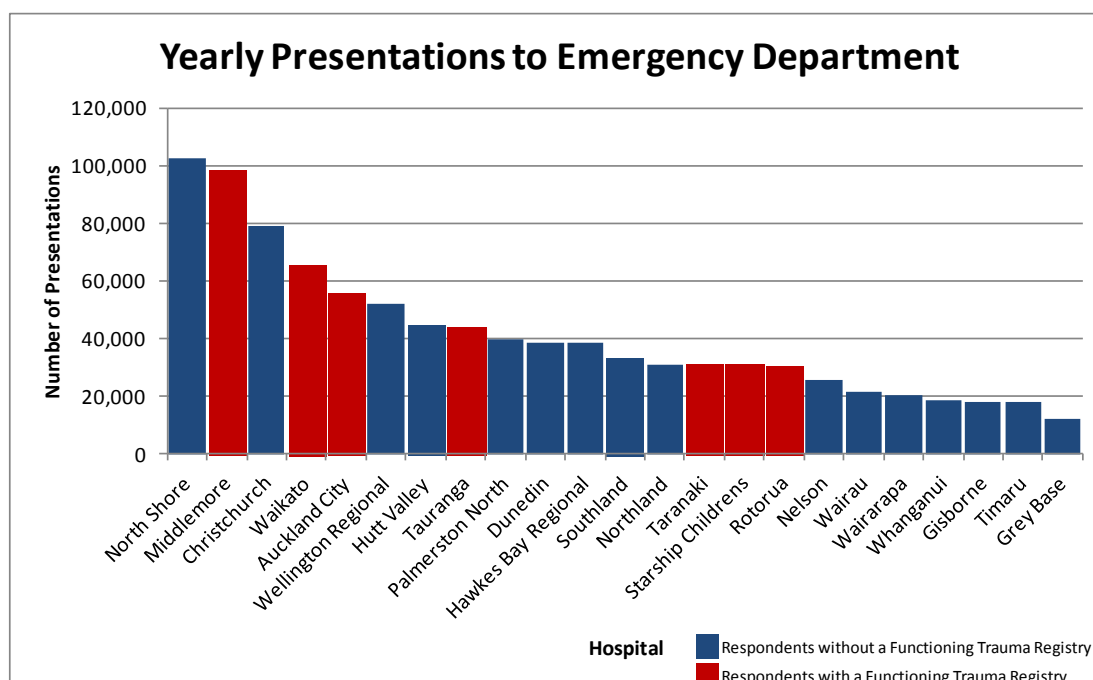
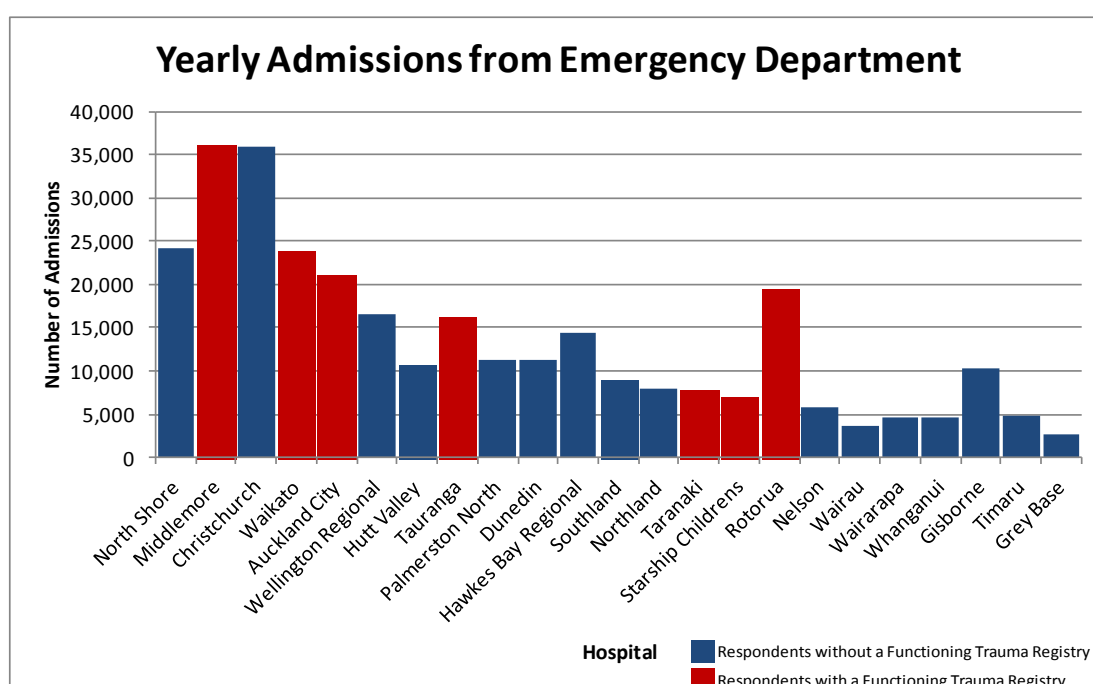


