

Serious traumatic brain  
injury in Aotearoa  
New Zealand: Summary  
of improvement work

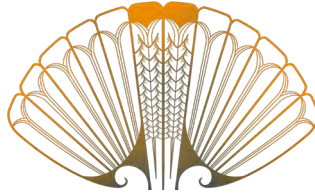
He whara kohuki roro  
tairaru i Aotearoa: He  
whakarāpopoto o ngā  
mahi whakapai



## Contents | Ngā ihirangi

---

Foreword by clinical lead   He kupu nā te mātanga arataki	1
Introduction   He kupu whakataki	3
sTBI workstreams   He mahi kōkiri	5
sTBI action plan and FAQ   He mahere mahi, he pātai auau	9
Health New Zealand - Te Whatu Ora Te Pae Hauora o Ruahine o Tararua MidCentral	10
Health New Zealand - Te Whatu Ora Taranaki	12
Health New Zealand - Te Whatu Ora Nelson Marlborough	14
Health New Zealand - Te Whatu Ora Te Matau a Māui Hawke's Bay	15
Health New Zealand - Te Whatu Ora Waitaha Canterbury	16
Health New Zealand - Te Whatu Ora Te Toka Tumai Auckland	18
Health New Zealand - Te Whatu Ora Hauora a Toi Bay of Plenty	19
Health New Zealand - Te Whatu Ora Te Tai Tokerau Northland	22
Health New Zealand - Te Whatu Ora Southern	24
Data and monitoring   He raraunga, he aroturuki	25
Key contacts   Ngā tino whakapānga	26
Glossary   He kuputaka	27



## Foreword by clinical lead | He kupu nā te mātanga arataki

---



It has been a tremendous privilege to be involved in a national traumatic brain injury (TBI) project. While much work remains, we were left with no doubt that Aotearoa New Zealand is

blessed with an engaged community of health professionals and consumers who are passionate about improving the life-changing consequences of TBI. We are confident that the work delivered by this project will have a lasting positive legacy for both patients and whānau.

The project was divided into two parts. The first targeted equity of access to specialist services by defining and disseminating standardised national neuroscience admission criteria. The second targeted identification of TBI by ensuring all major trauma patients were screened for the presence of brain injury.

A combination of evidence-based medicine, contemporaneous data and individual site and specialty discussion allowed us to identify standardised admission criteria. The enthusiastic and supportive nature of our interactions with recipient neuroscience centres and referring regional hospitals ensured this process proceeded smoothly. In addition to

this definition, most regions have now identified a single point of contact for referral of patients with serious TBI. This contact person provides medical expertise, facilitates transport and ensures timely access to neuroscience centres. This is a major step towards reducing barriers and promoting time-efficient access to specialist services.

We adopted a collaborative quality improvement approach to systematic screening for TBI. We were fortunate to work with nine enthusiastic multidisciplinary teams from around the country. Each group identified a scope of work based on the broad principles of the project and tailored to opportunities identified within each hospital. However, the real power of the collaboration came from the networking between the groups. A culture of information sharing and dynamic solution-based advice helped many groups overcome seemingly insurmountable problems. The energy, ingenuity and resilience of each group remains a personal highlight for me. We were delighted to see improvement in TBI recognition across all the services, and we look forward to seeing how this process continues to roll out in the future.

### **David Knight**

*Clinical lead, serious traumatic brain injury –  
Te Tāhū Hauora Health Quality & Safety  
Commission*

## The serious traumatic brain injury consumer team

We extend our heartfelt thanks to the consumers who gave their time and shared their lived experience of serious traumatic brain injury. Their enthusiasm and unique perspectives helped shape the changes implemented by the teams to ensure improvement work was designed by consumers, for consumers, where possible. Their impact on this work is immeasurable.

### The trauma team



**Ian Civil**  
National clinical director,  
National Trauma Network



**Siobhan Isles**  
National programme  
director, National Trauma  
Network



**Jessica Lockett**  
Quality improvement  
advisor, Te Tāhū Hauora  
Health Quality & Safety  
Commission



**Kat Quick**  
Clinical lead trauma  
rehabilitation, Te Tāhū  
Hauora Health Quality  
& Safety Commission



**Tony Mottershead**  
Senior project manager,  
Te Tāhū Hauora Health  
Quality & Safety  
Commission



**Sreeja Talluri**  
Programme coordinator,  
Te Tāhū Hauora Health  
Quality & Safety  
Commission



**Paul McBride**  
Senior data scientist,  
Te Tāhū Hauora Health  
Quality & Safety  
Commission



**Arie Bates-Hermans**  
Data analyst, Te Tāhū  
Hauora Health Quality &  
Safety Commission



**Michael Keane**  
Graduate data analyst,  
Te Tāhū Hauora Health  
Quality & Safety  
Commission

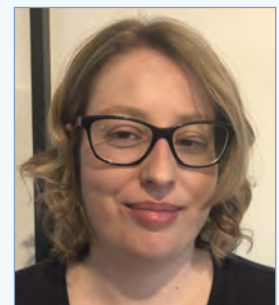
### Faculty



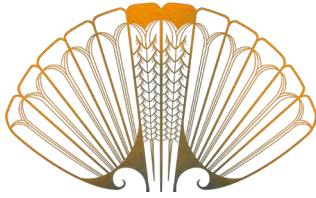
**Katrina Hutching**  
Quality improvement  
advisor, Te Tāhū Hauora  
Health Quality & Safety  
Commission



**Jonathan Armstrong**  
educator, ABI  
Rehabilitation



**Natasha Jones**  
Section head acute  
occupational therapy,  
Te Whatu Ora Counties  
Manukau



## Introduction | He kupu whakataki

---

Traumatic brain injury (TBI) can be broadly defined as an alteration in brain function, or other evidence of brain pathology, caused by an external force.<sup>1</sup>

The serious TBI (sTBI) project is one of three areas of focus within the quality improvement workstream of the major trauma collaboration between the National Trauma Network (the Network) and Te Tāhū Hauora Health Quality & Safety Commission (Te Tāhū Hauora), as funded by the Accident Compensation Corporation (ACC).

The overarching aims of the sTBI project are to:

- develop national consistency in the acute management of patients with isolated or complex sTBI to reduce mortality and secondary injury morbidity regardless of geographic location of injury
- ensure that all major trauma patients at risk of TBI are screened early and that those who need it receive the rehabilitation required for optimal recovery.

### sTBI definition

Patients with a head injury and an Abbreviated Injury Scale (AIS) severity score of 3 or higher are classified as having an sTBI. Those with a serious injury solely to the head are classified as an isolated sTBI, and those with additional injuries to other body systems as well as the head are classified as complex sTBI.

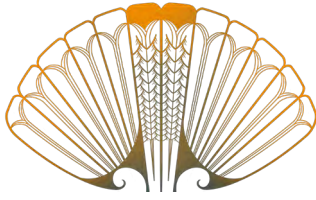
The AIS score reflects anatomical injury based on diagnostic imaging and is then used to calculate the Injury Severity Score (ISS). The higher the ISS, the greater the risk to the patient's life. In the initial stages of patient care, clinical signs such as the Glasgow Coma Scale (GCS) are used to assess consciousness using motor, verbal and eye-opening responses. The GCS ranges from a score of 3 (unresponsive across all domains) to 15 (normal responses across all domains). A variety of factors other than head injury can affect the GCS, including alcohol or drug use and comorbid cognitive conditions.

<sup>1</sup> Menon DK, Schwab K, Wright DW, et al. 2010. Position statement: definition of traumatic brain injury. *Archives of Physical Medicine and Rehabilitation* 91(11): 1637-40. DOI:10.1016/j.apmr.2010.05.017.

## sTBI in Aotearoa New Zealand 2021/22

- Analysis of data from the Aotearoa New Zealand Trauma Registry estimated that 36 percent (approximately 700–800 per year) of all patients with major trauma have an associated sTBI.
- The median age for sTBI was 51 and 46 years (isolated and complex sTBI, respectively).
- Patients with an isolated sTBI had a case fatality rate more than three times (12.9 percent) higher than patients with no sTBI (3.9 percent). The case fatality rate was even higher for patients with complex sTBI (14.9 percent), although they also tended to have a higher ISS (median 29 vs 17 for isolated sTBI and non-sTBI, respectively).
- Almost half (49 percent) of sTBI patients have minimal or no impairment in consciousness at the scene of injury (GCS 14–15).
- sTBI patients with impaired consciousness had the shortest median time to computed tomography (CT) scan: 52 minutes for those with a GCS 3–13 compared with 82 minutes for patients with no impaired consciousness.
- Half of all sTBI patients were transported directly to a specialist neuroscience centre for initial care. However, when analysed by ethnicity, only 36 percent of Pacific peoples and 44 percent of Māori patients received their initial care at a specialist centre.
- When patients who were transferred to a neuroscience centre from another hospital for definitive care were added, the total percentage of sTBI patients who benefited from specialist neuroscience centre care rose to 71 percent. Pacific peoples continued to experience inequitable outcomes, as only 61 percent were transferred for definitive care.





