2024

Auckland City Hospital: Trauma Registry Report

Health New Zealand
Te Whatu Ora

Foreword and Data

Auckland City Hospital is part of the Northern Region (Te Tai Tokerau). Te Tai Tokerau is made up of Northland, Waitematā, Auckland and Counties Manukau districts. The Northern Regional Trauma Network includes senior representatives from the ambulance services, hospital trauma clinicians, trauma nurse specialists, rehabilitation specialists and primary care. The focus is on improving health outcomes for trauma patients and whanau through clinical audits of cases, research, training and education. Northern is one of four regional divisions making up Te Whatu Ora, the others are Te Manawa Taki, Central and Te Waipounamu.

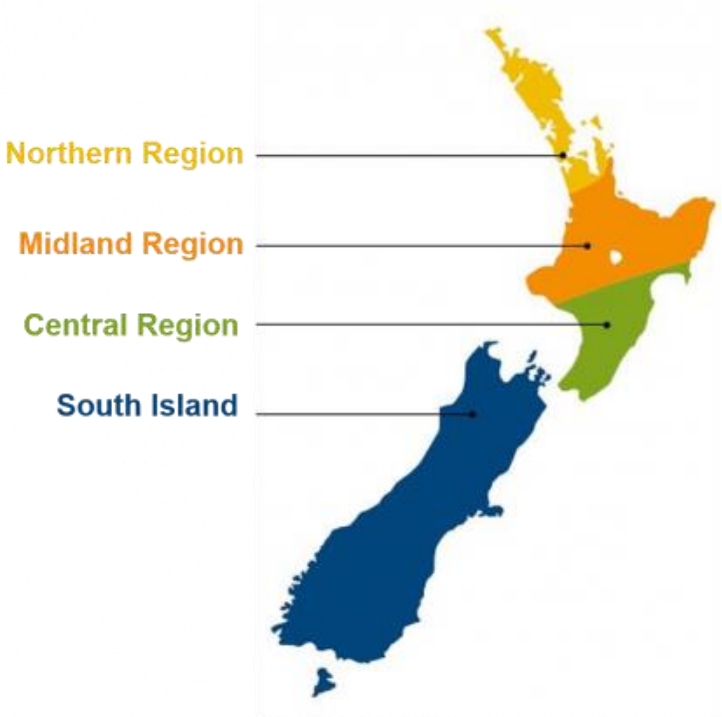
https://www.northerntrauma.co.nz/

Auckland City Hospital(ACH) is one of two tertiary hospitals who receive injured adults in the Northern region. ACH provides neurosurgical and cardiothoracic services for the entire region while Middlemore Hospital(MMH) provides, burns, plastic surgical, maxillofacial and spinal cord injury services. A destination policy and flowcharts describe the preferred major trauma hospital/s, based on the best descriptor of the patient's clinical condition.

https://www.majortrauma.nz/assets/Publication-Resources/Out-of-hospital-triage/3.-Major-trauma-destination-policy-Auckland-and-Northland-areas-Feb-2017.pdf

Auckland City Hospital contributes to the New Zealand Trauma Registry(NZTR), which is a single web-based system collecting data on all major trauma (injury severity score >12) patients admitted to acute hospitals in New Zealand. This registry provides information to reduce in-hospital mortality rates, improve recovery from injuries and improve quality of care for major trauma patients.

The Trauma service at ACH has 1.5 full time equivalents(fte) surgeons, 2.4 fte Trauma Nurse Specialists, 1.0 fte Junior resident medical officers and 1.7 fte support staff. Our official working hours are 0800-1600, 5 days a week with after-hours cover from the Acute Surgical Unit.



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Summary

- In 2024 ACH treated 1713 injured patients, 391 of these suffered major injury, that is with an ISS >12. Severely injured patients' data is also entered in the National Trauma Registry which is part of the National Trauma Network.

- In the severely injured group of patients, men were over-represented as were Māori. The greater number of these patients had transport related injuries at 46%. Reflecting our urban catchment this includes patients in motor vehicles, on motorbikes, E-scooters, E-bikes, pedal bikes on the road and pedestrians hit by vehicles.