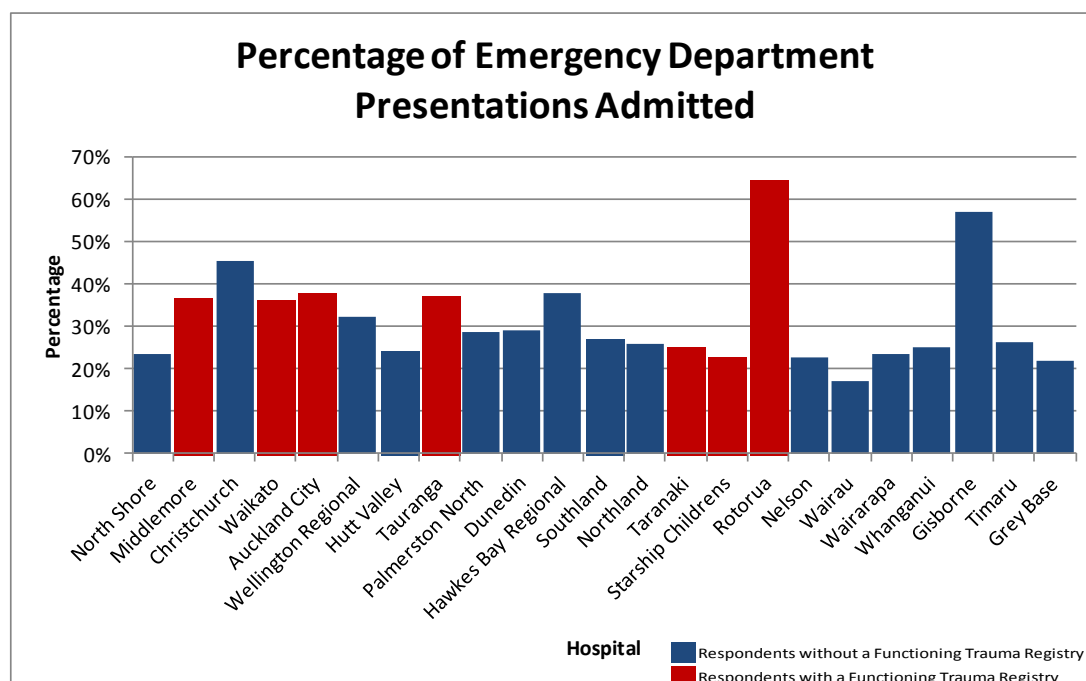
Chart 3: The number of patients admitted from the Emergency Department<sup>4</sup>.



<sup>3</sup> According to articles; Middlemore Hospital had 88,565 presentations to their Emergency Department; <http://journal.nzma.org.nz/journal/123-1320/4257/>; and North Shore Hospital seeing over 46,000 patients presenting to Emergency Department; <http://www.healthpoint.co.nz/specialists/emergency/waitemata-dhb-emergency-department-ed-and/at/north-shore-hospital/>

<sup>4</sup> Rotorua and Gisborne's number of admissions from Emergency Department has been queried without response. These may include patients in ED over 3 hours in addition to hospital inpatient admissions.

Chart 4: The percentage of patients presenting to Emergency Department who then go on to be admitted to hospital.



The surveyed hospitals see an average of 29%<sup>5</sup> of Emergency Department presentations going on to be admitted into hospital.

Of the 23 hospitals surveyed:

- All 23 Emergency Departments are open 24 hours a day.
- 19 (83%) have an ED SMO on call 24/7.
- 10 (43%) have an ED SMO on call and in-house 24/7.
- 16 (70%) report their Trauma team activates 24/7.

### Trauma Service

Of the 23 hospitals surveyed:

- 6 (26%) have a dedicated Trauma Service.
- 7 (30%) have a functional Trauma Registry.
- 7 (30%) have a Quality Assurance Program functioning. Of those who stated they had a QA programme functioning, common points used to describe the programme include:
  - Case reviews,
  - Loop closure of issues, and
  - Trend reporting.
- The majority of hospitals have a Whole Hospital Disaster Clinical Operations plan in place; 22 (96%).

<sup>5</sup> This figure has not been updated to include Rotorua or Gisborne's figures as their inpatient admissions from ED appear to be anomalous.

Chart 5: The total trauma admissions by hospital if known<sup>6</sup>.

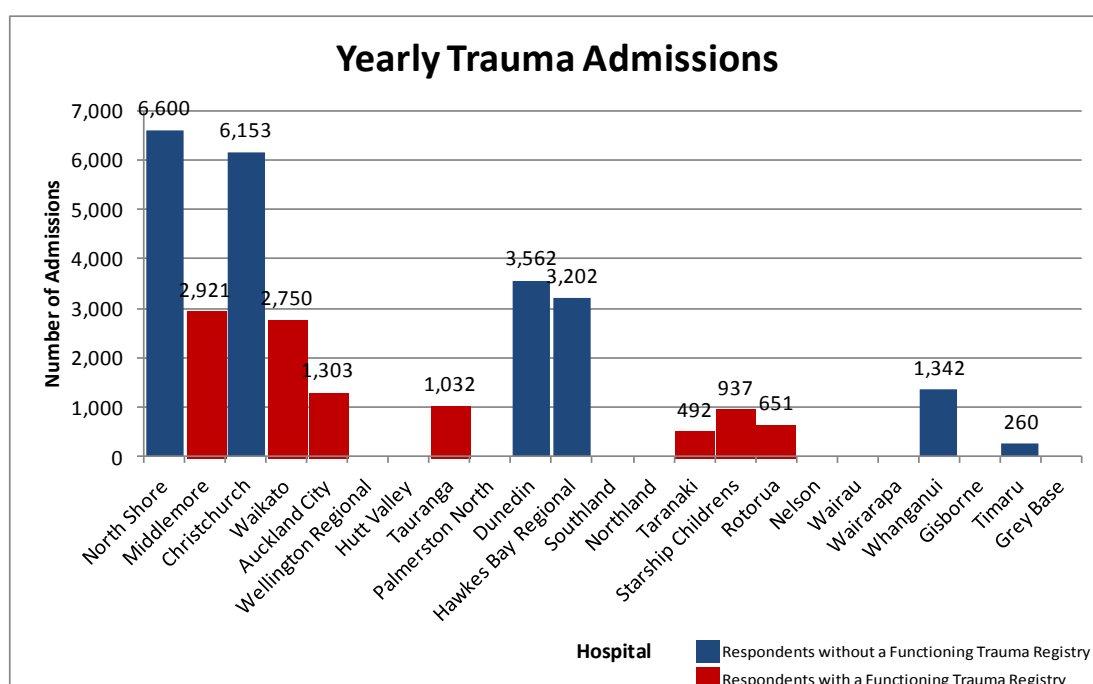
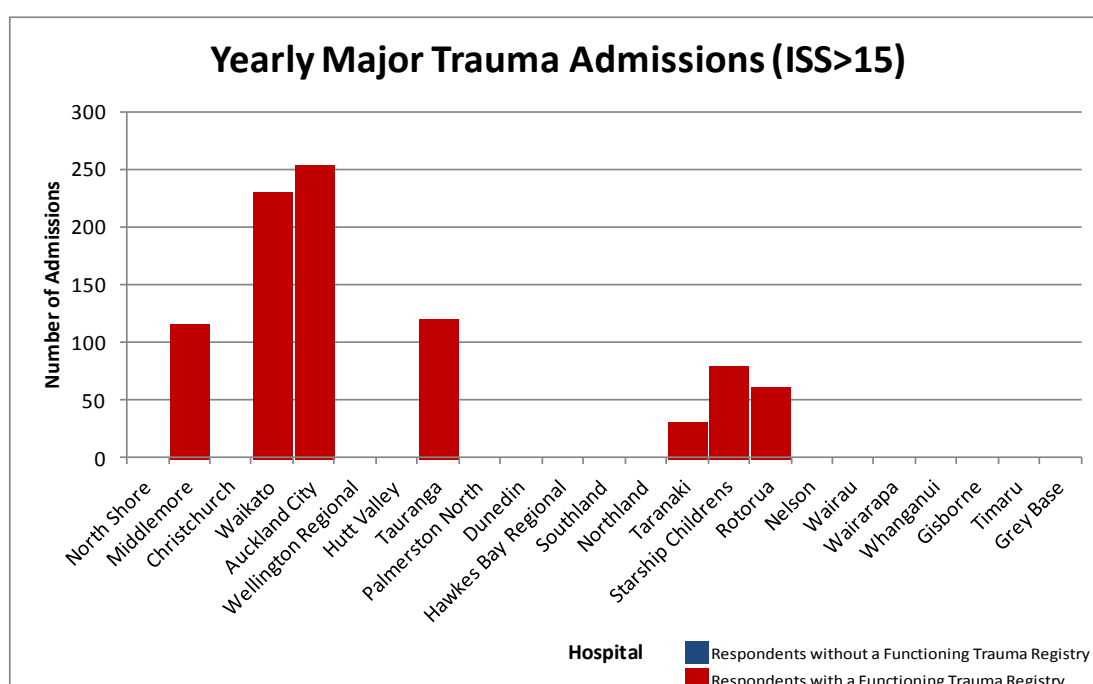