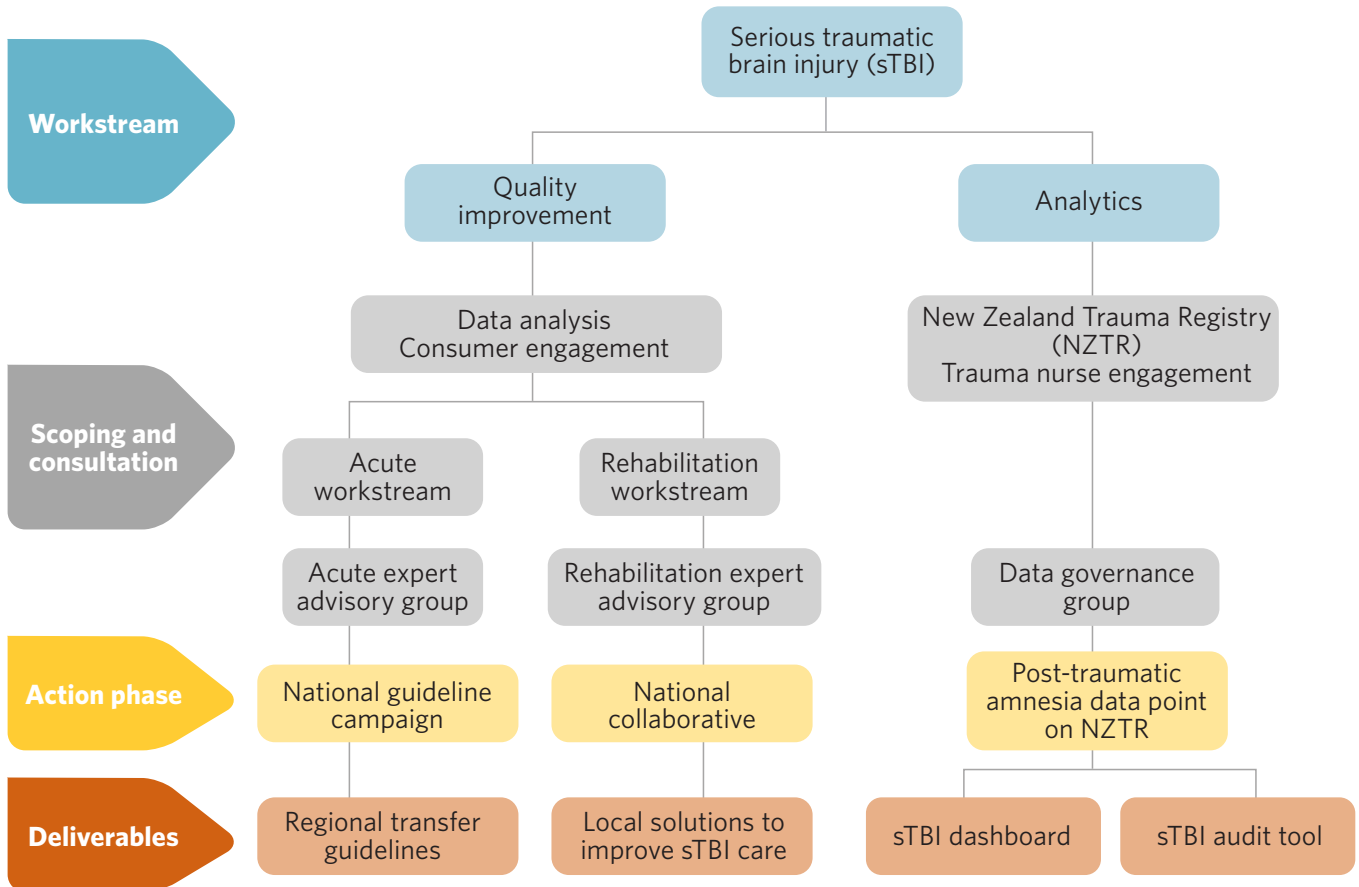
## sTBI workstreams | He mahi kōkiri

Improvement opportunities were identified across the spectrum of sTBI patient care, and a decision was made early on to split the project into two separate but equally critical workstreams.

- One workstream examined the acute phase of patient management, with a

focus on equitable access to specialist neuroscience care.

- The other workstream looked at ongoing care and rehabilitation for sTBI patients and supporting their transition from inpatient management to the community.



## sTBI acute care workstream

### Background

Evidence demonstrates that optimal recovery after sTBI requires a multidisciplinary approach. Although many aspects of sTBI care can be delivered in regional non-neuroscience intensive care units, most regional hospitals cannot provide the breadth and depth of expertise offered by the multidisciplinary specialist services, including allied health and nursing care. The acute workstream aims to increase equity of access to neuroscience centres for people with a TBI.

Six neuroscience centres serve the population of Aotearoa New Zealand:

- Auckland City Hospital and Starship Children's Hospital (Health New Zealand - Te Whatu Ora Te Toka Tumai Auckland)
- Waikato Hospital (Health New Zealand - Te Whatu Ora Waikato)
- Wellington Hospital (Health New Zealand - Te Whatu Ora Capital, Coast and Hutt Valley)
- Christchurch Hospital (Health New Zealand - Te Whatu Ora Waitaha Canterbury)
- Dunedin Hospital (Health New Zealand - Te Whatu Ora Southern).

### The inequity

Data from the New Zealand Trauma Registry suggests that approximately half of sTBI patients are initially admitted to a non-neuroscience centre and that significant regional variation exists in both access to specialist neuroscience care and patient outcomes after experiencing TBI.

### The opportunity

Before the launch of this project, there had been no national consensus on which patients should be transferred to a neuroscience centre after experiencing an sTBI (GCS <9).

### National guideline campaign

As guidelines to facilitate the appropriate and effective transfer of patients to neuroscience centres had been implemented successfully in the UK, the acute expert advisory group agreed to use a similar strategy in Aotearoa New Zealand.

## sTBI rehab workstream overview

### Background

The presence of a TBI can be a significant factor affecting long-term outcomes for people after serious injury. Extensive scoping work identified that assessment and identification of TBI in patients with major trauma was inconsistent in Aotearoa New Zealand. If a diagnosis of TBI is not made during a patient's hospital stay, it is more difficult for that person to receive TBI-specific rehabilitation. This can lead to delays in functional recovery and affect a person's ability to return to work and their overall quality of life.

### The inequity

Consultation with health professionals and consumers who have experienced TBI identified that systematic screening of brain injury in patients admitted to hospital with major trauma was limited, particularly for people who did not lose consciousness (as measured with the GCS) or had a normal CT scan of the head.

In total, 55 percent of hospitals surveyed reported that trauma patients were discharged home without an appropriate head injury assessment; this was a moderate occurrence (one to three patients per month) in 25 percent of cases and a frequent occurrence (most weeks) in 30 percent. A total of 40 percent of hospitals reported that they had no systematic processes to identify trauma patients with a TBI. Screening for a brain injury was often challenging on weekends and after hours because of staff shortages and a lack of allied health professionals working.



## The opportunity

Post-traumatic amnesia (PTA) is an indicator of injury severity in those who sustain TBI. The presence and duration of PTA, as measured by a validated tool, is an important prognostic indicator of long-term recovery and return to functional independence. The duration of PTA is also used by hospitals and ACC to determine the severity of TBI and the rehabilitation intensity required. The TBI severity classifications as recognised within ACC criteria<sup>2</sup> are:

- mild TBI: GCS score 13-15; PTA duration <24 hours
- moderate TBI: GCS score 9-12; PTA duration 1-6 days
- severe TBI: GCS score 3-8; PTA duration ≥7 days

## Identifying patients at risk

Serious brain injury is not necessarily defined by the initial level of consciousness or anatomical injury. Identification requires an index of suspicion and ongoing specialist assessment. Many patients have grossly normal brain function or competing medical priorities, which means that this assessment is not always performed. Failure to identify brain injury can impact on employment opportunities, relationships and optimal access to rehabilitation services.

The consequences of a missed brain injury are significant, and early recognition is crucial. Therefore, the criteria for PTA assessment within this project were kept broad and included not just those with a diagnosed head injury but anyone admitted to hospital with trauma involving two or more body regions (chest, abdomen, extremity, etc) or any injury involving the head.

## National collaborative model

The sTBI rehabilitation collaborative worked with project teams from across the country to improve the rates and accuracy of PTA screening for major trauma patients to ensure that all patients with a TBI receive appropriate and timely rehabilitation.

Ambitiously, the goals for this project were:

- identification – systematic screening of all (major) trauma patients
- assessment – completed PTA assessment on all identified patients
- outcome – positive patient and whānau experience.

Two quality improvement approaches have been used in this work:

- co-design involving consumers to identify and understand problems and issues and to design and implement resolutions<sup>3</sup>
- working with local project teams to resolve problems and issues via a national collaborative.<sup>4</sup>

---

*'It's been a really interesting journey being part of this, to learn what services are out there, what could be there and I guess like how we could all sort of advocate to try and make things a little bit easier in terms of navigating.'*

*Consumer perspective*

---

*'I just kind of reminded them to think about consumers rather than as clinicians.'*

*Consumer perspective*

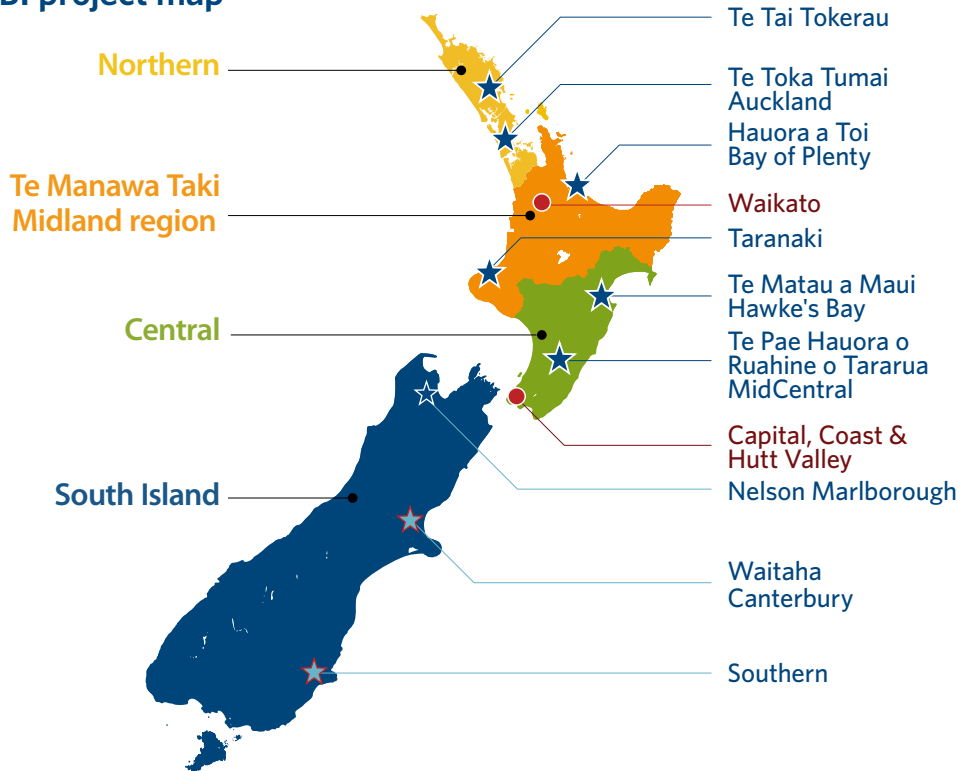
---

2 Accident Compensation Corporation (ACC). 2023. Concussion services: operational guidelines. Wellington: ACC. URL: [www.acc.co.nz/assets/contracts/concussion-og.pdf](http://www.acc.co.nz/assets/contracts/concussion-og.pdf)

3 Te Tāhū Hauora Health Quality & Safety Commission. 2023. The co-design process. URL: [www.hqsc.govt.nz/resources/resource-library/the-co-design-process](http://www.hqsc.govt.nz/resources/resource-library/the-co-design-process).

