Queensland Trauma Education

TRAUMA TEAMS

Trauma reception and team roles

Immersive scenario

Facilitator resource kit

Clinical Excellence Queensland
JAMIESON TRAUMA INSTITUTE
CSDS Clinical Skills Development Service
Queensland Government

Queensland Trauma Education

The resources developed for Queensland Trauma Education are designed for use in any Queensland Health facility that cares for patients who have been injured as a result of trauma. Each resource can be modified by the facilitator and scaled to the learners needs as well as the environment in which the education is being delivered, from tertiary to rural and remote facilities.

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Queensland Trauma Education
Trauma Teams – Trauma reception and team roles: Immersive scenario – Facilitator resource kit
Version 2.0

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About this training resource kit

This resource kit provides healthcare clinicians with knowledge and skills to effectively manage a multidisciplinary trauma team.

National Safety and Quality Health Service (NSQHS) Standards

Target audience

Emergency department medical and nursing clinicians.

Duration

45 minutes.

Group size

Suited to small group participation.

Learning objectives

By the end of this session the participant will be able to:

- Identify roles and responsibilities in trauma team activation and mobilisation
- Effectively manage a multidisciplinary team
- Perform the initial reception and primary management in a trauma presentation

Facilitation guide

1. The immersive scenario can be run in two formats as follows:
    a. Senior participants- scenario run with debrief at conclusion
    b. Junior participants- scenario run as pause and discuss with debrief at conclusion.
2. Facilitator to discuss the pre-simulation briefing and deliver the immersive scenario on trauma team roles.
3. Utilise the supporting documents to maximise learning throughout the immersive scenario.
4. Utilise the debrief guide to evaluate and support participant performance and provide feedback.

Supporting resources (in Printable resources)

1. Structured assessment in trauma

2. CXR: Bilateral rib fractures 1-4, bilateral large pneumothorax
3. Pelvic Xray: pelvic binder high, warming blanket in-situ, Fractures of L iliac crest, L superior and inferior pubic rami
4. L femur Xray: L midshaft and distal femoral #
5. R ankle Xray Anteroposterior and Lateral: Compound tibial/fibula # with vac splint
6. EFAST: RUQ/Morrisons: negative
7. EFAST: LUQ/splenorenal: negative
8. EFAST: Subxiphoid/cardiac: negative
9. EFAST: Pelvis: negative
10. Pre-simulation briefing poster

Simulation event

This section contains the following:

1. Immersive scenario
2. Resource requirements
3. Handover card
4. Scenario progression
    a. State 1
    b. State 2
    c. State 3
5. Debriefing guide

Immersive scenario

Type	Immersive scenario
Target audience	Emergency Department medical & nursing staff Pharmacist
Overview	This scenario will explore the initial reception and resuscitation of multi-trauma patient where participants will prepare and mobilise the trauma team roles and clearly communicate patient priorities and patient management.
Learning objectives	• Identify roles and responsibilities in trauma team activation and mobilisation • Effectively manage a multidisciplinary team • Perform the initial reception and primary management in a trauma presentation
Duration	45 minutes, including debrief.

Resource requirements

Physical resources

Room setup	Resus bay in Emergency Department
Simulator/s	ALS advanced, SimMan ALS or SimMan 3G
Simulator set up	*Street clothes lying supine* *Moulage:* normal patient, R chest seatbelt bruising- extending across lower abdomen, pelvic binder (placed high), R tibia/fibula compound fracture, L femoral bruising
Clinical equipment	• Femoral traction splint • Arterial tourniquet • Fluids: Sodium Chloride 0.9% or Hartmanns • Blood products, TXA, calcium, IV analgesia
Access	2 x IV setups: 1 x 18G PIVC R ACF and 1 x PIVC with NO IV sticker attached
Other	ED chart & relevant paperwork

Human resources

Faculty	2 facilitators (Dr/Nurse with debriefing experience) to take on roles of scenario commander and primary debrief
Simulation coordinators	Simco x 1 for manikin set up and control
Confederates	Ambulance officer for clinical handover
Other	1 nurse and 1 doctor in room to receive initial notification from ambulance officer

Handover card

Handover from ambulance officer

Ambulance Paramedic deliver notification over the phone:

Hello. This is James/Jane from the ambulance. I'm at the scene of a single vehicle RTC, high speed car into a tree. We have a 35yr old male, sole occupant of the vehicle. He was entrapped for 25 minutes, His current vital signs GCS 13 (motor score 6), pulse 120, blood pressure 95/75, saturations 96% on 15 litres. He's got an obvious seat belt sign across his chest and abdomen, a closed mid-shaft left femur and open right tib-fib. We'll be with you in ten minutes.