Chart 6: The total major trauma admissions if known<sup>7</sup>.



<sup>6</sup> Data has been removed for Nelson and Wairau as the information reported was anomalous.

<sup>7</sup> Data has been removed for hospitals without functioning trauma registries.

Chart 7: The number of patients who die from trauma each year<sup>8</sup>.

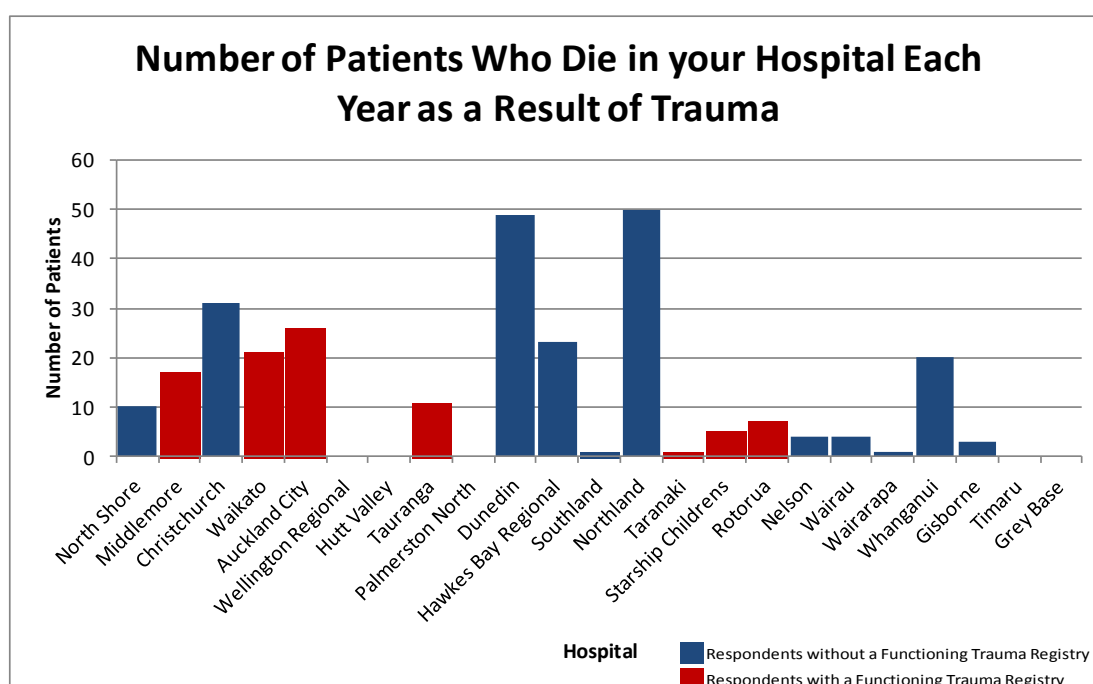
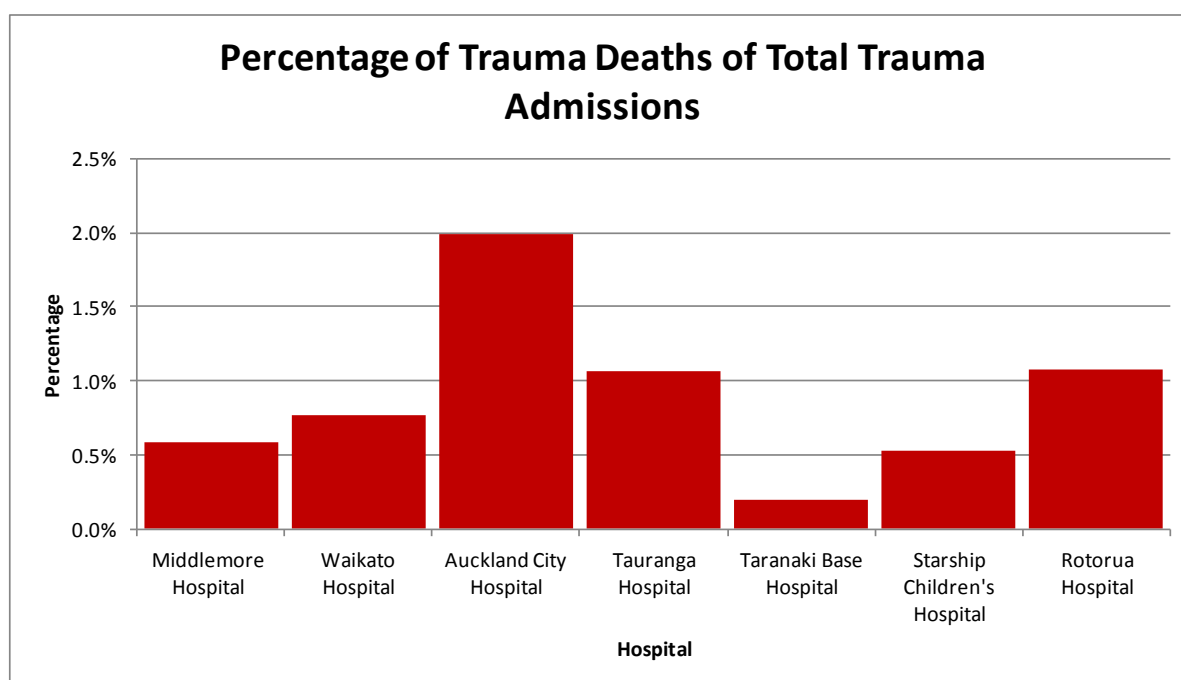