4 A collaborative involves bringing regional project teams together for in-person and virtual learning sessions over the course of a year. The focus of these sessions is learning from each other and recognised experts in the topic area and learning quality improvement methodologies (tools and techniques). The teams take the learning 'home' and work on their projects between each learning session – known as the action period. Support during the action periods is provided by the national project team and peers through Zoom meetings, online forums and on-site mentoring visits. The end products/outputs are written summaries of the projects that others can learn from and replicate to resolve similar issues. (Institute for Healthcare Improvement. 2003. *The Breakthrough Series: IHI's Collaborative Model for Achieving Breakthrough Improvement*. IHI Innovation Series white paper. Boston: IHI. URL: [www.ihl.org/resources/white-papers/breakthrough-series-ihis-collaborative-model-achieving-breakthrough](http://www.ihl.org/resources/white-papers/breakthrough-series-ihis-collaborative-model-achieving-breakthrough))

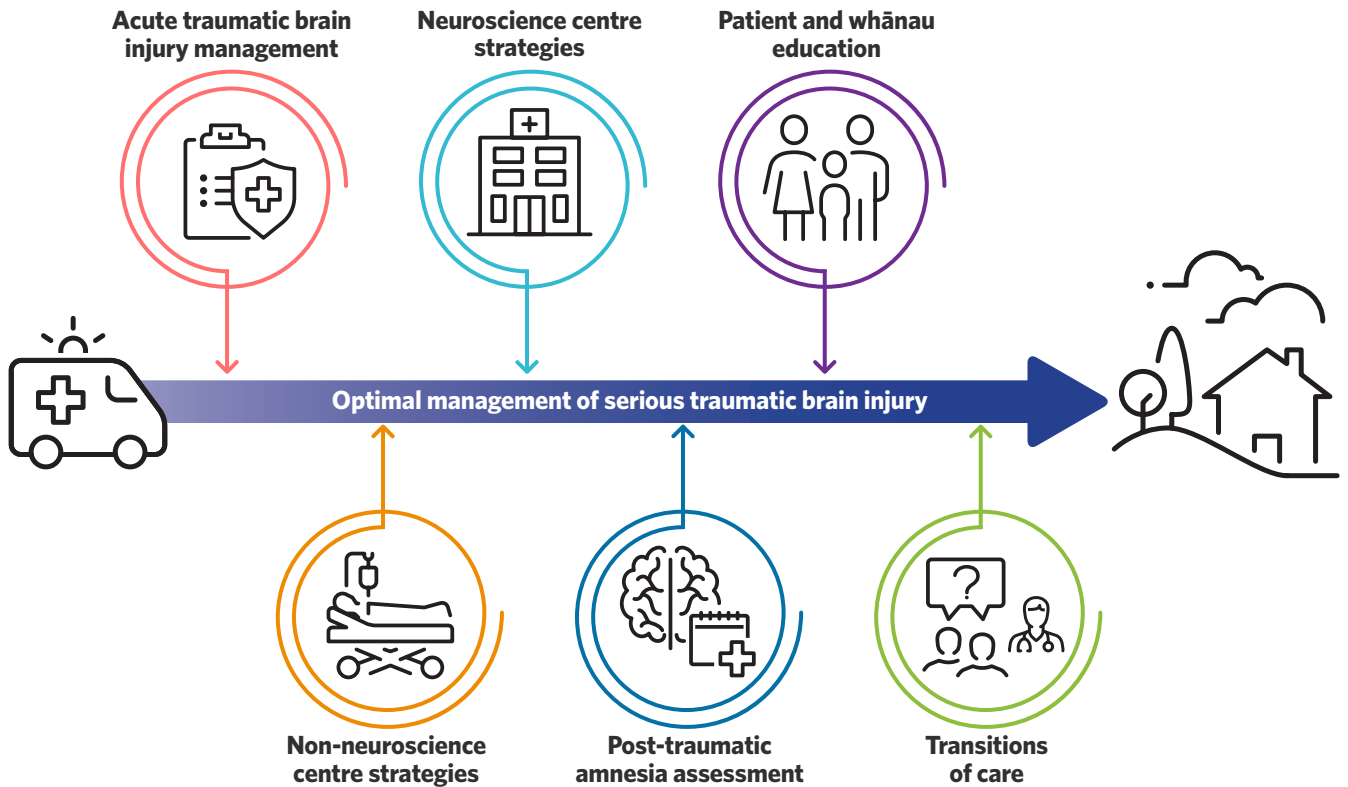
## sTBI project map

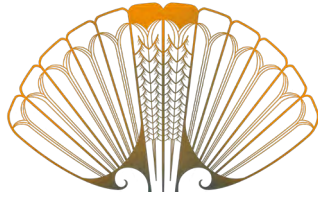


**KEY** ★ Participated in sTBI rehabilitation national collaborative (non-neuroscience centre)  
 ★ Participated in sTBI rehabilitation national collaborative (neuroscience centre)  
 ● Neuroscience centre

Credit: National Trauma Network

## Overview of TBI project





## sTBI action plan and FAQ | He mahere mahi, he pātai auau

To promote equitable access to specialist care for all sTBI patients, local guidelines specific to each of the four trauma regions that service the country (Northern, Te Manawa Taki [Midland], Central and South Island) were developed. These were reviewed and approved by the neuroscience and non-neuroscience centres within those regions. A resource outlining the rationale and frequently asked questions accompanies each guideline.

The broad aims of the action plan are to provide clarity on the following.

### Definitions

The term 'neuroscience centre' is used throughout the guidelines to reflect the broad multidisciplinary neurological expertise readily available at these hospitals and de-emphasise neurosurgical intervention as the only admission criteria. A neuroscience centre has neurosurgical services available 24 hours a day, 7 days a week.

### Example of an sTBI action plan

For a printable copy of this resource, please go to:

[www.hqsc.govt.nz/resources/resource-library/serious-traumatic-brain-injury-in-aotearoa-new-zealand-summary-of-improvement-work](http://www.hqsc.govt.nz/resources/resource-library/serious-traumatic-brain-injury-in-aotearoa-new-zealand-summary-of-improvement-work)

For examples of brain injury action plans from other regions, please go to:

[www.hqsc.govt.nz/our-work/national-trauma-network/projects/traumatic-brain-injury-work-programme/stbi-acute-workstream/action-plan-and-care-pathway](http://www.hqsc.govt.nz/our-work/national-trauma-network/projects/traumatic-brain-injury-work-programme/stbi-acute-workstream/action-plan-and-care-pathway)

### Transfer criteria

The action plan specifies clinical and radiological criteria to alert clinicians when a patient should be considered for transfer to a neuroscience centre:

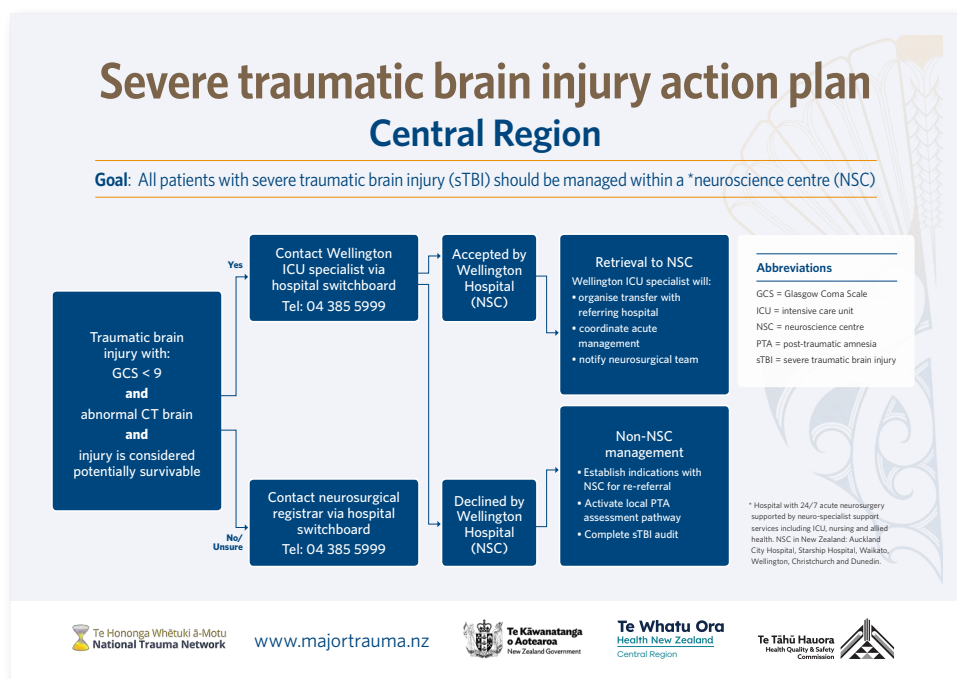
- traumatic brain injury with GCS <9 AND
- an abnormal CT brain AND
- the patient's clinical team considers the injury potentially survivable.

