Trauma in CDHB and South Island

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TRAUMA IS THE LEADING CAUSE OF DEATH FOR YOUNG NEW ZEALANDER'S

Every year an estimated 1,800 people die from trauma. Over 2000 have lasting effects. We aim to reduce this number and assist victims of major trauma to live better lives.

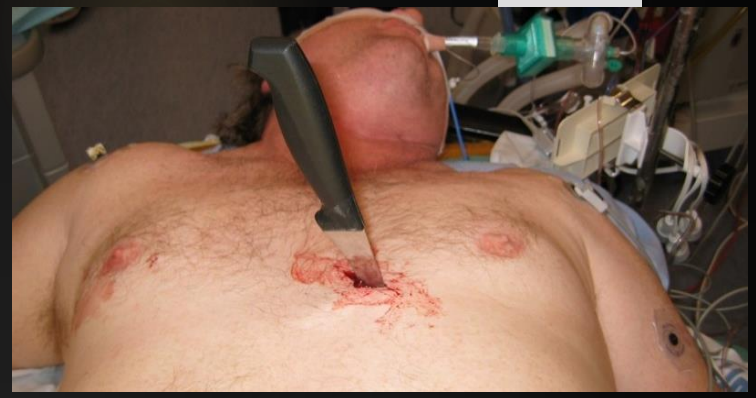
Major Trauma
National Clinical Network

SO WHAT IS TRAUMA AND HOW IS IT PERCIEVED??

What is Trauma?

Physical injury caused by energy transfer:

- Blunt trauma
- Falls
- Motor vehicle related
- Sports injury
- Assault
- Penetrating trauma
- GSW
- Stabbing
- Laceration
- Burns



When did trauma care first begin?

- Anthropological findings have shown skull decompression dating back to 10000 BC. This had been seen to be more than once and successful as holes had healed.
- Romans had trauma centre called "Valetudinaria" built 1st and 2nd centuries AD. 25 of these have been found. Medical Corps were within the Roman Legions, 85 army physicians are recorded.
- Shock was never defined until 19th and 20th century.
- The first identified trauma centres first started in the America in 1966.

About 40 years ago……..

- No trauma system in New Zealand
- Limited injury prevention initiatives
- No EMST (Emergency Management Severe Trauma) , DSTC (Definitive Surgical Trauma Course) Trauma Nursing course started 1995
- Road traffic
  - No airbags
  - No mandatory back seat restraints
  - Lap belts

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The MTNCN has three main priorities, which are to:

1. Establish a formal trauma structure and system across New Zealand
2. Establish the New Zealand Major Trauma Registry
3. Develop consistent guidelines and plans for managing trauma in New Zealand

By focusing on these priorities, we aim to help shape the future delivery of trauma services in New Zealand. This includes how patients are treated:

Before they arrive in hospital

During their time in hospital

During rehabilitation

A patient is considered to have a major trauma when their injuries score greater than 12 on the Injury Severity Scale (AIS 2005 version with 2008 amendments).

The 2017-18 results are:

Incidence

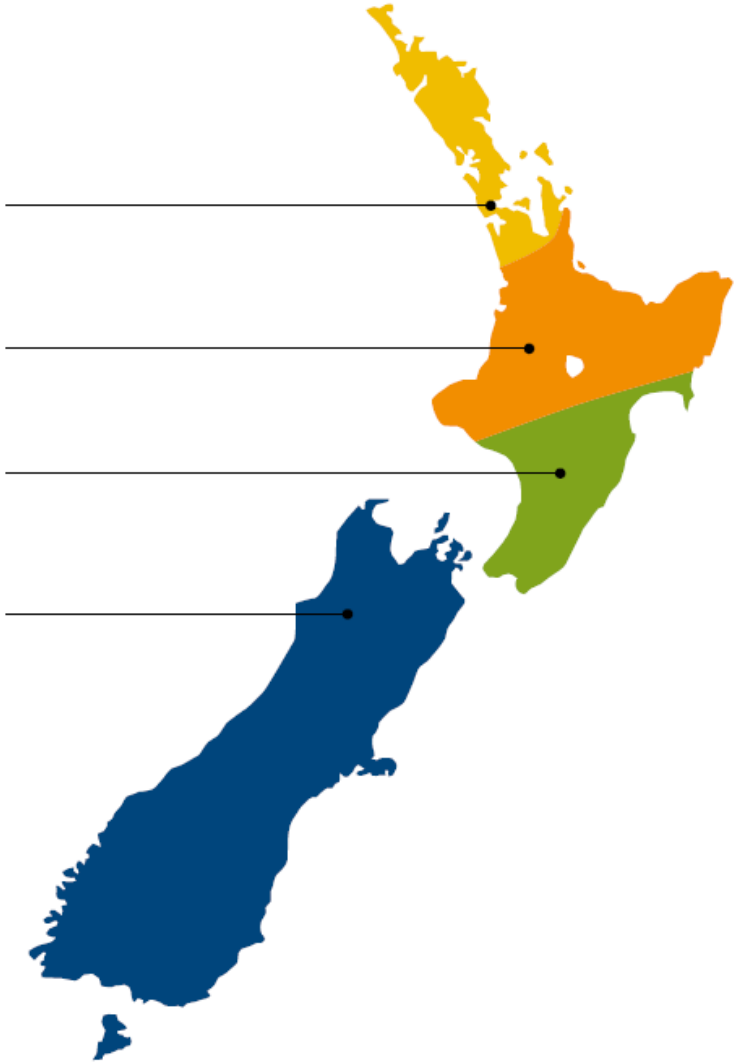
National Incidence
40/100,000

Northern Region
26/100,000

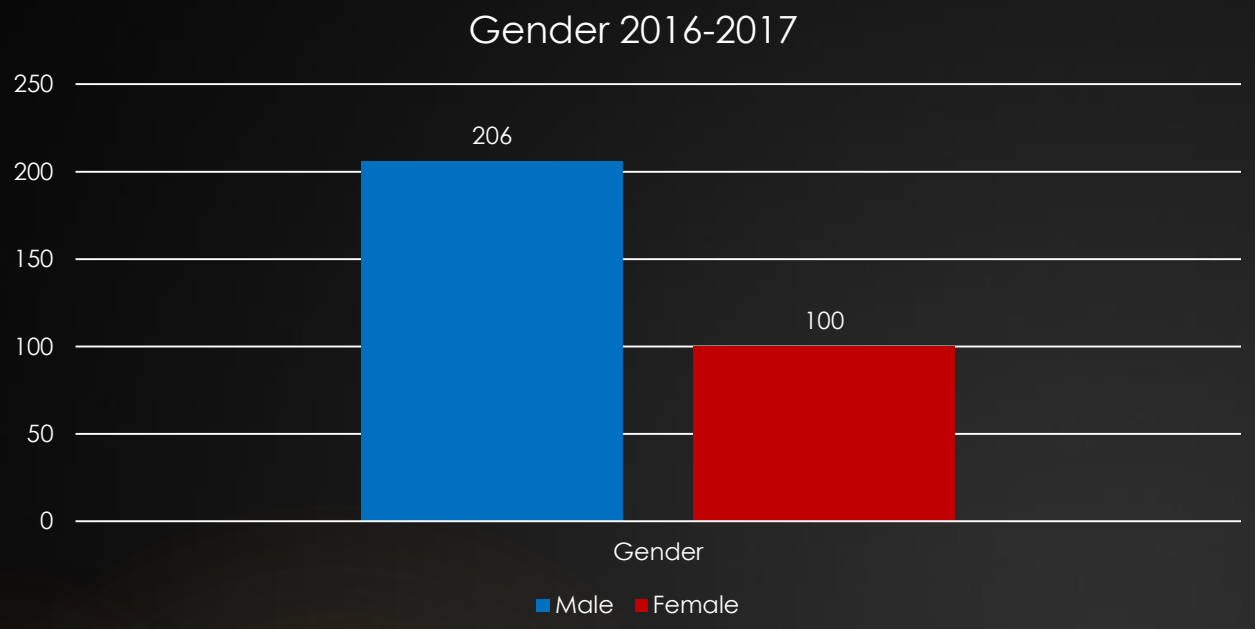
Midland Region
49/100,000

Central Region
47/100,000

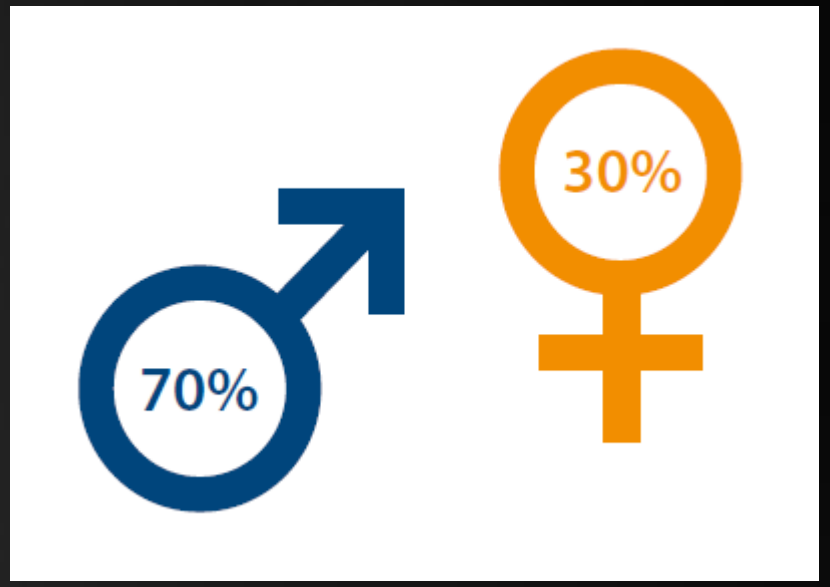
South Island
51/100,000

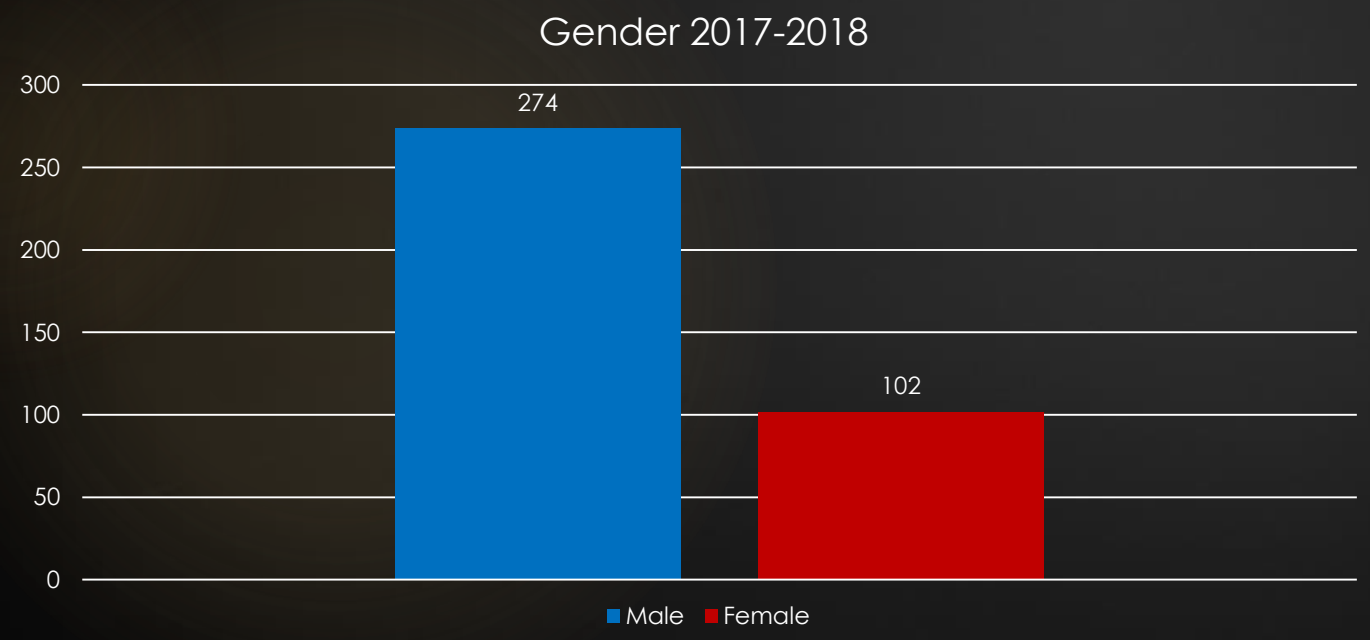


Which Gender has the most major trauma?



306 Major





376 Major

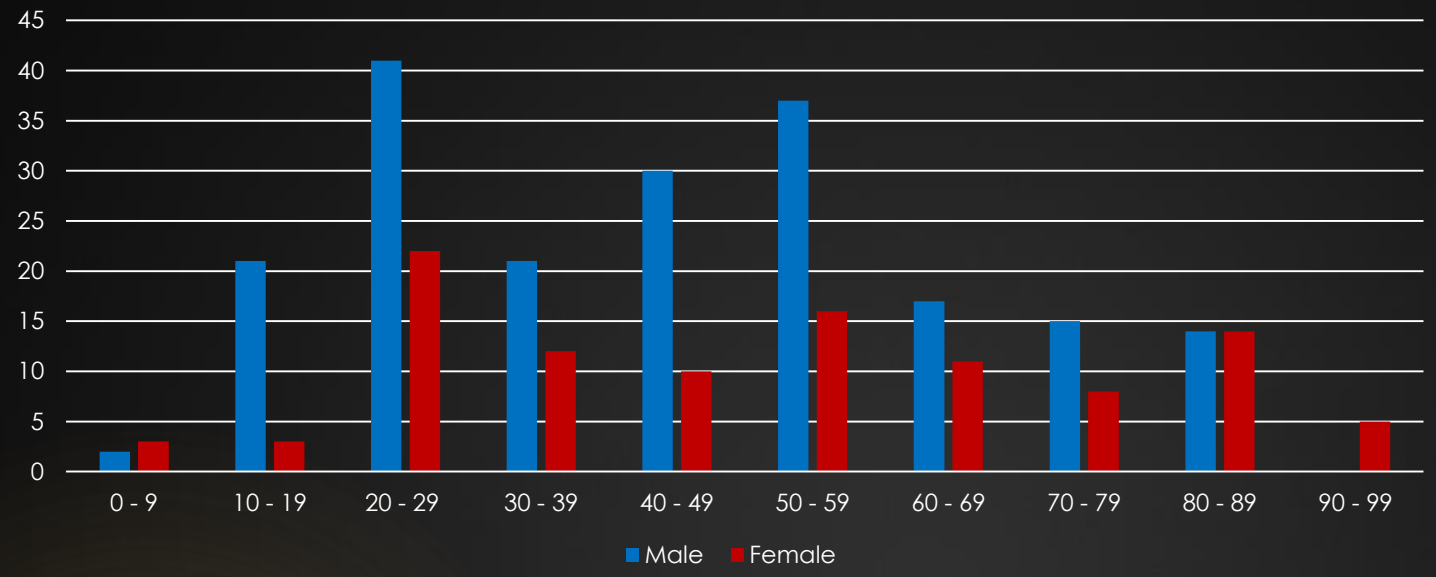
What age range has the most trauma?