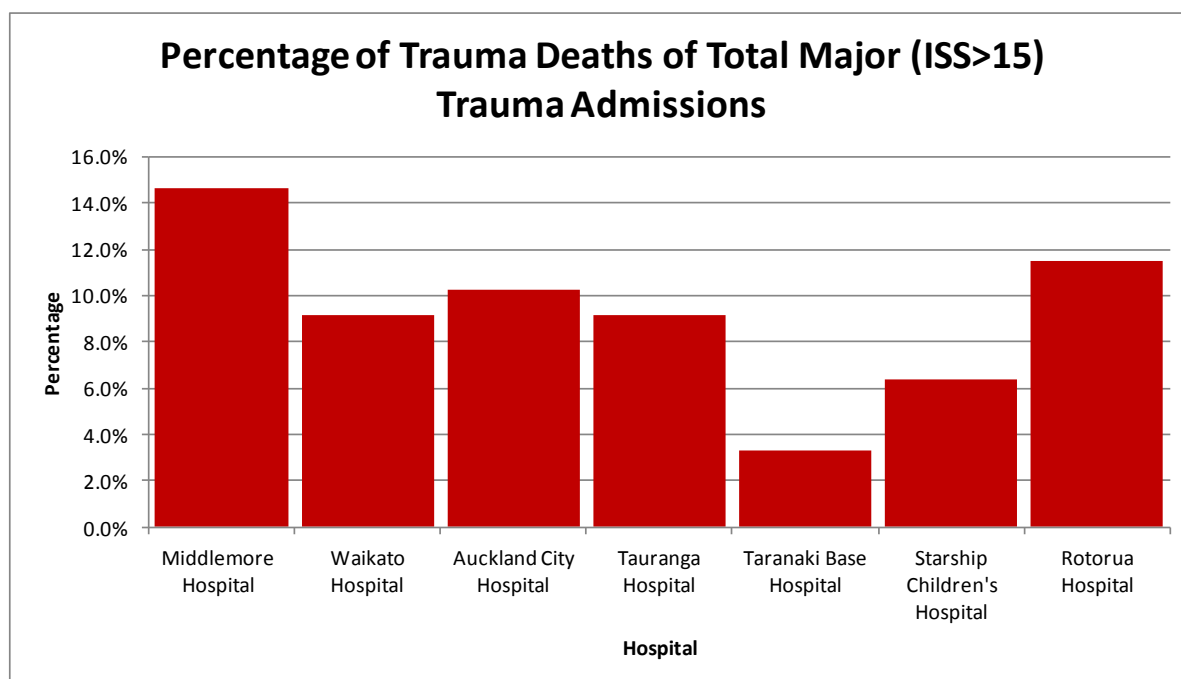
Chart 8: The percentage of trauma deaths over the total number of trauma admissions. Note this chart is for respondents who have a functional trauma registry only.



<sup>8</sup> Dunedin, Northland and Whanganui appear to be anomalous. Christchurch has amended their data following a chart review. Other hospitals have not been requested to do a chart review due to the work involved.



Chart 9: The percentage of trauma deaths over the total number of major (ISS>15) trauma admissions. Note this chart is for respondents who have a functional trauma registry only.



### Clinical Staffing and Availability of Specialists

All respondents reported doctors to be present in the hospital 24 hours; and doctors on call for trauma 24 hours.

14 (61%) reported in house general surgery registrars are available 24/7 and 10 (43%) reported in house orthopaedic registrars are available 24/7.

Looking at the availability of specialists across all respondents; on average:

- 47% will attend 24/7.
- 11% will advise 24/7.
- 15% will advise and attend only in working hours.
- 10% will advise only.
- 17% have no service available, or no response was given.

Looking into the specialties further, particular points of interest were:

- 100% of general surgery and anaesthetic specialties will attend 24/7.
- A large component of allied health will only advise or attend within working hours.

See appendix 2 for a more detailed summary of specialty availability.

No doctors were reported as having PRIME training. Tauranga Hospital was the only respondent reporting nurses with PRIME training (38% of their nurses).

## Intensive Care Unit

Of the 23 hospitals surveyed:

- 19 (83%) are staffed and equipped in accordance with CICMANZ IC-1.
- 11 (48%) of the surveyed hospitals have APACHE scoring.
- 9 (39%) have an ICU based trauma retrieval service.

Chart 10: The number of regularly staffed Intensive Care Unit beds.