### Single point of contact

Based on feedback from regional clinicians within the expert advisory group guiding this work, the action plan has introduced a single point of contact for referring clinicians.

### Non-transfer actions

Establishes actions in cases of non-transfer, including indications for re-referral, assessment of PTA and completing an audit of the case that is collected by Te Tāhū Hauora for ongoing learning.



# Health New Zealand Te Whatu Ora

Te Pae Hauora o Ruahine o Tararua  
MidCentral

Palmerston North Hospital is a busy regional major trauma hospital in the lower North Island. Each year, approximately 120 people are admitted with major trauma, many with severe and complex injuries. Although Palmerston North Hospital is not a neuroscience centre, many patients with TBI are still managed there, and only the most severe are transferred to the tertiary neuroscience centre at Wellington Regional Hospital.

## The problem

PTA assessment is an important indicator of injury severity and a known predictor of outcomes in TBI. However, the experienced allied health and nursing clinicians who formed the project team recognised from the outset that PTA assessment was inconsistently completed in the major trauma population admitted to Palmerston North Hospital. In conjunction with their own clinical experience as allied health and nursing professionals, the team recruited two consumers who graciously shared their perspectives with the team and helped them to further shape the direction of the project. One consumer shared their negative experience within the emergency department (ED): they had experienced a TBI but were discharged home without adequate information, support or referrals. This injury was still having a significant impact on their wellbeing at 6 months.

.....  
*'When I was discharged from ED, we were not given any information, my teammates were just told to check on me during the night to make sure I was still breathing. Following that concussion, I lost 6 months of my memory.'*  
*Consumer perspective*  
.....

The team therefore decided to examine the current state of PTA assessment both in the ED and on the main ward that admits trauma patients (ward 29; general and vascular surgery). They conducted a 3-month audit of presentations via patient notes and found that no patients presenting to Palmerston North

ED with an injury to two or more body systems had received an Abbreviated Westmead PTA scale (A-WPTAS) assessment. The audit also found that only 25 percent of patients who were admitted as inpatients to ward 29 and met criteria for a full A-WPTAS assessment had undergone one. The team also discovered that the accuracy rate of these assessments was 67 percent.

## Project aim

In addition to the patient notes audit, ED and ward staff were surveyed to determine their baseline knowledge around PTA. Almost three-quarters of ED staff who responded reported that they had not heard of the A-WPTAS; of those who had, their confidence in using it was predominantly low. Ward staff responses were similar: respondents reported that they did not know where to find guidelines or tools to carry out the assessments or information handouts for patients with brain injury and their whānau.

These audit and survey results led the team to set two project aims.

- To increase the rate of use of the A-WPTAS in the ED to 75 percent for patients with injuries to two or more body systems.
- That 90 percent of patients admitted to ward 29 and who met criteria would undergo a full A-WPTAS.

## What we did

- Education was a big focus for the team after the staff surveys demonstrated a significant knowledge gap. Education sessions were developed and adapted to suit different staffing groups, including occupational therapists, physiotherapists, nurses and doctors.
- ED nursing staff were provided short sessions during daily education time at shift handover to capture the greatest number of staff. ED doctors received their training during their weekly education days.
- Ward-based staff were given in-person training by occupational therapists and were also encouraged to use the Ko Awatea online training module to further their learning and confidence.

- Small versions of the Westmead picture cards were created and distributed as lanyard cards to staff at education sessions to act as both a visual prompt and a resource to complete the required assessment.
- PTA assessment and concussion clinic referrals were included on a discharge checklist designed to help general surgeons write comprehensive discharge summaries.

## Results and implementation

By August 2023, the team had achieved nearly 100 percent compliance in the screening of major trauma patients for PTA and a corresponding increase in referrals to the concussion clinic. Work is ongoing to ensure that patients who do not meet the criteria of major trauma but are at risk of TBI are also screened.

- A resource folder is being developed that will contain printed copies of the PTA assessment and additional picture cards for staff to access any time an assessment may be needed.
- The team is developing a clinical guideline for the management of sTBI, which will include handouts for patients and their whānau as both consumers and staff identified this as an opportunity for improvement.

## Resources

### Lanyard cards



# Health New Zealand Te Whatu Ora

## Taranaki

---

The Taranaki region is a mixed urban/rural area, and major trauma patients in the region are served by Taranaki Base Hospital. Patients requiring tertiary neurospecialist care are transported to Waikato Hospital or Wellington Regional Hospital. Approximately 20 percent of the population identify as Māori.

### The problem

An audit of trauma admissions demonstrated a baseline PTA assessment rate of 60 percent. PTA duration is used to determine the need for rehabilitation services post-injury, so there was concern that access to rehabilitation and support services could be delayed or that some patients would miss out entirely on the services needed to support functional recovery.

### Project aim

The team aimed to increase the accurate assessment of PTA in trauma patients at risk of TBI from 60 percent to 90 percent by January 2023. Taranaki Base Hospital regularly operates at a high occupancy level, so the service raised concerns that this project may have an unintended negative impact on bed-days. As such, patient length of stay was also tracked as a balancing measure.

### What we did

- The team collaborated with Starship Children's Hospital, the Wilson Centre, other Te Whatu Ora hospitals and Taranaki-based ACC concussion service providers to determine whether Taranaki Base Hospital was using the correct tools validated for use across adults and paediatrics (this includes the abbreviated and full WPTAS for adults and the Sydney Post Traumatic Amnesia Scale for children).
- The team used process mapping to show the current state and highlight areas where improvements could be made. A single process map was initially developed, but feedback from staff led the team to map the PTA assessment process for the ED, the surgical ward and the paediatric ward as separate processes to improve clarity.

- Education sessions were adapted to each unique area based on feedback from staff. The process maps were used in the staff training, alongside content such as definitions, rationale, validated PTA assessment tools (adult and paediatric) and the concussion referral process.
- A clear, concise pathway for patients with head injury was developed to guide Taranaki Base Hospital staff in providing consistent evidence-based care.
- An information booklet on PTA was developed for patients and their whānau, and an existing patient information booklet on TBI was updated and made bilingual (English/te reo Māori) in collaboration with the Māori Advisory Service. This booklet also includes a page for recording the names of key contact people as well as space for noting questions the patient may have to ask the care team.

---

'From what I understand and remember was staff giving me information and the need to hurry because they're under pressure to get around everybody ... telling me that this person's going to come and talk to me and if I've got any questions and then of course Murphy's law, I remember something I was gonna ask 2 minutes after they've walked out the door. So a pen and paper ... you have a question being able to write it down so that then you can make the most of the time that you do have that person with you.'

*Consumer perspective*

---

## Results and implementation

The rate of completed PTA assessments improved from 60 percent to 83 percent over the change period.

The median length of stay for these patients remained low and reduced slightly from 3.5 days before to 3 days after completion of the improvement project.

Nursing and allied health staff completed a survey using a Likert scale before and after the training to assess the outcomes of education sessions. The results demonstrated improved confidence in assessing for PTA and in referring patients to the concussion clinic.

## Resources

### Head injury pathway

**Te Whatu Ora**  
Health New Zealand  
Taranaki

**Head Injury pathway Taranaki**

- Ensure concussion is coded on the ACC45
- Patient that meets the Post traumatic amnesia (PTA) assessment criteria for Syptas or Westmead commence as soon as able

**How to refer?**

**Acute wards:**

- Non-complex Head injury a nurse or Doctor can complete the abbreviated Westmead / SYPTAS and start the full Westmead, provide education handout and complete the concussion referral
- Complex head injuries refer to Occupational Therapist / Physiotherapist during the week Monday to Friday 8am till 4pm – Complete referral on IBA (8am till 3.30pm)  
Refer to ART/ARTHA over the weekend/public holiday – Call duty phone 027 357 7479 (7am-4.30pm)

**Emergency department:**

- Non-complex Head injury a nurse or Doctor can complete the abbreviated Westmead / SYPTAS and start the full Westmead, provide education handout and complete the concussion referral
- Complex Head Injury refer to ART/ARTHA call duty phone 027 357 7479 (7am-4.30pm 7 days a week)

**The process for PTA / Education and concussion referrals:**

- Ensure the patient meets PTA criteria. PTA exclusion criteria - patient has long-term intellectual, cognitive, Behavioural deficits.
- If patient is intoxicated, or other life-threatening treatment needed first, then commence PTA assessment when able.