- Admissions from E-scooter related injury continues to increase, from 56 admissions in 2021 to 66 admission in 2024

- Most major trauma patients are transported directly from the scene to ACH, 23% were transferred from another hospital, the most common being MMH

- ACH is the definitive care hospital for 96% of the severely injured patients we look after. Trauma patients admitted via the Emergency Department spend a median time of 7 hours and 6 minutes there, with the median time for major trauma patients being 4 hours and 54 minutes. Time spent in ED for trauma patients and major trauma patients has increased in 2024 compared to 2023

- There were 726 Trauma Team Activations in 2024. Mandatory Trauma Calls are made on the basis of an ambulance communication, physiology, transfer of major trauma, multiple casualties or various types of injury. Discretionary trauma calls may be made by the Emergency Medicine SMO (Senior Medical Officer) or Registrar. Not all trauma calls result in an admission. Of the 391 major trauma patients 58% had a trauma call. Overall 28% of all patients had a trauma call. A Code Crimson identifies those patients at high risk of exsanguination, Code crimsons were called 37 times during 2024.

- There were 38 trauma related deaths in 2024 which is a reduction on previous years. The mortality rate of Māori with Major Trauma has dropped from 10.1% in 2023 to 3.8% in 2024.

- Over 50% of all trauma patients are tested for alcohol, 23% of those have alcohol in their system at the time of admission to hospital. Of those trauma patients who have alcohol in their system 93% are over the legal driving limit.

Data and demographics.

Data is collected on all patients 15 years of age and over admitted to ACH as a result of an acute injury caused by trauma. The Auckland City Hospital Trauma Registry provides data for injury research, across a number of specialities and disciplines

Injuries by gender

Male patients make up most of the major trauma patients at 72%.

Injuries by age

Overall most injuries occur in the 25 to 34-year age bracket.
There are more male patients in every age range until 65 years old onwards.

The median age of the trauma patient for 2024 is 51 years old.
The number of patients admitted with trauma over the age of 65 years continues to increase, 498 patients over 65 were admitted in 2024, the highest number in over 15 years.

Injuries by ethnicity

The percentage of Māori in the Auckland City Hospital catchment area is half the national average however Māori continue to be over represented in all trauma and major trauma numbers.

	For New Zealand	Northland	Waitematā	Counties Manukau	Auckland	ACH admissions major trauma	ACH admissions all trauma
Māori	16.1%	34.9%	9.9%	15.8%	7.9%	20%	14%
Pacific	6.6%	2.3%	7.1%	21.3%	10%	10%	11%
Other	77.3%	62.8%	83.0%	62.9%	82.1%	70%	75%

Infographic Summary

PATIENT

1713 total patients

Median Age 51

40% **Female**

35% Occurred at the **Weekend**

391 **Major Trauma (23%)**

MOST COMMON PLACE OF INJURY

73% occurred at home

MOST COMMON MECHANISM

51% Falls

ARRIVAL

Emergency services transport **60%** of all patients and **83%** of major trauma patients

28% of major trauma admissions are transfers from another hospital

HOSPITAL

Median **time spent in ED**

All Trauma **7**hours **6**minutes

Major Trauma **4**hours **54**minutes

Median LOS for all patients = 3 days

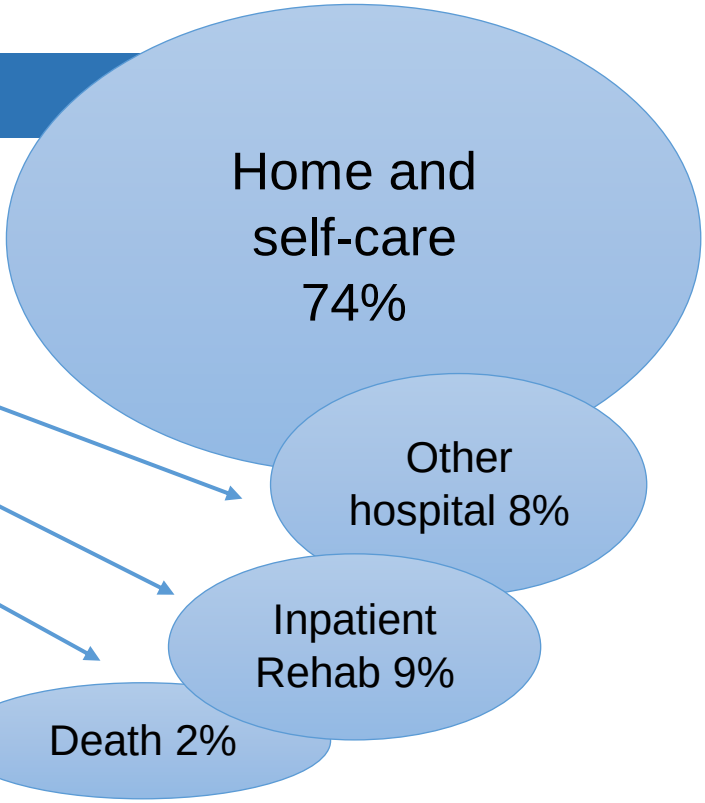
Median LOS for Major Trauma patients = 8 days