© Getty Images

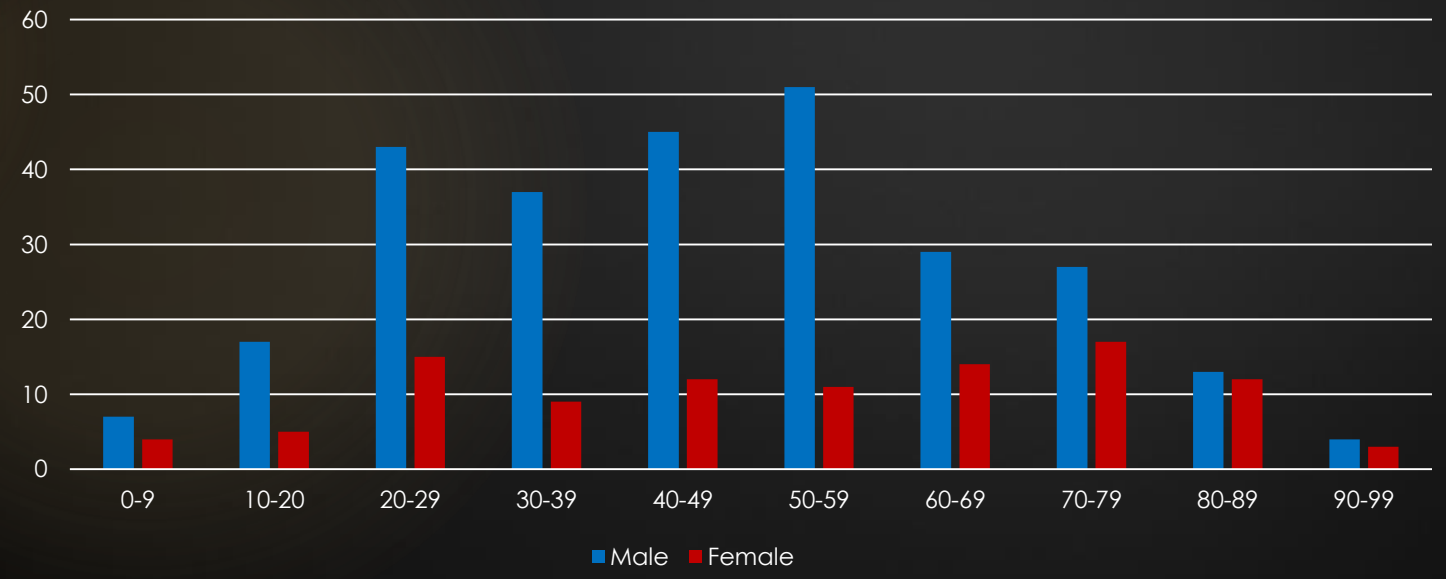

TRUMP

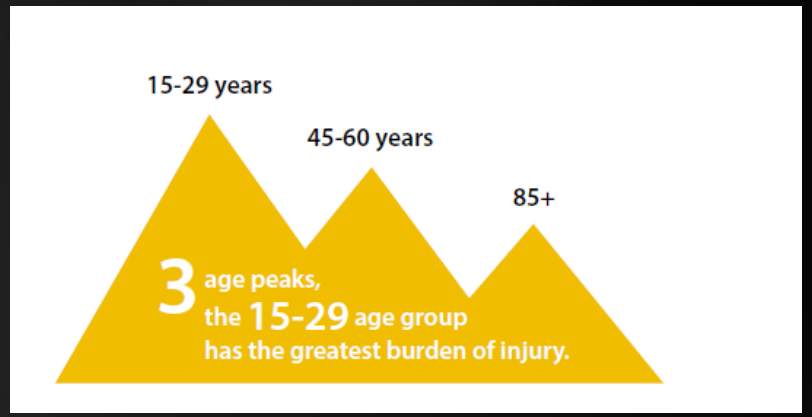

BARTLETT ROAD

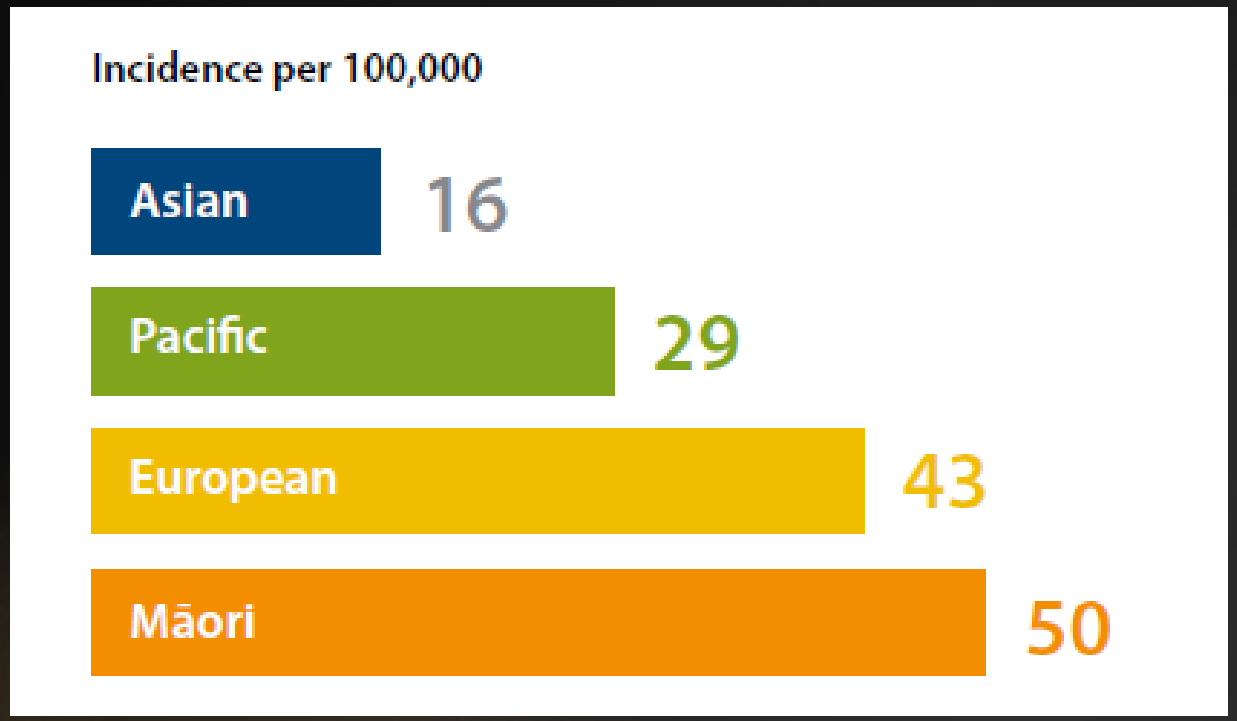
Major Trauma (ISS >12) age and gender 2016-2017



Major Trauma (ISS >12) age and gender 2017-2018







The high incidence of major trauma in Maori is identified as a key area for further research so that we can understand if there are specific locations or causes or other factors involved. With this knowledge we can work with partners to intervene and hopefully reduce the burden.