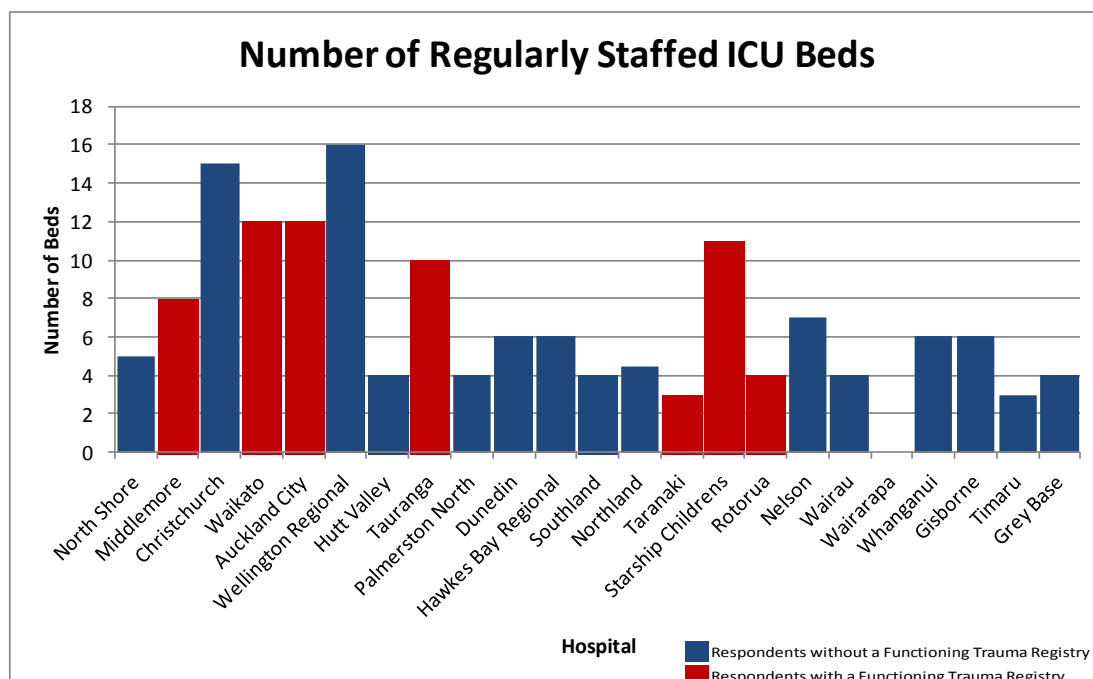
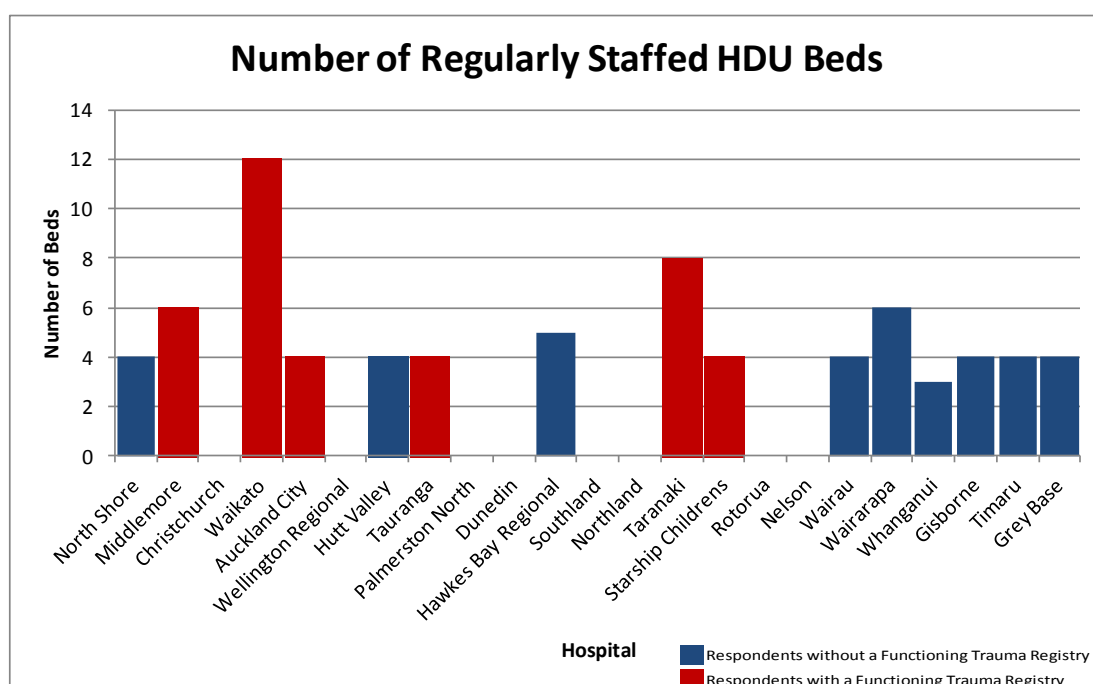


Chart 11: The number of regularly staffed High Dependency Unit beds.



16 (70%) of respondents have a High Dependency Unit.

### **Radiology and Medical Imaging**

Of the 23 hospitals surveyed:

- All have trauma CT available 24/7.
- All have trauma consultant reporting available 24/7.
- All usually have trauma CT reports available within 1 hour of scan.
- 21 (91%) have teleradiology. Wellington Regional Hospital and Wairarapa DHB do not have teleradiology.

### **Operating Theatres and Recovery Room**

Of the 23 hospitals surveyed:

- 18 (78%) report staff are immediately available 24 hours.
- 13 (57%) have anaesthetic capability according to ANZCA.

Amongst the feedback respondents gave regarding their Operating Theatre response to trauma patients; the dominating theme was that a great service is provided and trauma patients receive an excellent and prompt response.