4% are transferred to another hospital for specialist care

median ICU LOS for trauma pts = 4days

OUTCOMES

Discharged to



The remaining patients went to a nursing care facility, special accommodation (including prison) or left against medical advice

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Discharge Home

Transition to home

Most trauma patients (74%) are discharged home, however there are many factors that can contribute to a poor discharge and transition experience.

Extending Manākitanga

Through an HQSC quality improvement project one of our Trauma Nurse Specialists has implemented phone follow up after discharge to extend service care for patients beyond their hospital stay.

Patient identification

- Injury severity score >12
- Length of stay >5 days

Consent

Consent is gained during the inpatient stay

Trauma Service Phone Follow Up Clinic

- Contact is made by phone within 10 working days of discharge
- An average of 4 patients are contacted every week
- Phone calls are usually 20-30 minutes long and use a standardised format based on Te Whare Tapu Whā

Subsequent referrals and interventions are captured and a clinic letter is sent to the patient, the General Practitioner and held in the regional clinical e-record.

Trauma Care - 777

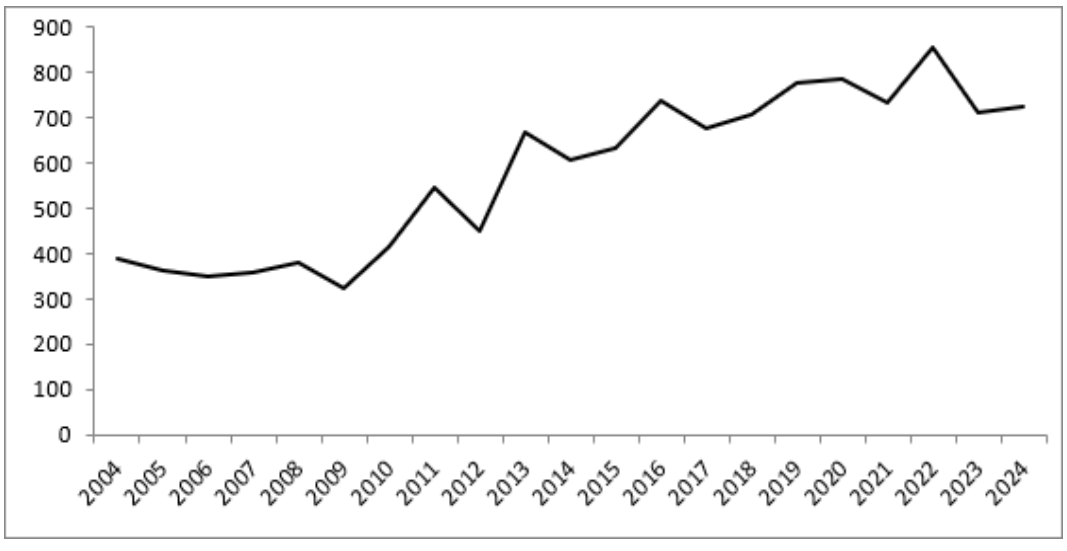
Code Crimsons

37 Code Crimsons were called in 2024, this identifies patients at high risk of exsanguination, and facilitates urgent surgical or radiological intervention to control bleeding.