Age	Meets PTA assessment criteria Within 24 hours	After 24 hours	Doesn't meet PTA assessment Criteria	Complex head injury	On Discharge / Non- complex discharge
7 years and over	Abbreviated Westmead	Full Westmead	Child HI screen Age 15 > Adult HI screen	Refer to Allied Health	<ul style="list-style-type: none"> <li>Education provided to family - ACC handout, discuss driving</li> <li>Concussion referral sent with scan / PTA assessment DC summary</li> <li>Ensure discharge summary is provided to the patient</li> <li>Ensure patient that is employed/studies has a medical certificate</li> </ul>
4 to 6 years, 11 months	Child HI screen Nurse, Dr or AH	Syptas Nurse, Dr or AH	Child HI screen Nurse, Dr or AH	Refer to Allied Health	
Under 4 years old	HI screen Nurse, Dr or AH	HI screen Nurse, Dr or AH	N/A	Refer to Allied Health	

**Education (intranet)**

**Children:**

- Head Injury handout Children, how to care for your child (ACC6009)
- Head injury handout for Children Returning to activity from a concussion / mild traumatic brain injury

**Adults:**

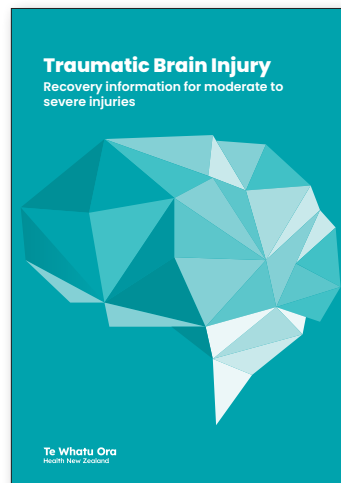
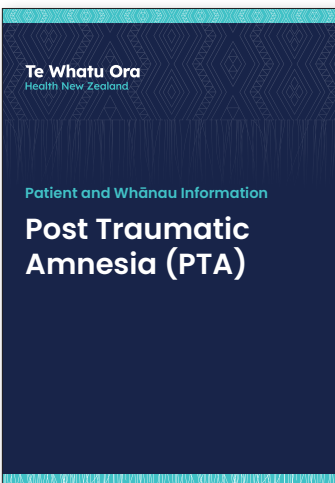
- Head injury handout Adult, caring for yourself (ACC572)
- Head injury Adult, knowing about your mild traumatic brain injury (ACC4154)
- Head injury Adult, Recovery advise Whakaora Tohtohu for patient's mild traumatic brain injury (ACC8319)
- Head Injury TBI moderate - severe Booklet (2022)

**Concussion referral – (Intranet)**

- ACC7988 - Concussion service direct referral.** Attach scan information, PTA scale, discharge summary, ensure you tick the provider  
Send all paper work to [RES-ACCandNonResident.Department@tdhb.org.nz](mailto:RES-ACCandNonResident.Department@tdhb.org.nz) pre-loaded into all hospital photocopier machines

Trauma project Nov 22

## Handouts



For printable copies of these resources, [www.hqsc.govt.nz/resources/resource-library/serious-traumatic-brain-injury-in-aotearoa-new-zealand-summary-of-improvement-work](http://www.hqsc.govt.nz/resources/resource-library/serious-traumatic-brain-injury-in-aotearoa-new-zealand-summary-of-improvement-work)

# Health New Zealand

## Te Whatu Ora

Nelson Marlborough

Trauma patients in Nelson Marlborough are managed at the two hospitals that service the region. Nelson Hospital is a 140-bed secondary-level trauma-receiving hospital for the upper South Island. Specialties include emergency, intensive care, general surgery, orthopaedics, general medicine and anaesthetics. Wairau Hospital in Blenheim maintains 65 beds. However, neither hospital is a neuroscience centre, and patients requiring specialist neuroscience care are transferred out of the region to either Wellington Regional Hospital or Christchurch Hospital.

### The problem

Although patients with an identified sTBI are routinely transferred to the tertiary neuroscience centre, patients with major multi-trauma are often admitted to the acute surgical or orthopaedics wards at Nelson or Wairau hospitals. These patients may also be at risk of TBI, but staffing shortages have meant that screening for the presence of PTA has been inconsistent.

### Project aim

A 3-month audit demonstrated that only half of all trauma admissions were screened for PTA at Nelson and Wairau hospitals. The team aimed to improve this rate to 80 percent by June 2023.

### What we did

- Work was already under way in Nelson Marlborough to update the TBI and concussion pathway to include the screening of all patients 'with a direct head injury or trauma where significant force has occurred', and the team supported this work. The updated pathway promotes the use of both the A-WPTAS scale to screen for PTA and the Brain Injury Severity Score tool for symptom screening. The pathway also promotes the role of the multidisciplinary team in encouraging medical, nursing and allied health professionals to contribute to these assessments.

- Targeted education on TBI and the process of PTA screening has been delivered to nurses and will continue as a permanent part of the surgical clinical skills day for nurses.
- Use of the A-WPTAS has been added to the trauma tertiary survey form to prompt staff to check whether it has been actioned.
- A question on the risk for TBI is being added to the ED admission checklist to also serve as a prompt to remind staff of the tools validated for use in the ED setting.

### Results and implementation

The rate of completion of PTA assessments improved to 85 percent across Nelson and Wairau hospitals by June 2023, exceeding the initial aim.

The team is now examining patient experiences when attending concussion clinics and whether referral rates are increasing. An equity lens has also been applied to the work, and collaboration is planned with Te Waka Hauora Māori Health Services to understand how TBI care can be improved for Māori in Nelson Marlborough.





# Health New Zealand Te Whatu Ora

Te Matau a Māui Hawke's Bay

Located on the east coast of the lower North Island, Te Matau a Māui Hawke's Bay sees over 100 major trauma cases per year, and almost 25 percent of these patients identify as Māori. Trauma patients in the region are cared for at Hawke's Bay Regional Hospital unless they require tertiary-level care, for which they are transported to Wellington Regional Hospital.

## The problem

A lack of weekend coverage for occupational therapy services meant that trauma patients who were admitted over the weekend were not receiving the recommended TBI screening. This resulted in inequitable care according to the day the injury was sustained. Baseline data analysis for the 2-month period before the project showed the largest proportion of major trauma patients were admitted on a Friday (35 percent) and a Saturday (22 percent). This was in stark contrast to the admissions on Tuesday and Wednesday, which accounted for approximately 4 percent each.

## Project aim

In September 2022, 58 percent of trauma patients were assessed for PTA. The team set an aim of improving this to 90 percent of patients by February 2023.

## What we did

- Nursing staff on surgical and orthopaedic wards were surveyed to obtain data on the level of knowledge around identifying and screening patients for PTA. Trauma patients are admitted to these wards if they do not require intensive care.
  - A total of 30 percent of respondents had never heard of the criteria for PTA screening.
  - A further 23 percent knew the theory but felt they could not apply it in practice.
  - Over 60 percent had no confidence in using the abbreviated or full assessment tools.
  - No staff felt they had the necessary knowledge to start the WPTAS autonomously without an already

diagnosed TBI or that they knew the theory and tool well enough to teach it to others.

- The team developed a visual prompt in the form of a poster for display around these wards to alert staff to the criteria for patients who require PTA screening.
- Clinical nurse managers are supporting the training and education of ward nurses to accurately complete the PTA assessment.

## Results and implementation

By December 2022, the rate of PTA assessment was up to 77 percent; however, Cyclone Gabrielle significantly impacted the Hawke's Bay region and the team's ability to continue to collect ongoing data for this project.

Nurse training is ongoing as and when the region has the resources to continue with this improvement work.

## Resources

**Poster to prompt staff to screen patients at risk of brain injury**

**Trauma patients that need to be screened for traumatic brain injury**

**POSSIBLE CAUSES:**  
MVA, MBA, cycle or quad bike accidents, falls, assaults, large animal vs person trauma.

All head, facial or c-spine injuries, or injuries of two or more of the following:

- head
- chest
- spine
- abdomen
- limbs.

For more information, go to: [majortrauma.nz](https://www.majortrauma.nz)

Te Whatu Ora  
Health New Zealand

For a printable copy of this resource, please go to: [www.hqsc.govt.nz/resources/resource-library/serious-traumatic-brain-injury-in-aotearoa-new-zealand-summary-of-improvement-work](https://www.hqsc.govt.nz/resources/resource-library/serious-traumatic-brain-injury-in-aotearoa-new-zealand-summary-of-improvement-work)

# Health New Zealand Te Whatu Ora

Waitaha Canterbury

Christchurch Hospital is the largest and busiest tertiary neuroscience centre in the South Island. It manages a significant caseload of major trauma and provides a full spectrum of specialist care for the most critically injured patients.

## The problem

Patients with sTBI are admitted to either the intensive care unit or the neurology and neurosurgery ward (B8) at Christchurch Hospital. Here, they receive specialist medical, nursing and allied health care for their brain injury, including assessment for PTA using the WPTAS. However, the project team identified that the WPTAS was only regularly performed on medically diagnosed head injuries. This raised concerns that some multi-trauma patients were potentially missing out if they were admitted to a different acute ward that manages multi-trauma. Two of these wards are the general surgical ward (A3) and the orthopaedic ward (A4). Both wards have units that can manage high-acuity or complex trauma patients.

Investigation into clinical practice demonstrated variation in head injury screening, with some occupational therapists using standardised and non-standardised assessments other than the WTPAS to screen for head injury symptoms. Additionally, multi-trauma patients admitted over the weekend were not routinely referred to the occupational therapy service for head injury assessment by nursing or medical staff.

The team identified an opportunity to standardise the identification and management of patients at risk of TBI. Correct diagnosis can help to provide appropriate assessment, rehabilitation and discharge plans to prevent readmission or complications in functional recovery.

## Project aim

Baseline data showed that approximately 36 percent of patients with major trauma affecting two or more body systems who were admitted to wards A3 and A4 were screened for PTA using the abbreviated or full WPTAS.

Approximately 72 percent were screened by occupational therapists using other standardised and non-standardised cognitive screening methods.

This project aimed to achieve a WPTAS completion rate of 95 percent for this group of patients by June 2023.

## What we did

- A targeted education approach was used to inform all weekday occupational therapists working on the pilot wards about the change to the criteria for PTA assessment. This focused on the rationale behind using the 'two or more body system injury' approach to risk identification and the expectation that all trauma patients admitted Monday through Friday will be screened by occupational therapists to identify the need for PTA assessment.
- The multidisciplinary nature of trauma care means that ward nursing staff are also considered a crucial resource in identifying patients at risk of head injury. Therefore, nursing staff were also educated about the criteria change and asked to refer any new trauma admissions to the weekend occupational therapy service for screening. Clear, concise information on how to refer to this service was provided to encourage compliance.
- Occupational therapy staff who worked on the weekend service and who had not already received targeted education were identified, and education was provided to them on the criteria change and the expected increase in weekend referrals for head injury screening.
- A poster was produced with the medical illustrations service to provide an ongoing visual reminder to nursing staff on the change in screening criteria and instructions on how to refer patients to the occupational therapy service on both weekdays and weekends. This poster will also be included in rotating computer screensaver displays as another medium to communicate the message.
- The occupational therapy TBI pathway is being updated with the new criteria and referral process within the electronic record system to help embed the criteria into standard practice.