Cause of injury

All road traffic crashes

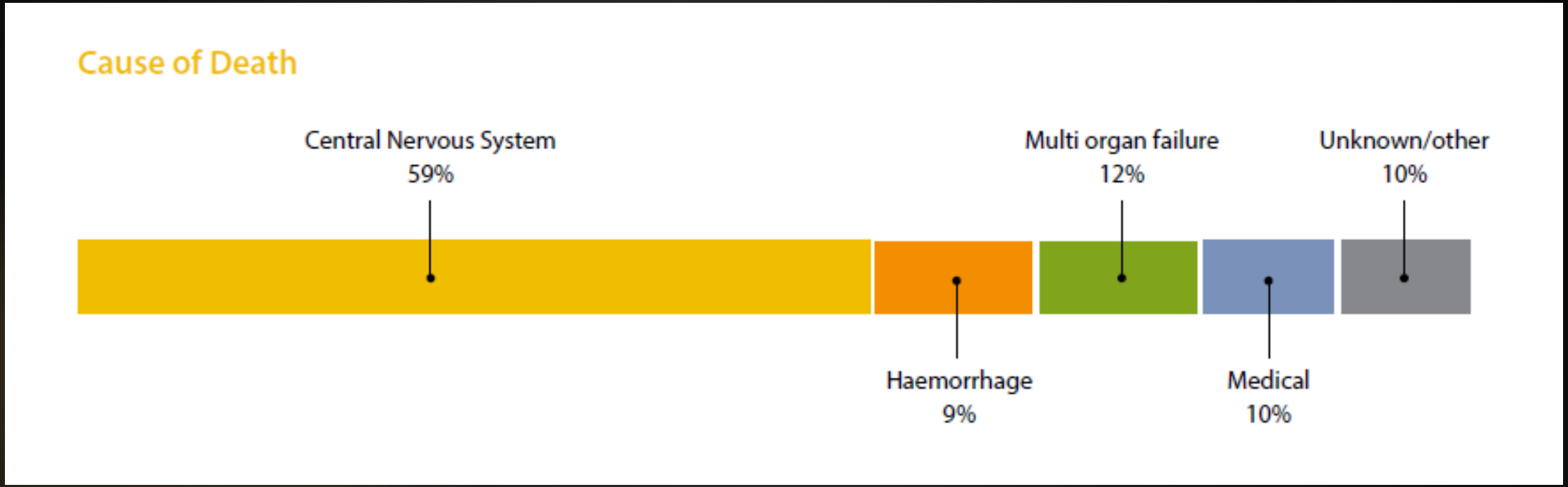
52%

Car	Motorbike	Cycle	Pedestrian	Quad bike /other	Falls	Assault	Other
28%	11%	6%	5%	2%	28%	8%	12%

Casemix by cause of injury (3 year data)

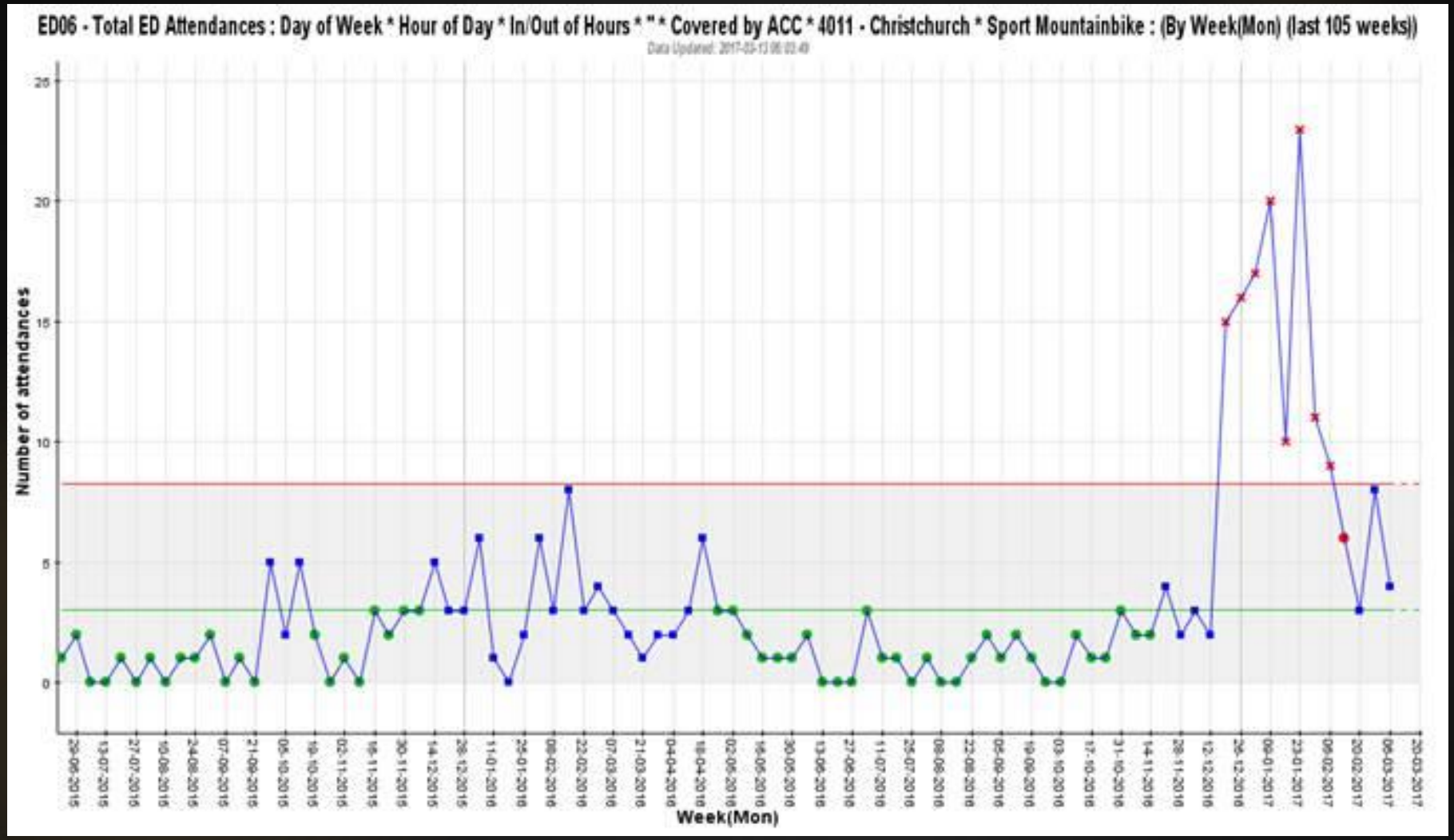
	Northern	Midland	Central	South Island	National
Fall	**26% (441)**	**22% (261)**	**34% (399)**	**30% (298)**	**28% (1399)**
Assault	**9% (153)**	**7% (82)**	**10% (114)**	**5% (50)**	**8% (399)**
All RTC	**52% (877)**	**60% (709)**	**45% (530)**	**51% (514)**	**52% (2630)**
Car occupant	26% (446)	33% (393)	22% (259)	30% (300)	28% (1398)
Motorcycle	10% (172)	14% (170)	11% (134)	10% (98)	11% (574)
Pedestrian	8% (135)	4% (46)	4% (50)	2% (22)	5% (253)
Pushbike	6% (97)	6% (68)	6% (68)	8% (83)	6% (316)
Quad bike	2% (27)	3% (32)	2% (19)	1% (11)	2% (89)
Other	**13% (215)**	**11% (132)**	**11% (132)**	**14% (139)**	**12% (618)**