Characteristic	Number (%)
Outcome	
Alive	28 (76)
Dead	9 (24)
Intervention	
Yes	23 (62)
No	13 (35)
Resuscitative thoracotomies in this group	1 (3)
Major Trauma	
Yes	33(89)
No	4 (11)

Trauma calls

There were 726 Trauma calls in 2024 bringing: A Surgical Registrar, DCCM Registrar, AED CCN, AED Consultant & Registrar, Trauma SMO & Registrar, Trauma Fellow and CNS to the Emergency Department.

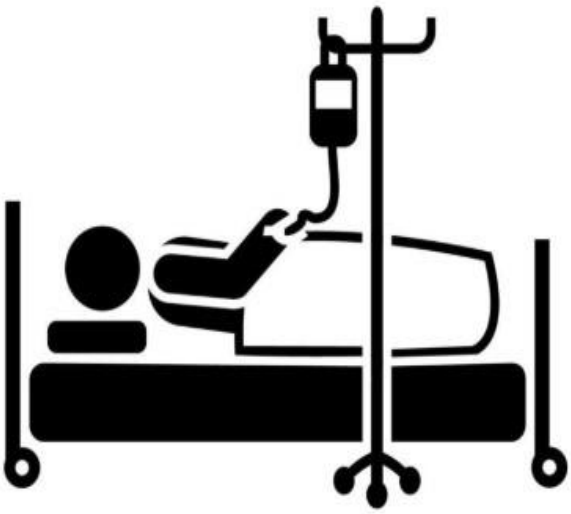


0800 4 TRAUMA

Inter-hospital transfers for unstable patients are facilitated with 0800 4 TRAUMA This number is available 24/7, calls are automatically directed to the on-duty intensivist who can accept patients with major trauma on behalf of all services at ACH and ensures all appropriate personnel are notified.

Injury and Trauma Centre Care

Time in ED
The median time spent in the ED for all trauma patients is 7 hours and 6 minutes. The median time in ED for major trauma patients is 4 hours and 54 minutes. Patient flow in 2024 has been affected by staffing levels in many hospitals throughout the Motu.



Time to index CT
Trauma care is often guided by the detailed images created by CT scans. The average time from patient admission to index CT being done at Auckland City Hospital is 1 hour and 46 minutes.

Hospital LOS
The median length of stay for major trauma patients is 8 days.
The median length of stay for major trauma patients in the Intensive Care Unit(ICU) is 4 days, 42% of major trauma patients at ACH have an ICU stay

Day of injury
Major Trauma patients are most often admitted on a Saturday and Sunday

Mechanism
The most common mechanism of injury is a fall (51%). The patients in this group include fall from a great height, such as a cliff, roof, balcony or ladder and fall from a standing height. More than half of the deaths were from some kind of fall and most of those were from standing height

E-scooters
Data has been kept in the registry on E-scooters since 2018. E-scooters have been popular initially because of the novelty but also there are no fumes and they are convenient. More recently there is a transition from rented to owned scooters. During 2024 66 patients were admitted to ACH with injuries involving E-scooters, this is the most there have been in the last four years.

Alcohol
Alcohol testing is part of the “trauma ED panel”. 51% of all trauma are tested and 78% of major trauma. The results are the same for all trauma and major trauma. 26% of those tested have alcohol in their system and of those tested 93% are over the legal driving limit.

Injury type and intent

Injury type is recorded in the Trauma Registry as blunt, penetrating or burn.
93% of all patients have a blunt type of injury, the remaining 7% were penetrating. Most injuries are unintentional however the majority of penetrating injures are intentional (self-harm or assault).
Injuries caused by guns have been far less frequent in 2024.

Severity of injury

Major trauma patients have an ISS>12, or an admission to the Department of Critical Care, or die from their injuries.
The proportion of major trauma patients continues to increase annually.
77% of our major trauma admissions come to ACH directly, the rest are transfers.
ACH provides definitive care for 96% of the major trauma patients admitted.
Most major trauma arrives with an ISS range of 13-24

Transport to hospital

Most patients admitted with an injury to ACH are transported by road ambulance.
The out-of-hospital destination policy ensures patients with a severe head injury in the Northland area arrive at ACH. While flow charts describe the preferred hospital based on the best descriptor of the patient's clinical condition it may be appropriate to bypass another major trauma hospital. Patients with a reduced Glasgow Coma Scale (GCS<9) from major trauma come directly to ACH.