### **Laboratory Service**

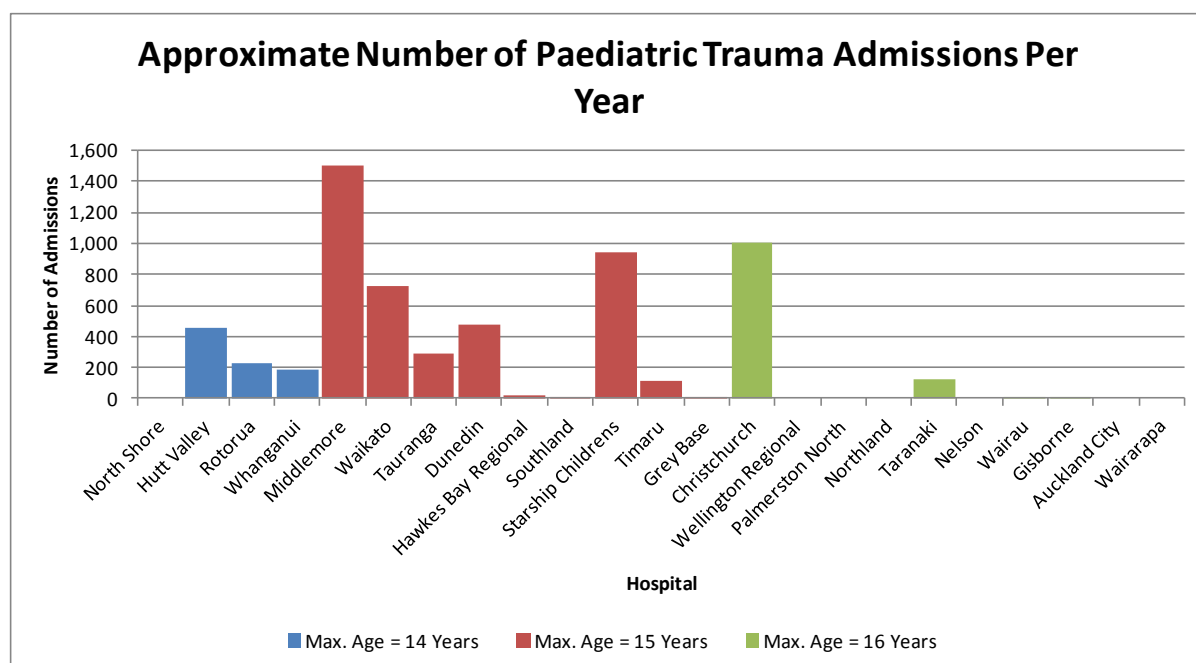
All respondents report their laboratory service to be available 24 hours a day. 19 (83%) have a documented massive transfusion protocol.

## Paediatrics

Of the 23 hospitals surveyed:

- 19 (86%) admit paediatric trauma patients.
- 2 (9%) have a Paediatric Intensive Care Unit available.
- 11 (50%) have paediatric trauma guidelines.

Chart 12: The number of paediatric trauma admissions per year<sup>9</sup>. Note this chart has been sorted by the maximum age for paediatrics reported for each hospital; segregated by bar colour.



## Quality Assurance, Training and Research

Of the 23 hospitals surveyed:

- 15 (65%) have a QA organisation structure.
- 10 (43%) have a multidisciplinary trauma audit.
- 4 (17%) have a Regional Trauma Audit Loop Closure process. On average this is undertaken 4 times a year.
- 8 (35%) use clinical indicators.
- 3 (13%) perform trauma outcome studies.
- 7 (30%) are involved in trauma research programs.
- 14 (61%) run trauma training programs for doctors.
- 15 (65%) run trauma training programs for nurses.
- 7 (30%) run trauma training programs for allied health personnel.
- 3 (13%) have community trauma education.

<sup>9</sup> Auckland City and Wairarapa did not indicate the maximum age of their paediatrics.

## Appendices

### Appendix 1: Assumptions

1. Survey responses have been cleansed where required. In particular;
  - a. The first answer given has been recorded where survey facilitators have given multiple answers for questions requiring a single letter response.
  - b. Yes has been recorded for questions where survey facilitators have entered yes and no.
  - c. Where a yes or no was required, however the respondent provided a letter A, B or E; A (attend 24/7) and B (advise 24/7; attend in working hours) have been updated to yes Y and E (no service) has been updated to be blank.
2. Analysis of the Emergency Department Presentations and Admissions from Emergency Department is based on the information provided under 2.0 HOSPITAL rather than 7.0 EMERGENCY DEPARTMENT. It is worth noting there are differences in the answers provided in the two sections.

### Appendix 2: Availability of Specialties

Table 1: A summary of the responses given for each specialty with regards to their availability.