Mortality



Christchurch Hospital in 2016 had a mortality rate for all Major trauma of 16%, this has now reduced to 6.7%

What does the introduction of a mountain bike park and a fire do to data?


ED06 - Total ED Attendances : Day of Week * Hour of Day * In/Out of Hours * " * Covered by ACC * 4011 - Christchurch * Sport Mountainbike : (By Week(Mon) (last 105 weeks))
Data Updated: 2017-03-13 06:03:49
Number of attendances
Week(Mon)

What is the trauma team idea?

- Trauma teams have been running overseas for a number of years which have lead to the development of trauma wards and departments.
- There are four levels of trauma service. 1, 2, 3, and 4
- Currently CDHB is at a level 2-3
- To get to a level one we need to have a trauma team
- The Trauma team involves a Trauma Surgeon (1-2), a CNS or Nurse Practitioner (1-4), and clerical assistance.

A Level I Trauma Service will be capable of providing the full spectrum of care for the most critically injured patient, from initial reception and resuscitation through to discharge and rehabilitation. As well as this the Level I Service provides:

- Research
- Education & Fellowship training
- Trauma Systems overview
- Quality improvement program
- Data collection
- Prevention and outreach programs
- Trauma audit
- Leadership responsibilities

What does a trauma nurse co - coordinator do?

Walk around with a folder.....

- Collect information of previous days admissions
- Review x-rays and CT results by self and with radiologists
- Review bloods
- Coordinate teams for patients with multiple inputs
- Assist nurses on ward with care of trauma patients with multiple injuries
- **Looks out for patient**
- Collects data and inputs onto a National database (codes Patients)
- Liaises with other coordinators and hospitals around New Zealand and overseas for care of patients and transfers
- Present to senior management
- Coach and teach about trauma
- Have input into trauma and where it is going, Committees and Southern Alliance
- Creates policies and procedures from trauma and monthly reports

Major Trauma
National Clinical Network

Trauma nursing

Professional development framework

The group identified four key areas of focus which form the basis of the framework:

1. Current state
2. Core trauma nursing skills and training
3. Advanced trauma nurse career options
4. Future trauma nursing state

This is the first time the framework has been undertaken and we anticipate it will be developed over time as our understanding grows. The framework is a guideline which describes our aspiration for the role and functions of trauma nurses.

Current state

In early 2019 we undertook a survey of trauma nurses to understand the current state and set a baseline. The detailed results are in Appendix C and summarised here.

The majority of the nursing workforce is in the
40-60 year age group,
and are female.

There are
26 postgraduate qualifications
(some have more than one) and a
further seven are currently studying toward a postgraduate qualification.
Almost all have done the AIS course (93%).

Nearly 80% of the trauma nursing workforce is in a designated senior nursing role, such as Clinical Nurse Specialist.

There are no Nurse Practitioners in trauma roles.

The average FTE is 0.56, ranging from 0.1 to full time.

In some hospitals, and particularly the smaller centres, the trauma nurse role is focussed only on data collection. In other hospitals, there may be more than one trauma nurse in role. These factors have an influence on the FTE average.

A significant proportion
(68%) has been in their role less than 3 years
and reflects the start of data collection in all DHBs as required in the Ministry of Health Regional Service Planning guidance.

There is a good level of interest in presenting at conferences and in research.

The main support to encourage nurses in these areas includes training, mentoring, and time.

The results of this survey are in line with the expected result considering over half the country implemented trauma nursing in the past three years.

The results will form the baseline for future surveys to understand how the trauma workforce has evolved over time.

South Island Major Trauma Numbers 2017-2018

Hospital	Number Major Trauma
Christchurch	375
Dunedin	110
Nelson / Wairau	70
Southland	48
Greymouth	12
Timaru	?