Major trauma incidents by sex, injury intent, type of injury severity score

Characteristic	Number (%)
Sex	
Trans	1(0)
Female	108(28)
Male	282(72)
Injury intent	
By other	32
Self-inflicted	8
Unintentional	338
Unknown	13
Dominant injury type	
Blunt	372
Penetrating	19
Injury Severity Score	
1-12	43(11)
13-24	236(60)
25-44	105(27)
45+	7(2)

Injury Outcomes

Mortality

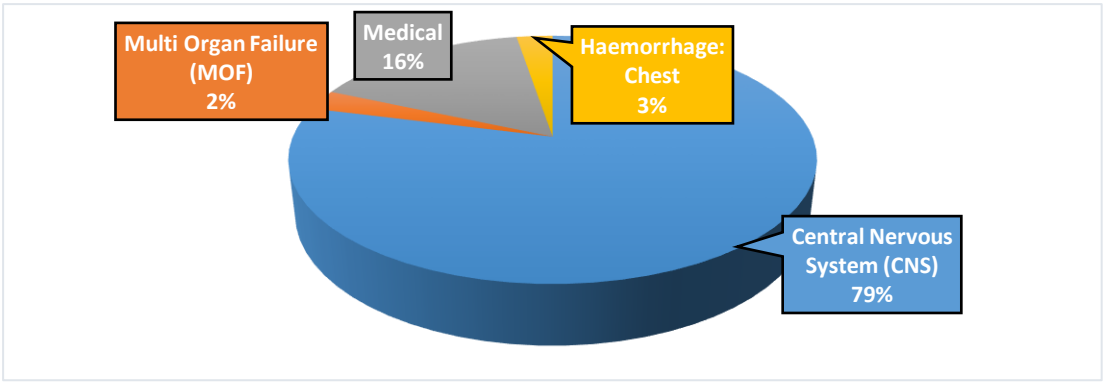
Mortality is associated with ISS, which is a threat to life score. Mortality for those patients who don't meet criteria for major trauma is usually related to an underlying comorbidity. There were 38 deaths in 2024

Below is a table with percentage of deaths per ISS grouping.

ISS					
	1-8	9-15	16-24	25-40	41-75
No.Deaths	2/1093	3/360	7/148	24/99	2/13
Percentage	0.02%	0.83%	4.73%	24.24%	15.38%

The mortality rate of major trauma patients at ACH has reduced this year from 11.6% to 9.7%. Māori continue to be overrepresented in trauma admissions, the mortality rate of Māori with Major Trauma has dropped from 10.1% in 2023 to 3.8% in 2024.
Most trauma deaths are Central Nervous System related, reflecting the destination policy of the region.

Types of death



Discharge Destination

Most patients are discharged home or to their usual residence. The Trauma Service coordinates follow up across the services. Some trauma patients (21%) require ongoing inpatient care post discharge, whether it is ongoing care in another hospital or rehabilitation. The Trauma Nurse Specialists assist with coordination for ACC community based supports for patients who go home.

Rehab

Auckland City Hospital has a strong relationship with ABI https://www.abi-rehab.co.nz/ who provide community services and inpatient services for patients with an acquired brain injury. Auckland City Hospital provides rehab for older patients in Older Peoples Health - Mana Awhi.

Head Trauma

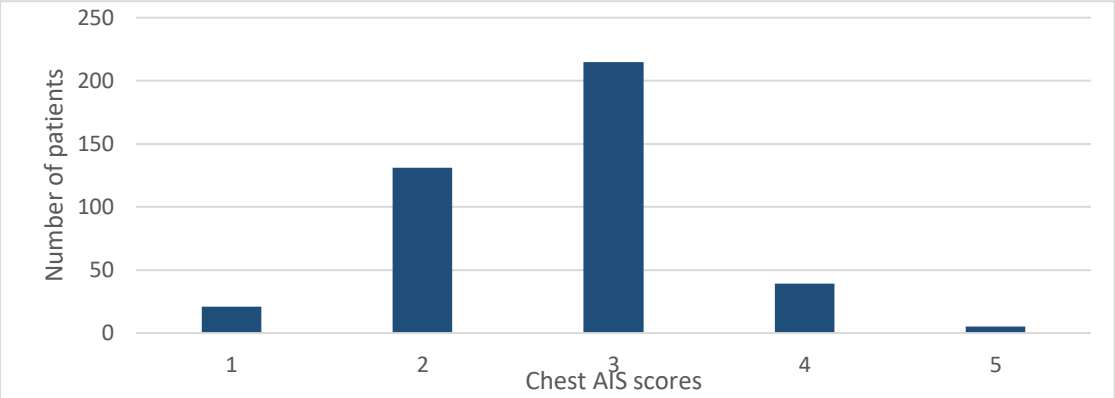
ACH admission numbers with Traumatic Brain Injury reflect the national and regional destination policies and the growing subspecialisation within all hospitals and clinical services. Patients are transferred to a trauma service with a neuroscience centre or an intensive care unit supported by an in-house neurosurgical unit.