Group	ID	Specialty	Number						Percentage					
			Will Attend 24/7	Will Advise 24/7: Attend in Working Hours	Will Advise and Attend only in Working Hours	Will Advise Only; Cannot Attend	No Service Available or No Response Given	Total	Will Attend 24/8	Will Advise 24/7: Attend in Working Hours	Will Advise and Attend only in Working Hours	Will Advise Only; Cannot Attend	No Service Available or No Response Given	
AVAILABI	6.01	Emergency medicine	20	1	2			23	87%	4%	9%			
AVAILABI	6.02	General surgery	23					23	100%					
AVAILABI	6.03	Anaesthetics	23					23	100%					
AVAILABI	6.04	Neurosurgery	6			6	11	23	26%			26%	48%	
AVAILABI	6.05	Intensive care	18	1		1	3	23	78%	4%		4%	13%	
AVAILABI	6.06	Orthopaedic surgery	21	2				23	91%	9%				
AVAILABI	6.07	Obstetric & gynaecological	21	1			1	23	91%	4%			4%	
AVAILABI	6.08	Cardiothoracic surgery	6			5	12	23	26%			22%	52%	
AVAILABI	6.09	ORL	12	2	1	3	5	23	52%	9%	4%	13%	22%	
AVAILABI	6.10	Plastic surgery	5	1		5	12	23	22%	4%		22%	52%	
AVAILABI	6.11	Oral-faciomaxiliary/Dental	10	3	3	2	5	23	43%	13%	13%	9%	22%	
AVAILABI	6.12	Urological surgery	11	3		5	4	23	48%	13%		22%	17%	
AVAILABI	6.13	Paediatric surgery	5		1	6	11	23	22%		4%	26%	48%	
AVAILABI	6.14	Burn surgery	6	2		4	11	23	26%	9%		17%	48%	
AVAILABI	6.15	Vascular	12	3		3	5	23	52%	13%		13%	22%	
AVAILABI	6.16	Spine surgery	10	4		3	6	23	43%	17%		13%	26%	
AVAILABI	6.19	Radiology	19	3		1		23	83%	13%		4%		
AVAILABI	6.20	Interventional Radiology	10	3	2	1	7	23	43%	13%	9%	4%	30%	
AVAILABI	6.21	Medicine	22	1				23	96%	4%				
AVAILABI	6.22	Paediatrics	19	1		1	2	23	83%	4%		4%	9%	
AVAILABI	6.23	Haematology	8	3	2	9	1	23	35%	13%	9%	39%	4%	
AVAILABI	6.24	Infectious disease	5	6	3	7	2	23	22%	26%	13%	30%	9%	
AVAILABI	6.25	Nephrology	5	6	1	7	4	23	22%	26%	4%	30%	17%	
AVAILABI	6.26	Pathology	10	6	2	4	1	23	43%	26%	9%	17%	4%	
AVAILABI	6.27	Psychiatry	18	3	1		1	23	78%	13%	4%		4%	
AVAILABI	6.28	Physiotherapy	9	6	7		1	23	39%	26%	30%		4%	
AVAILABI	6.29	Occupational Therapy	2	4	16		1	23	9%	17%	70%		4%	
AVAILABI	6.30	Occupational Therapy TBI Assessment Service	1	3	11	2	6	23	4%	13%	48%	9%	26%	
AVAILABI	6.31	Speech and Language Specialist	1	4	17		1	23	4%	17%	74%		4%	
AVAILABI	6.32	Dietician	1	5	16		1	23	4%	22%	70%		4%	
AVAILABI	6.33	Hospital-wide pain service	7	4	7	1	4	23	30%	17%	30%	4%	17%	
AVAILABI	6.34	Loss/Grief, PTSD counselling	2	2	10	1	8	23	9%	9%	43%	4%	35%	
AVAILABI	6.35	Social work, child protection and family support	6	4	11		2	23	26%	17%	48%		9%	
Total			354	87	113	77	128	759	47%	11%	15%	10%	17%	

### Appendix 3: Breakdown of Yes / No Answers

Table 2: A summary of the responses given for the yes and no questions.

Group	Number	Question	Yes	No	No Response	Total	% Yes
HOSPITAL	2.15	Are you a rural hospital?	3	19	1	23	13%
	2.17	Are you a district base hospital?	16	5	2	23	70%
	2.19	Are you are regional referral centre for trauma patients?	10	13	0	23	43%
	2.21	Are you participating in RACS Trauma Verification Program?	4	17	2	23	17%
	2.24	Do your trauma patients have access to acute (in-hospital) rehabilitation services?	19	1	3	23	83%
	2.25	Is access to rehabilitation services equitable?	14	6	3	23	61%
PREHOSPITAL TRANSPORT AND CARE	3.01	Do you have trauma triage guidelines?	20	2	1	23	87%
	3.02	If yes, are trauma triage guidelines routinely used?	18	2	3	23	78%
	3.03	Routine Communications between ambulance and hospital doctors?	20	3	0	23	87%
	3.04	Pre-hospital medical support service?	3	18	2	23	13%
TRAUMA SERVICE ORGANISATION	4.01	Do you have a dedicated Trauma Service?	6	17	0	23	26%
	4.03	Do you have a trauma committee?	10	13	0	23	43%
	4.07	Trauma service organisation chart available?	5	17	1	23	22%
	***	Written patient management guidelines?	2	1	20	23	9%
	4.08	Functional Trauma Registry?	7	16	0	23	30%
	4.10	Trauma education & research?	10	12	1	23	43%
	4.11	Emergotrain testing in last 3 years?	17	6	0	23	74%
	4.12	Whole Hospital Disaster Clinical Operations plan in place?	22	1	0	23	96%
	4.13	Quality Assurance Program functioning?	7	16	0	23	30%
HOSPITAL CLINICAL	5.01	Doctors present in the hospital 24 hours?	23	0	0	23	100%
	5.02	Doctors on call for trauma 24 hours?	23	0	0	23	100%
AVAILABILITY OF SPECIALISTS	6.17	In-house General Surgery registrars 24/7	14	9	0	23	61%
	6.18	In-house Orthopaedic registrars 24/7	10	12	1	23	43%
EMERGENCY DEPARTMENT	7.08	ED open 24 hours	23	0	0	23	100%
	7.09	SMO on call 24/7	19	4	0	23	83%
	7.10	SMO on call and in-house 24/7	10	13	0	23	43%
	7.11	Do you have trauma call criteria?	19	3	1	23	83%
	7.12	Do you have a routine trauma call process?	20	3	0	23	87%
	7.13a	Do you have a routine trauma team? If Yes, please list members	16	6	1	23	70%
	7.14	Does the trauma team activate 24/7?	16	5	2	23	70%
	7.15	Are your trauma calls subject to formal audit process?	9	13	1	23	39%
	7.16	On site aircraft access	20	3	0	23	87%
	7.17	Routine triage on arrival	23	0	0	23	100%
	7.18	Documented policies and protocols for trauma care	18	5	0	23	78%
	7.19	Research and education programs	15	8	0	23	65%
	7.20	Designated medical director of ED	22	1	0	23	96%
	7.21	Trauma-experienced nurse in charge of nursing	22	1	0	23	96%
	7.22	Trained nurses and aides	23	0	0	23	100%
	7.23	Do you host EMST courses in your hospital?	6	17	0	23	26%
	7.25	Does a Universal Precautions protocol apply in the trauma resuscitation areas?	22	1	0	23	96%
	7.26	If yes, is it routinely adhered to in trauma resuscitation events.	16	6	1	23	70%