'I was in the hospital for one night, so I didn't actually have any concussion tests as such done because we need the bed and a lot of it when you don't know what's going on and the basic fact there, you don't know what you don't know. I just went with the flow and was shunted from pillar to post and then it's like I was out of hospital and then basically there was some great follow-up, but it was like a time limit on it and then that was that, but I have ongoing, you know, ... six months later I have ongoing issues.'

*Consumer perspective*

## Results and implementation

After the change in criteria for WPTAS screening, 100 percent of eligible patients were screened for PTA between March and June in the pilot wards.

The occupational therapy service has engaged positively with the project, and staff have been motivated by seeing how a small change in practice can make a big difference for patients.

Engaged, motivated and proactive clinical nurse specialists on both wards and within the trauma service have supported the project, helped with nursing education and offered support to refer to the occupational therapy service.

Delegation of responsibility to allied health assistants for ongoing WPTAS has also

increased. This has helped occupational therapists with their workload and increased the skillsets of allied health assistants.

## Resources

Poster to prompt staff to screen patients at risk of brain injury and how to refer to occupational therapy

### Trauma tūroro need to be screened for concussion

**All head, facial or C-Spine injuries, or injuries of two or more of the following:**

- Chest
- Spine
- Abdomen
- Limbs



**POSSIBLE CAUSES:** MVA, MBA, cycle or quad bike accidents, falls, assaults, large animal vs person trauma.

**Trauma tūroro referral to occupational therapy**

Does your tūroro have two or more body systems injured following trauma? Please refer to occupational therapy for memory assessment as soon as possible.

**Call 021 224 3501 between 9am–4pm at weekends and public holidays**

**Cortex referrals Monday to Friday**

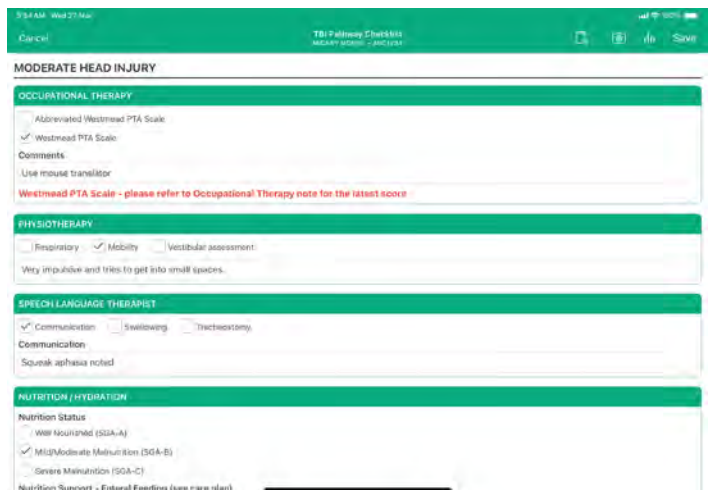
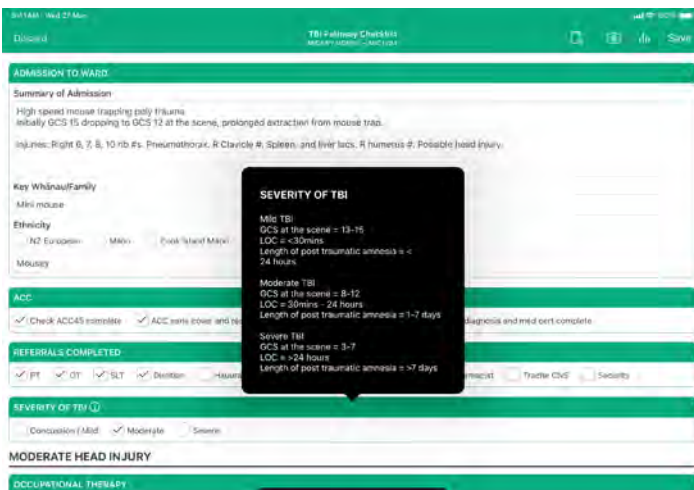
[For more information go to majortrauma.nz](http://www.majortrauma.nz)

**Te Whatu Ora**  
Health New Zealand  
July 2023

Ref: 2410419      Authorised By: Occupational Therapy Clinical Manager

For a printable copy of this resource, please go to: [www.hqsc.govt.nz/resources/resource-library/serious-traumatic-brain-injury-in-aotearoa-new-zealand-summary-of-improvement-work](http://www.hqsc.govt.nz/resources/resource-library/serious-traumatic-brain-injury-in-aotearoa-new-zealand-summary-of-improvement-work)

## Example of the updated TBI pathway in the electronic record system



# Health New Zealand

## Te Whatu Ora

Te Toka Tumai Auckland

Te Toka Tumai Auckland is a leading district for the management of major trauma in Aotearoa New Zealand. In 2022, almost 600 trauma patients were managed at Auckland City Hospital, the default destination for trauma (excluding major burns) across the Auckland and Waitematā regions. Of these, 229 patients were classified as having an isolated or complex sTBI.

### The problem

Although excellent, timely and evidence-based care is provided to patients with a diagnosed head injury who are admitted under the care of the neurosurgical and critical care services, staff queried whether similar care was provided to multi-trauma patients admitted to other acute wards (general surgery and orthopaedic) that do not focus on brain injury.

### Project aim

An initial audit of TBI patients demonstrated a very high rate of screening for PTA since most of these patients are admitted to the specialist neurosurgical ward.

The team then focused on the general surgical and orthopaedic wards, which often admit multi-trauma patients without obvious head injuries. A 3-month audit showed a PTA screening rate of 86 percent, so the team set a project aim of improving this to 95 percent.

### What we did

- The project team conducted a campaign to increase awareness of the broader definition of patients at risk of sTBI, including those with injury to two or more body systems. This included posters around the ward, education for staff and inclusion of criteria and rationale in orientation material for new staff.
- A review of the existing process for referral from the ED to the occupational therapy service found that multiple methods were being used, which caused confusion. The team decided to try to narrow it down to a single method.
- The team expanded teaching about the WPTAS to include therapy assistants to improve the completion rate.

### Results and implementation

As the screening rate was already high, the team focused on targeting new staff and existing staff who may be lagging or resistant to change. The current screening rate remains high, and the team continues to monitor it to achieve their aim.



# Health New Zealand

## Te Whatu Ora

Hauora a Toi Bay of Plenty

Major trauma patients in Te Moana-a-Toi Bay of Plenty are cared for at two hospitals: the 360-bed regional trauma-receiving hospital in Tauranga and the 160-bed hospital in Whakatane. Approximately one-quarter of major trauma admissions are Māori. Neither hospital is a neuroscience specialist centre, and patients with sTBI are transferred to Waikato Hospital.

### The problem

As neither hospital is a neuroscience centre but both receive a high volume of trauma presentations, the trauma committee at Tauranga and Whakatane Hospitals expressed concern that their patients may not be receiving consistent, appropriate or equitable care for their brain injuries. The biggest indicator of an issue was stories of consumer experiences, including late or missed referrals to concussion services and the significant impact of this on consumers' functional recovery and quality of life. Feedback from health professionals indicated variation and inconsistency in the application of assessments for brain injury within the allied health and nursing teams. Many non-occupational therapy staff reported that they lacked confidence in using PTA assessment tools and making concussion referrals.

### Project aim

A notes audit was carried out in a sample of patients who experienced major trauma and were treated at Tauranga or Whakatane Hospitals. In total, 61 percent of major trauma patients had a brain injury assessment at Tauranga Hospital, whereas only one-third of patients received an assessment at Whakatane.

The aim of this project was to improve the screening of patients with trauma to two or more body systems for TBI to 80 percent by March 2023, starting specifically in the orthopaedic ward at Tauranga Hospital.

### What we did

- A blanket referral to occupational therapy for all trauma patients admitted to the orthopaedic ward was working well, so the wider multidisciplinary team was educated on the criteria for TBI screening in trauma populations.
- The occupational therapy service screened the ward list each weekday morning and flagged any potential patients at the rapid round.
- Registered nurses can now text or call the occupational therapy service to refer a newly admitted patient for TBI screening.
- A process map was developed as a visual reference for the new process.
- In-service education was provided to allied health, nursing and medical staff on PTA criteria, assessment tools and the referral process.
- Several staff trialled the Ko Awatea online module on PTA assessment and provided feedback that will be used in work on a local module that can be accessed through a local online training platform.
- The change in criteria for screening and the rationale behind it was promoted using the trauma service board on the orthopaedic ward and within the ED to communicate education opportunities and resources.
- The new TBI screening process is being promoted on the intranet to raise the profile of this project and the work of the wider trauma service.

## Results and implementation

The rate of screening for TBI at Tauranga Hospital for major trauma patients increased to 90 percent as a result of this project, despite high occupancy across the hospital and high levels of staffing gaps due to sickness.