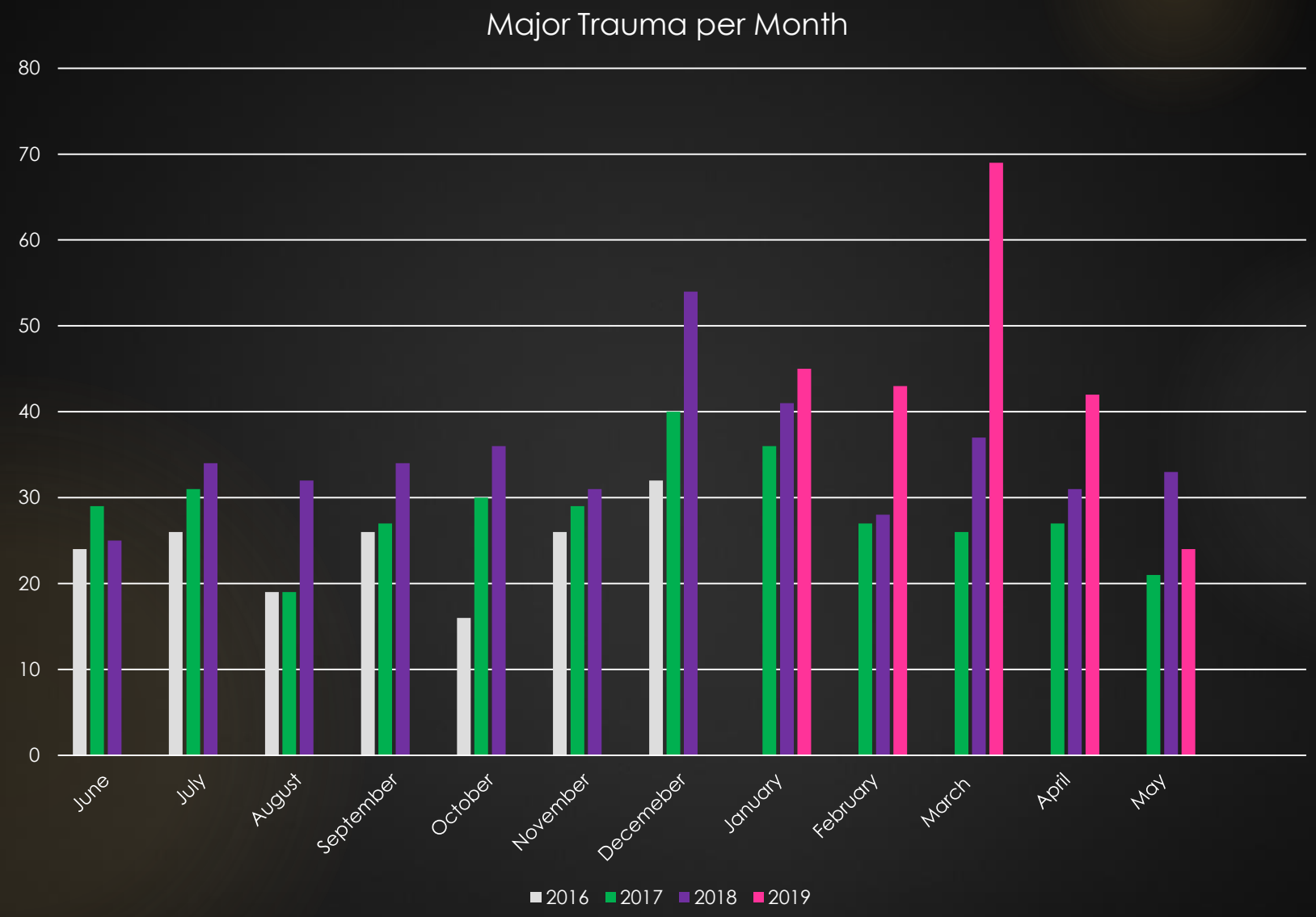
2016-2017

ACC	Discharged	Non Major	Major	Excluded
32812	22095	4119	306	3699

2017-2018

ACC	Discharged	Non Major	Major	Excluded
34064	22087	4144	375	4227

At any point in time there are 86 trauma inpatients in Christchurch Hospital


Major Trauma per Month
80
70
60
50
40
30
20
10
0
June
July
August
September
October
November
Decemeber
January
February
March
April
May
2016
2017
2018
2019

June 2016 – 31 May 2017 306 Major Traumas

June 2017 – 31 May 2018 375 Major Traumas

69 more major traumas than last year

So if we estimate bed day costs $800
Estimated average trauma stay 10 days
Cost for extra patients just in bed days $552,000
All Major trauma could mean $3000000

NZ Prehospital Major Trauma Triage Policy

New Zealand Prehospital Major Trauma Triage Policy

This document is for the use of prehospital personnel when triaging patients with trauma in the prehospital setting in New Zealand. It has been developed by the New Zealand National Major Trauma Clinical Network.

Publication date June 2015

MAJOR TRAUMA National Clinical Network

St John

Wellington Free Ambulance

Major Trauma Triage

Flowchart for Prehospital Personnel

Is an immediately life threatening problem present?
For example:
- Severe airway obstruction despite adjuncts
- Inadequate breathing
- Severe uncontrolled external bleeding

YES → Transport to the closest appropriate hospital. Activate staging if this is not a major trauma hospital.

NO

Are any of the following present?
- Manageable airway obstruction
- Respiratory distress
- The patient is intubated or being ventilated
- Shock
- Motor score less than or equal to five

YES → Transport to the most appropriate major trauma hospital utilising the District Destination Policy.

NO

Are any of the following injury patterns present?
- Penetrating trauma to the head, neck or torso
- Penetrating trauma to a limb with arterial injury
- Crush injury to the head, neck or torso
- Flail chest
- More than one long bone fracture
- Crushed, mangled, amputated or pulseless limb
- Clinically obvious pelvic fracture
- Paraplegia or quadriplegia*
- Burns involving the airway
- Burns greater than 20% of body surface area

** See the Spinal Cord Injury Destination Policy*

YES → Transport to the most appropriate major trauma hospital utilising the District Destination Policy.

NO

Are additional risk factors present?
For example:
- Significant additional signs or symptoms
- High risk mechanism of injury
- Additional patient risk factors

YES → Consider transport to the most appropriate major trauma hospital utilising the District Destination Policy.

NO → Transport to the most appropriate hospital.

Spinal cord injury destination policy

New Zealand Spinal Cord Injury Destination Policy

This document is for the use of prehospital personnel when determining the destination of patients with spinal cord injury in New Zealand. It has been developed by the National Spinal Cord Impairment Governance Committee.

Publication date June 2015

ACC · Ministry of Health Manatū Hauora · St John · Wellington Free Ambulance

Spinal Cord Injury Destination Policy

Flowchart for Prehospital Personnel

- Does the patient have acute spinal cord injury with signs of paraplegia or quadriplegia? — NO → This policy does not apply. See the District Destination Policy.
- YES → Does the patient have signs of major trauma in addition to spinal cord injury? — YES → Transport the patient to the most appropriate major trauma hospital
- NO → Does the patient have inadequate breathing or shock? — YES → Transport the patient to the most appropriate major trauma hospital
- NO → Is it feasible to transport the patient directly to a SCI centre* by road? — YES → Transport the patient directly to a SCI centre* by road
- NO → Is it feasible to fly the patient directly to a SCI centre*? — YES → Fly the patient directly to the most appropriate SCI centre*
- NO → Transport the patient to the most appropriate major trauma hospital

*** Spinal Cord Impairment (SCI) Centres**

- Middlemore Hospital (adults)
- Christchurch Hospital (adults and children)
- Starship Children's Hospital (children)

Spinal Cord Injury Destination Policy

Catchment Area Boundaries

TRAUMA TEAM CALL OR STANDBY

Trauma call or standby can occur at ANY time

PRESENCE OF ANY

A. Intubated or imminent airway loss
B. Respiratory distress: Respiratory rate > 30 or SpO_2 < 90%
C. Shock: Systolic BP < 90 mmHg (consider pre-arrival request for O-Negative blood, up to six units)
D. Impaired consciousness: GCS < 13

SPECIFIC INJURIES:

- Penetrating injury to neck, head or torso
- Paraplegia or quadriplegia (refer to Spinal Pathway)
- ≥ 2 long bone fractures, complex pelvic fracture
- Traumatic amputations proximal to knee or elbow
- Flail chest
- Burns > 20% (BSA) partial / full thickness or airway burns (Major Burns Pathway)
- Paediatrics Burns > 10%

MECHANISM OF INJURY:

- Fall greater than 5 metres
- Pedestrian, cyclist or motorcyclist versus car
- Ejection from vehicle, prolonged entrapment or rollover
- Death on scene
- Pregnancy > 20 weeks
- Multiple casualties ≥ 4 (Consider Major Incident)
- Trauma transfers from other centres

TRAUMA TEAM CALL

TRAUMA TEAM CALL

TRAUMA TEAM STANDBY

TRAUMA TEAM CALL

Trauma calls occur via the pager system – it will be sent (according to adult/child) to:

- ICU Registrar
- Surgical Registrar
- Anaesthetic Registrar
- Social Worker
- Trauma Nurse Coordinator
- Radiology and CT

Alternative responses for paediatric calls:

- Paed. Surg. (Paediatric Registrar after hours)
- Paediatric Anaesthetic Registrar
- Paediatric Social Worker
- Paediatric nursing responses:
  0800-1430h: CAAU Charge Nurse
  1430-midnight: Clinical Nurse Coordinator
  Midnight-0800h: Wd22 Nurse-in-charge

Pager message will state: GO TO EMERGENCY, ETA [XX] MIN (or NOW), [XX] PATIENTS

EXPECTED ACTIONS, ATTENDANCE AND TIMEFRAMES OF ARRIVALS are:

- **Mandatory: All medical professionals** – Immediate: present to ED Resus Triage RN for directions, alerting their team (not all members of the team need attend)
- **Discretionary: Social Workers and Specialist Nurses** – ASAP: will contact ED to confirm need to attend
- **Will not attend ED: CT** – Will prepare to receive a patient within 20 min

A discretionary trauma call (either Call or Standby) may be made by the emergency medicine specialist or senior registrar. This is for a clinically concerning mechanism, physiology, co-morbidities or a combination of these that do not meet the mandatory threshold but raise the possibility of significant injuries or an adverse outcome.

TRAUMA TEAM STANDBY

Standby ensures General Surgery and ICU are made aware there is a potentially serious trauma patient arriving into ED and that at the TIME of the call the patient is stable and does not need immediate intensive resuscitation.

Standby occurs via the pager system.

EXPECTED ATTENDANCE AND TIMEFRAMES OF ARRIVALS are:

- Surgical Registrar – Mandatory – present to ED within 30 min
- ICU Registrar – Discretionary
- Radiology / CT – Discretionary
- Trauma Coordinator – Discretionary

Pagers will state: Surgical: TRAUMA FOR REVIEW IN ED WITHIN 30 min
Everyone else: TRAUMA NOTIFICATION

STATUS STAND-DOWN

- A stand-down call may be made if no surgical team will be required for admission of patient. This will be done via paging the Surgical Registrar.