215	Patients were admitted to ACH in 2024 with a head injury with AIS>2
84%	Are brought to Auckland City Hospital by emergency services
31%	Were admitted to ICU
29	Didn't survive their injuries
186	survived their injuries
37%	Went to Rehab

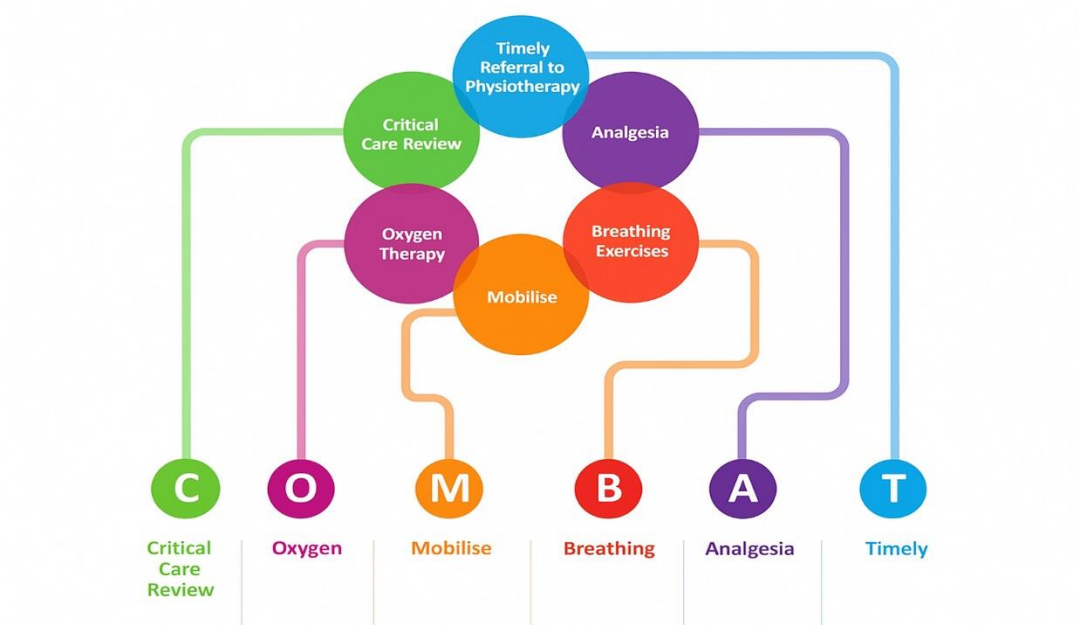
Chest Trauma

The destination policy dictates, if an adult patient in the Northern Region has any of the following they should be taken to Auckland City Hospital or Middlemore Hospital.

- Penetrating trauma to the neck or torso
- Crush injury to the neck or torso
- Flail chest



Rib Fractures are the most common injury from blunt thoracic trauma. Surgical fixation of severe rib fractures is sometimes required and is offered at ACH. Supportive treatments allocated include: Critical Care Review, Oxygen Therapy, Mobilisation and Breathing Exercises, Analgesia and Early Referral to the Acute Pain Service and referral to Physiotherapy. These therapies make up the COMBAT protocol for rib fracture treatment.



Elderly patients in this group are at risk of significant mortality and morbidity and in 2024 make up 33% of these admissions

Abdominal Trauma

ACH is the default hospital for patients with abdominal trauma in most of the Northern region Services provided include CT imaging, Interventional Radiology (IR).