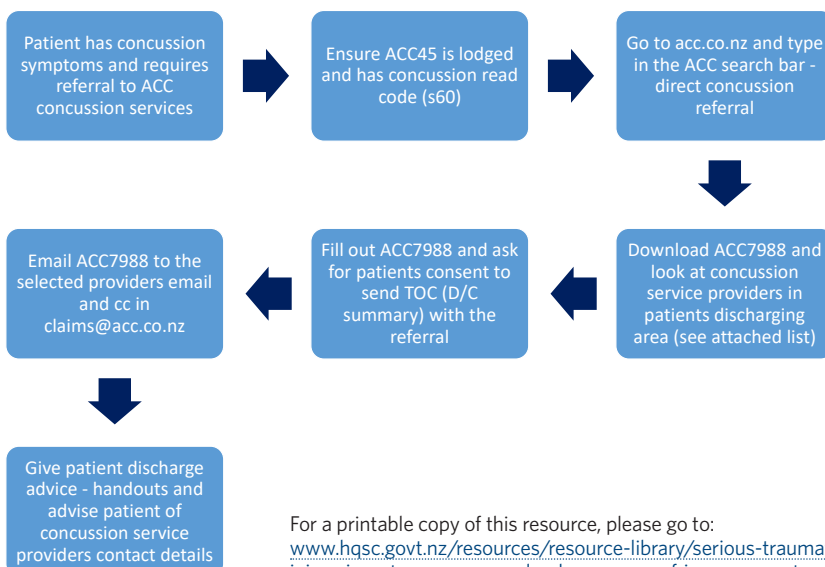
Feedback from staff outside occupational therapy services showed increased confidence in TBI screening following the in-service and online education. Work is now under way to implement the changes in all other wards in both Tauranga and Whakatane hospitals. Once the online training module is live on the platform, completion will be audited to determine uptake.

## Resources

Examples of communication to hospital staff via email and trauma service board



Example of concussion service referral process map to guide clinicians



## Ko Awatea module

Several of the teams that participated in the major trauma rehabilitation national collaborative that preceded the sTBI work had concerns about gaps in the care of sTBI patients. One team chose to focus their improvement work on screening for PTA. Their work helped to inspire the aims of the sTBI national collaborative.

A team of occupational therapists at Te Whatu Ora Counties Manukau (then Counties Manukau district health board) undertook a clinical notes audit of major trauma patients. This audit demonstrated inconsistencies in the administration and scoring of the abbreviated and full WPTAS: 45 percent of PTA assessments were accurate. As a result, some patients were unable to access the support they needed after their injury.

The team created, tested and implemented an e-learning module to educate clinicians on the accurate administration of the abbreviated and full WPTAS and other aspects of treatment to consider in the early stages of a patient's recovery from head injury.

This e-learning module was shared with the teams participating in the sTBI collaborative as a tool to use in their PTA staff education campaigns and to duplicate on their own Te Whatu Ora staff e-learning platforms. This has helped to reduce variation in how PTA assessment is taught to clinicians across Aotearoa New Zealand.

For queries about or access to the Counties Manukau PTA module, please contact: [eLearning@middlemore.co.nz](mailto:eLearning@middlemore.co.nz)

### PTA e-learning module on the Ko Awatea learning platform

Welcome to the PTA eLearning Your progress 1

**CONCUSSION**  
TRAUMATIC BRAIN INJURY THAT CAN OCCUR AFTER AN IMPACT TO HEAD

**CONCUSSION SIGNS AND SYMPTOMS**

- MEMORY PROBLEMS
- NAUSEA AND VOMITING
- BLURRY VISION
- HEADACHE
- RINGING IN THE EARS
- FATIGUE OR DROWSINESS

**DIRECT IMPACT INJURY**      **ACCELERATION-DECCELERATION INJURY**      **BLAST INJURY**

This e-learning has been developed for health care professionals who work with people with suspected or confirmed post-traumatic amnesia (PTA) following brain injury (TBI).

**Time:** You should allow 1 hour to complete this module.

On completion of this module you will be able to describe what PTA is and how it is tested, understand the importance of testing, feel confident in testing procedures, and understand the clinical implications of the test results.

# Health New Zealand

## Te Whatu Ora

### Te Tai Tokerau Northland

---

Te Tai Tokerau Northland covers a large geographic area and has high rates of rurality and a high deprivation index. The population of Māori in the area is around 36 percent, more than double the national average of 17 percent. The area has a significant major trauma caseload, which is affected by rural roads, variable mobile phone service coverage and a substantial increase in population over the summer months. Outside the largest city, Whangarei, access to health resources, including general practitioners and after-hours care, is limited.

### The problem

There is large variation in access to health care across the Te Tai Tokerau region. The team felt it was important to approach the project with a focus on the groups most at risk of inequity and ensure they are provided with appropriate education, resources and follow-up. Improving care for those in the most deprived areas would contribute to improving outcomes for all.

### Project aim

A retrospective audit before the project started showed a baseline PTA screening rate of 61 percent in trauma patients. However, data collected at the start of the project in October 2022 showed a lower baseline rate of 25 percent. The team set a target of improving this to 90 percent.

### What we did

A survey of whānau identified the following themes that the team used to guide their change ideas.

- It can be hard for Māori to engage with community services.
- The time to access community physiotherapy can be lengthy.
- Patients were receiving either no follow-up or mixed messages from the concussion clinic.
- Information about how to manage symptoms at home was lacking.
- Home help services were delayed for months.

- Patients were uncertain about how to contact community services.
- Community assistance was lacking in rural areas.

To bridge these gaps, the team:

- reviewed existing TBI patient information resources and discussed ideas to improve them among the team and with consumer representatives; this included adjusting the reading age to account for those with lower levels of health literacy and using imagery
- revised the information provided at discharge to improve the transition of care from hospital to community; this was a collaborative effort between the team, the occupational therapy service, doctors, consumers, whānau and community rehabilitation services
- developed a clear process pathway for occupational therapy staff to guide screening, education, resources and referrals for community support services.

The staff survey also highlighted that hospital staff were motivated to learn more about the Māori world view and to engage with Māori and Māori-led services. As a result, the team worked with Māori health care consumers to develop a new resource for trauma patients and their whānau. They also engaged the Māori directorate to develop equity-focused education sessions for allied health and nursing staff.

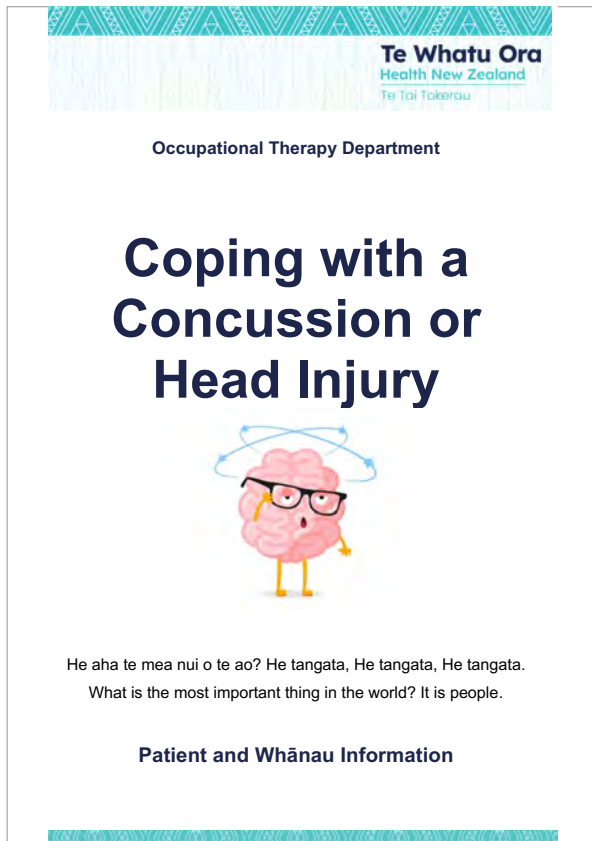


## Results and implementation

The screening rate for PTA improved to 50 percent by January 2023; by August 2023, 100 percent of major trauma patients seen at and admitted to Whangarei Hospital were being screened for PTA. Qualitative feedback from patients who have been discharged following TBI has been positive and indicates that patients feel well supported by the concussion clinic and other community support services.

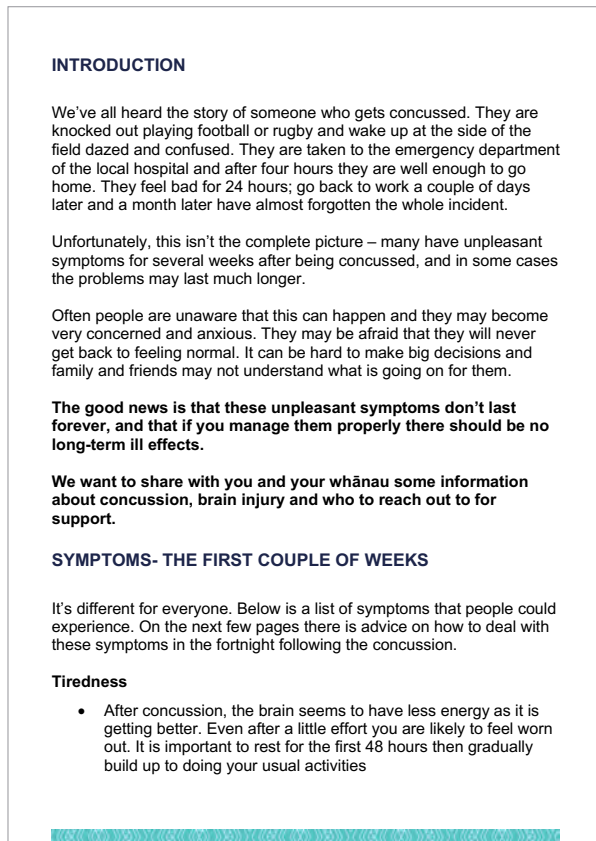
## Resources

### Tips from whānau to whānau



'I think you guys have done a good job covering what needs to be looked at and especially the family's importance, like they need to ask these questions and all know what questions to ask as well. I think that's awesome.'