Group	Number	Question	Yes	No	No Response	Total	% Yes
ED EQUIPMENT	8.01	Blood warmer	22	1	0	23	96%
	8.02	Portable ventilator	22	1	0	23	96%
	8.03	Airways and endotracheal tubes	23	0	0	23	100%
	8.04	Laryngoscope	23	0	0	23	100%
	8.05	FAST ultrasound machine	23	0	0	23	100%
	8.06	Oxygen supply	23	0	0	23	100%
	8.07	IV fluids and drip sets	23	0	0	23	100%
	8.08	Portable monitor/ defibrillator	23	0	0	23	100%
	8.09	Cricothyroidotomy set	21	2	0	23	91%
	8.10	ED Thoracotomy set	15	8	0	23	65%
	8.11	Intercostal tubes and drains	23	0	0	23	100%
	8.12	Intraosseous needles	23	0	0	23	100%
	8.13	Radiology in close proximity to ED (<50m)	23	0	0	23	100%
	8.14	Mobile x-ray in Resus area	22	1	0	23	96%
	8.15	Portable pulse oximeter	23	0	0	23	100%
	8.16	Portable non-invasive BP monitor	23	0	0	23	100%
	8.17	12-lead ECG	23	0	0	23	100%
	8.18	Auroscope	23	0	0	23	100%
	8.19	Ophthalmoscope	23	0	0	23	100%
	8.20	Cardiac monitor	23	0	0	23	100%
	8.21	Blood refrigerator	8	15	0	23	35%
	8.22	Infusion pump	23	0	0	23	100%
	8.23	Humidifier	17	6	0	23	74%
	8.24	Full range of splints	22	1	0	23	96%
	8.25	Protective clothing	23	0	0	23	100%
	8.26	Minor operations set	22	1	0	23	96%
	8.27	Nebuliser	23	0	0	23	100%
	8.28	Routine ethanol testing on all major trauma patients?	12	10	1	23	52%
INTENSIVE CARE UNIT	9.03	Staffed and equipped in accordance with CICMANZ IC-1	19	1	3	23	83%
	9.05	Do you have a High Dependency Unit	16	6	1	23	70%
	9.07	Do you do APACHE scoring?	11	11	1	23	48%
	9.08	ICU-based trauma retrieval service	9	14	0	23	39%
RADIOLOGY AND MEDICAL IMAGING	10.01	Therapeutic angiography	12	11	0	23	52%
	10.02	Therapeutic angiography 24/7	9	13	1	23	39%
	10.03	Sonography	22	1	0	23	96%
	10.04	Transoesophageal echo	16	7	0	23	70%
	10.05	Plain films	23	0	0	23	100%
	10.06	CT scanning	23	0	0	23	100%
	10.08	Trauma CT available 24/7?	23	0	0	23	100%
	10.09	Trauma CT consultant reporting available 24/7?	23	0	0	23	100%
	10.10	Trauma CT reports usually available within 1 hour of scan	23	0	0	23	100%
	10.11	MRI	20	3	0	23	87%
	10.12	Teleradiology	21	2	0	23	91%
OPERATING THEATRES AND RECOVERY ROOM	11.01	Anaesthetic capability according to ANZCA	13	0	10	23	57%
	11.02	Staff immediately available 24 hours	18	5	0	23	78%
	11.03	Trauma equipped theatres	22	1	0	23	96%
	11.04	Bypass and perfusionist available 24/7	6	17	0	23	26%
	11.05	Hybrid Operating Suite available (interventional radiology + surgery)	1	22	0	23	4%
LABORATORY SERVICE	12.01	Available 24 hours a day	23	0	0	23	100%
	12.02	Standard analyses of blood etc	23	0	0	23	100%
	12.03	Blood typing and cross matching	23	0	0	23	100%
	12.04	Coagulation studies	23	0	0	23	100%
	12.05	Blood bank	23	0	0	23	100%
	12.06	O-neg blood available	23	0	0	23	100%
	12.07	O-neg blood available 24/7	23	0	0	23	100%
	12.11	Blood gas 24/7	22	1	0	23	96%
	12.12	Serum and urine osmolality	22	1	0	23	96%
	12.13	Microbiology	22	1	0	23	96%
	12.14	Routine ethanol on major trauma	15	7	1	23	65%
	12.16	Drug and alcohol screening	18	5	0	23	78%
	12.17	Documented massive transfusion protocol?	19	4	0	23	83%

Group	Number	Question	Yes	No	No Response	Total	% Yes
PAEDIATRICS	13.01	Do you admit paediatric trauma patients?	20	3	0	23	87%
	13.04	Dedicated Children's ED	4	18	1	23	17%
	13.05	PICU	2	20	1	23	9%
	13.06	Paediatric trauma guidelines	12	10	1	23	52%
	13.07	ED Paediatric triage guidelines	17	5	1	23	74%
	13.10	PICU	3	18	2	23	13%
	13.11	Paediatric anaesthesia	11	11	1	23	48%
	13.12	Paediatric surgery	8	13	2	23	35%
	13.13	Paediatric Orthopaedic Surgery	12	10	1	23	52%
	13.14	Documented paediatric policies and procedures	18	3	2	23	78%
	13.15	Paediatric trauma QA program	5	17	1	23	22%
	13.16	Paediatric multi-disciplinary trauma audit	3	19	1	23	13%
QUALITY ASSURANCE, TRAINING AND RESEARCH	14.01	QA organisation structure	15	7	1	23	65%
	14.02	Multidisciplinary trauma audit	10	12	1	23	43%
	14.03	Regional Trauma Audit Loop Closure Process?	4	18	1	23	17%
	14.05	Use of clinical indicators?	8	12	3	23	35%
	14.07	Perform trauma outcome studies?	3	18	2	23	13%
	14.09	Involved in trauma research programs?	7	15	1	23	30%
	14.11	Do you run trauma training programs?	12	9	2	23	52%
	14.12	for doctors?	14	8	1	23	61%
	14.13	for nurses?	15	7	1	23	65%
	14.14	for allied health personnel?	7	15	1	23	30%
	14.15	Community trauma education?	3	19	1	23	13%