Code Crimson Calls get all the surgical decision makers and facilitators in the resuscitation room to facilitate rapid access to theatre or interventional radiology. Injuries involving the abdominal organs cause 32% of Code Crimson calls.

Road traffic crashes are the most common cause of abdominal trauma (54%)

153	Patients were admitted to ACH in 2024 with injuries to the abdominal region
18%	Had splenic injuries
12%	Had kidney injuries
21%	Had liver injuries
35	Patients with abdominal injuries received Laparotomy surgery

Tertiary Surveys

A tertiary survey is a re-evaluation of the patient to avoid undiagnosed injuries, these are injuries not detected in the primary and secondary surveys.

Purpose

- To identify potential injuries
- Reduce the incidence of missed injuries

Patient selection

- All major trauma ISS>12
- Significant mechanism for example: high speed road crash, falls >1-2m
- Injuries in multiple body regions
- Patients transferred to the ward from an ICU setting, irrespective of length of stay
- Patients under the influences of substances who are unable to comply with a thorough physical assessment on admission

When

- Ideally completed between 24-72 hours after admission to the ward.
- All radiology reports must be validated

Process of assessment

- Completed by a members of the Trauma Service
- Patients needing a Tertiary Survey are identified from daily data collection information.
- Preliminary information and injury list collated prior to physical assessment to eliminate repetition and exclude known injuries.

Outcomes

- Reduced missed injuries
- Treatment of potential new findings.
- Referrals for incidental findings
- Accuracy of injury sustained for ACC and coding purposes

The Trauma Registry and Research

The Auckland City Hospital Trauma Registry was established in December 1994 and as of the end of 2024, contained 44495 patients. This annual report covers the dates between 1st January 2024 and 31st December 2024.

Trauma related articles

Schroll, R., Flint, S. A., Harris, D., Civil, I.
Blunt cerebrovascular injury in trauma patients: an under-recognised injury pattern at Auckland City Hospital
(2025) *New Zealand Medical Journal, 138(1616),* pp. 59-68

Panesar, D., Civil, I.
Intentional physical self-injury in Auckland: patterns, associations and clinical implications in a single-centre cross-sectional study
(2024) *New Zealand Medical Journal, 137(1600), pp. 40-51*

Dicker, B., Montoya, L., Davie, G., Lilley, R., Kool, B.
Distribution of prehospital times of major trauma cases attended by emergency medical services in Aotearoa New Zealand
(2025) *New Zealand Medical Journal, 138(1611), pp. 55-64*

Gibson, G., Dicker. B., Civil. I., Kool, B.
Adherence to New Zealand's Major Trauma Destination Policy: an audit of current practice
(2024) *New Zealand Medical Journal, 137(1603), pp. 89-128*

Trauma presentations - The National Trauma Symposium 2024

Dr Claudia Mason, Registrar, Starship Children's Hospital, Auckland, NZ
Difference In Management of Paediatric Blunt Splenic Injury In Adolescents Treated By Paediatric And Adult Trauma Teams – 12year Single-Centre Experience

Dr James Penfold, Registrar, Auckland City Hospital, Auckland, NZ
Code Crimson at Auckland City Hospital – A Contemporary and Clinical Experience

Lucy Stevens, Advanced Clinician Speech Language Therapist, Auckland City Hospital, Auckland, NZ
Becky Lantzos, Speech-Language Therapy Critical Care Clinical Educator, Health New Zealand Te Whatu Ora, Northern Region, NZ
"Don't You Just Put People Nil By Mouth or On Thickened Fluids?" The Role of Speech and Language Therapy and All Thinks Tracheostomy

Auckland City Hospital Trauma Service

Senior Medical Officers

Prof Ian Civil Clinical Director

Dr Li Hsee Trauma Surgeon

Dr Savitha Bhagvan Trauma Surgeon

Assoc/Prof Rebecca Schroll Trauma Surgeon

Dr Mark Friedericksen Emergency Physician

Fellows/Registrars

Dr Maria Brand

Dr James Penfold

Trauma Nurse Specialists

Pamela Fitzpatrick

Nancy Mitchell

Bridget Dwyer

Trauma Systems Co-ordinator

Sue Wilkinson

Trauma Administrator

Anne Stephens

Report prepared by Sue Wilkinson