*Consumer perspective*



For a printable copy of this resource, please go to:  
[www.hqsc.govt.nz/resources/resource-library/serious-traumatic-brain-injury-in-aotearoa-new-zealand-summary-of-improvement-work](http://www.hqsc.govt.nz/resources/resource-library/serious-traumatic-brain-injury-in-aotearoa-new-zealand-summary-of-improvement-work)

# Health New Zealand

## Te Whatu Ora

Southern

The Southern region of Aotearoa New Zealand covers the bottom third of Te Waipounamu | the South Island. It provides both tertiary (Dunedin Hospital) and secondary (Southland Hospital) care to the approximately 170 major and 1,400 non-major trauma presentations per year.

### The problem

The abbreviated and full WPTAS was performed inconsistently in the ED and inpatient wards, and gaps in the concussion referral system and TBI rehabilitation processes contributed to additional variations in care. Many ward staff (primarily registered nurses) expressed minimal or no confidence in administering either the abbreviated or the full WPTAS.

### Project aim

By February 2023, 70 percent of major trauma patients on ward 3 surgical at risk of TBI will be accurately assessed for PTA using a validated assessment tool, increasing from a baseline range of 25 to 45 percent.

### What we did

Insight from consumers who have lived experienced of TBI and their whānau helped the team prioritise change ideas. Specific issues raised through this process were as follows.

- Communication to patients and their families about their recovery plan was lacking.
- Patients had difficulty understanding medical jargon and the hospital system in general.
- Late or missed diagnoses impacted patients' ability to access funded rehabilitation and support services.
- Existing education and resources should be reviewed for appropriateness, and consumer whānau should be involved when these are delivered to patients.

With this information, the team focused on reviewing existing information and resources to meet the needs of consumers. The most

significant of this involved the introduction of a TBI template to the electronic discharge summary to ensure that appropriate information is provided to patients when they are transitioning back to the community. This includes management of concussion symptoms; red flags; booked follow-up appointments; information about return to work, sports and driving; and contact numbers for ACC. Information is also included for clinicians to ensure referrals are offered for all relevant support services in the region, such as the Brain Injury Association and rongoā Māori services (traditional Māori healing).

.....  
'I have suffered quite a few head injuries. The first one that I had was major, and I had no aftercare whatsoever with that one. I think it's just really important to have that information available for people. The last one that I had was two years ago, and I got all the care that I needed because I knew what I was looking for, and I just know how many people were not receiving that information at all, so got no idea what they're experiencing.'

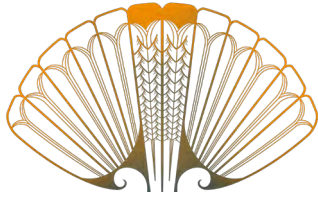
*Consumer perspective*

.....

Additional work involved clarification of the PTA assessment and referral process through targeted education sessions for nursing and medical staff.

### Results and implementation

Unfortunately, staffing and time limitations have meant that data about PTA screening rates during and after the intervention phase is yet to be collected. However, staff confidence in the administration of PTA assessment has increased as a result of education sessions held throughout the project timeframe.



## Data and monitoring | He raraunga, he aroturuki

---

### National minimum dataset

The New Zealand Trauma Registry is a repository of data from major trauma patients admitted to acute hospitals in Aotearoa New Zealand. A national minimum dataset includes consistent and comprehensive information that provides:

- measures for trauma quality improvement
- trauma systems performance
- risk-adjusted benchmarking
- a valuable resource for research and understanding of trauma patient outcomes.

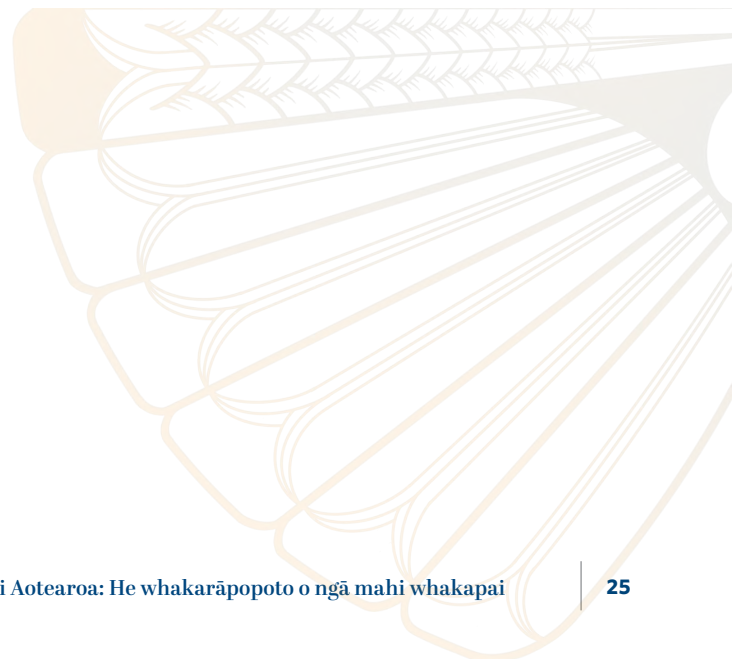
Systematic screening for PTA was added to the national minimum dataset in October 2022. This allows the National Trauma Network to monitor PTA screening as an outcome measure for the sTBI project during implementation of this work and in the future.

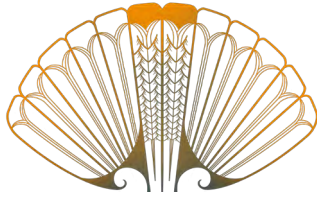
### Audit tool

An audit mechanism has also been established to monitor compliance with the sTBI action plan and care pathway. The purpose of the audit is to identify patients who fit the criteria for sTBI but are not transported to a neuroscience centre for ongoing care, so the factors contributing to these decisions and the outcomes for these patients can be examined.

Data from this audit will be used to produce reports on the management of sTBI patients in Aotearoa New Zealand and investigate where opportunities for ongoing quality improvement work exist to reduce variation in care.

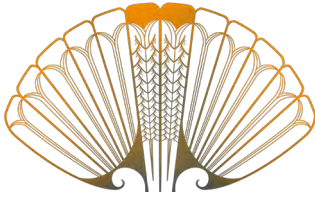
The audit tool can be found in the National Trauma Network members area at: [www.majortrauma.nz](http://www.majortrauma.nz) or on the Te Tāhū Hauora website at: [www.hqsc.govt.nz/our-work/national-trauma-network/serious-traumatic-brain-injury-audit-tool-for-non-neuroscience-centres](http://www.hqsc.govt.nz/our-work/national-trauma-network/serious-traumatic-brain-injury-audit-tool-for-non-neuroscience-centres)





## Key contacts | Ngā tino whakapānga

Health New Zealand - Te Whatu Ora Te Pae Hauora o Ruahine o Tararua MidCentral	Sonya Rider sonya.rider@midcentralthb.govt.nz
Health New Zealand - Te Whatu Ora Taranaki	Karien Visagie karien.visagie@tdhb.org.nz
Health New Zealand - Te Whatu Ora Nelson Marlborough	Claire Hitchcock claire.hitchcock@nmdhb.govt.nz
Health New Zealand - Te Whatu Ora Te Matau a Māui Hawke's Bay	Sharlene Olsen sharlene.olsen@hbdhb.govt.nz
Health New Zealand - Te Whatu Ora Waitaha Canterbury	Mary Gorton mary.gorton@cdhb.health.nz
Health New Zealand - Te Whatu Ora Te Toka Tumai Auckland	Jon Bagnall jbagnall@adhb.govt.nz
Health New Zealand - Te Whatu Ora Hauora a Toi Bay of Plenty	Sarah Shannon sarah.shannon@bopdhb.govt.nz
Health New Zealand - Te Whatu Ora Te Tai Tokerau	Olivia Mitten olivia.mitten@northlanddhd.org.nz
Health New Zealand - Te Whatu Ora Southern	Kylie James kylie.james@southerndhb.govt.nz
Clinical lead - serious traumatic brain injury, Te Tāhū Hauora Health Quality & Safety Commission	David Knight david.knight@cdhb.health.nz
Quality improvement advisor - trauma, Te Tāhū Hauora Health Quality & Safety Commission	Jessica Lockett jessica.lockett@hqsc.govt.nz
Clinical lead - major trauma, Te Tāhū Hauora Health Quality & Safety Commission	Kat Quick kat.quick@majortrauma.nz



## Glossary | He kuputaka

---

### **Abbreviated Westmead post-traumatic amnesia scale**

**(A-WPTAS):** An objective measure of post-traumatic amnesia for patients with a current GCS of 13-15 in the first 24 hours following injury to the head.

**Allied health:** Registered health professionals such as occupational therapists, physiotherapists, social workers and speech language therapists.

**Computerised tomography:** Imaging test that provides cross-sectional views of tissue, vessels and bone.

**Glasgow coma scale (GCS):** A test used to describe a person's level of consciousness through assessment of eye, verbal and motor responses. It ranges from a score of 3 (lowest, unconscious) through to 15 (highest, fully conscious).

**Neuroscience centre:** A hospital with readily available multidisciplinary neuro-expertise.

**Occupational therapy:** Allied health professionals who work alongside patients and whānau to help develop, recover or maintain meaningful activities of daily living.

**Post-traumatic amnesia:** A state of disorientation, confusion or impaired memory that can occur following injury to the head. The duration of PTA in days is a metric used to classify the severity of head injury.

**Westmead post-traumatic amnesia scale (WPTAS):** An objective measure of the duration of post-traumatic amnesia administered across a minimum of 3 consecutive days.





Published in April 2024 by  
Te Tāhū Hauora Health Quality & Safety Commission and the National Trauma Network.  
Available online at [www.hqsc.govt.nz](http://www.hqsc.govt.nz)

ISBN: 978-1-991122-13-1 (online)

ISBN: 978-1-991122-12-4 (print)

This work is licensed under the Creative Commons  
Attribution 4.0 International License.

To view a copy of this licence, visit  
<https://creativecommons.org/licenses/by-nc-sa/4.0/>.