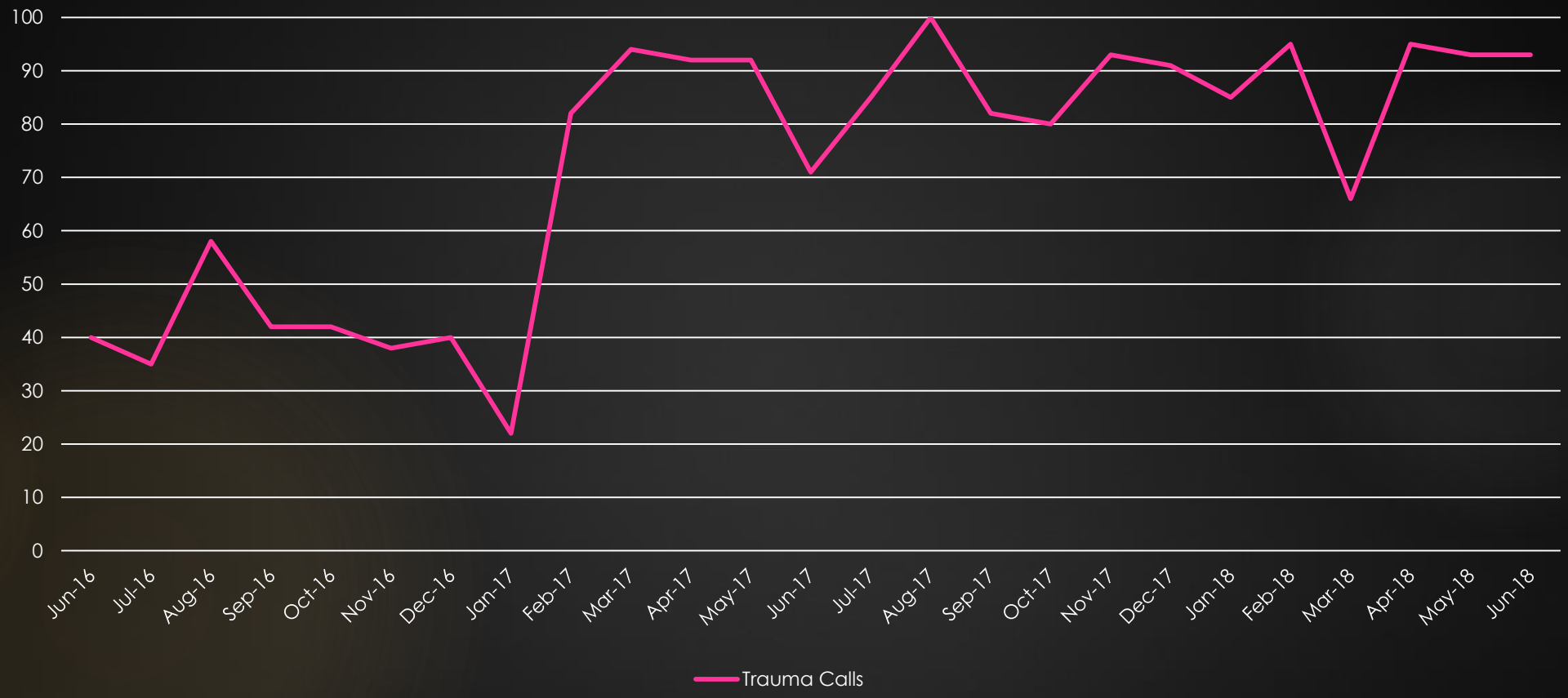
STATUS INCREASE

- The notification can be increased to activation at any time

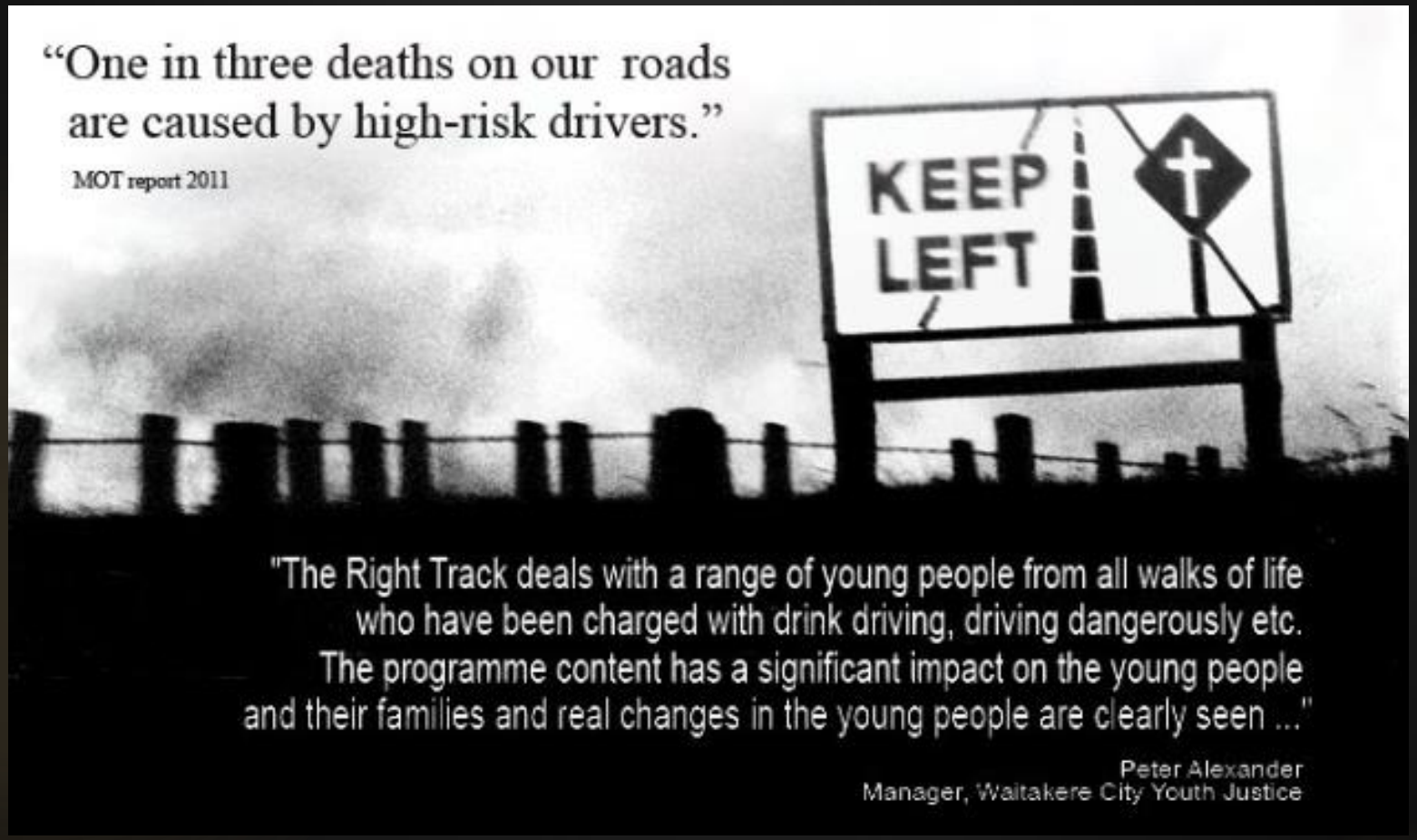
If the activation or notification criteria are met a trauma call may be initiated:

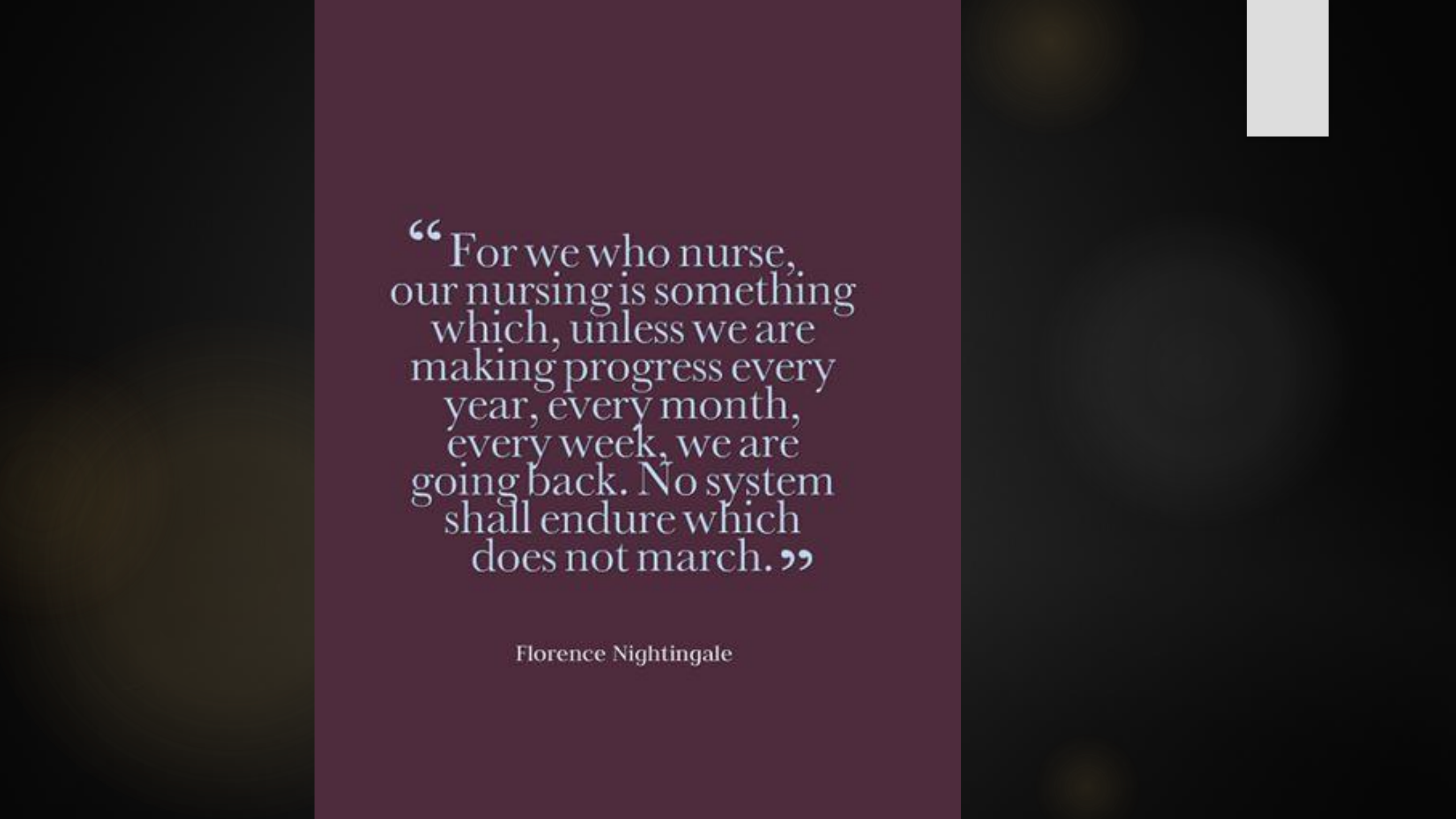
- **WHO** – the Emergency Medicine Specialist or Registrar, the ACNM or Resus Triage Nurse
- **WHEN** – pre-arrival, on arrival, or during the patient's ED assessment
- **HOW** – initiate by:
  1. Dial 777
  Clearly state:
  2. "**Trauma Team Call**" or "**Trauma Team Call**" or "**Paediatric Trauma Team Standby**" or "**Paediatric Trauma Team Standby**"
  3. Other teams required – e.g., Orthopaedics, Cardiothoracic, Neurosurgery
  4. The timeframe: "**Now**" or "**ETA [xx] mins**" – This decision is for the nurse or doctor making the trauma call
  5. The number of patients

Trauma Calls for Majors each month Percentage 2016,2017, 2018



THE RIGHT TRACK
TE ARA TUTUKI PAI change for life




“For we who nurse, our nursing is something which, unless we are making progress every year, every month, every week, we are going back. No system shall endure which does not march.”
Florence Nightingale