Ambulance Paramedic deliver notification in person on arrival to ED:

Hello, this is Alex. As mentioned, he is a 35yo male involved in a high-speed car crash. Since I spoke to you, he has deteriorated, and I am now concerned as he is hypotensive and tachycardic. His most current vital signs are HR 135, BP 85/50mmHg, saturations 92% 15L NRB and GCS 13. I have managed to get one IV line in his R) ACF and given him 50microg fentanyl.

Scenario progression

<table>
<tr><th colspan="4">STATE 1: INITIAL ASSESSMENT</th></tr>
<tr><th colspan="2">Vital signs</th><th>Script</th><th>Details</th><th>Expected actions</th></tr>
<tr><td>ECG</td><td>ST</td><td rowspan="9">Alex
Moaning. Answers yes/no to questions. Respiratory distress.</td><td rowspan="9">Primary survey results
A: Patent, anterior neck normal, cervical collar insitu.
B: Seatbelt abrasion across R chest wall, bruising and crepitus on the R. Bilateral subcutaneous emphysema. Decreased movement and decreased BS bilaterally.
C: Cool peripherally. Seatbelt sign across abdomen, tender LUQ.
D: Confused and eyes open to voice. Moving all limbs to command.
E: Bleeding from R tib/fib fracture. Tense swollen tender L thigh.

Pause and discuss:
• What clinical features can help identify bleeding and haemorrhagic shock?
• What are the possible sources of bleeding in this patient?</td><td rowspan="9">Team leader to perform:
• Role allocation
• Uses standardised tool for handover
• Identify priorities from case in pre-notification
• Activate ‘trauma notification’ process
Commence Primary Survey
❑ Recognise haemorrhage and hypovolaemia
• Chest
• Abdo
• Long bones
• Pelvis
❑ Recognise severe chest injury- likely haemo-pneumothorax and rib fractures
❑ Team leader clearly communicates life-threats to team
❑ Team leader communicates patient priorities following primary survey findings</td></tr>
<tr><td>HR</td><td>135</td></tr>
<tr><td>SpO_2</td><td>92% 15L NRB</td></tr>
<tr><td>BP/ART</td><td>85/50</td></tr>
<tr><td>RR</td><td>30</td></tr>
<tr><td>Temp</td><td>37</td></tr>
<tr><td>BGL</td><td>6</td></tr>
<tr><td>GCS</td><td>13 (E3V4M6)</td></tr>
<tr><td></td><td></td></tr>
</table>

STATE 2: PRIORITISING MANAGEMENT				
Vital signs		**Script**	**Details**	**Expected actions**
ECG	ST	**Alex:** Moaning. Answers yes/no to questions. Respiratory distress	**Secondary survey results** Pelvic binder insitu but too high and applied over clothes ***Pause and Discuss:*** • *What is the role of blood tests in this scenario?* • *What is a 'trauma panel'?* • *Why do we do a CXR and Pelvic Xray in trauma?* • *What role does an EFAST have in this patient?* • *How can we improve this patient's oxygenation?* • *How do we manage the orthopaedic injuries?* • *How do you know the pelvic binder is well positioned?* • *What other splints/equipment can we use for limb bleeding?*	**Team to utilise:** • Closed loop communication • Shared mental model • Team Leader role **Secondary survey** ❑ Recognise potential for pelvic injury ❑ Recognize binder incorrectly applied **Investigations** ❑ Bedside: trauma panel, ECG, WTU ❑ CXR, pelvic Xray, L femur and R tib/fib Xray ❑ EFAST **Management** ❑ Further IVC access ❑ Volume resuscitation: PRBC transfusion ❑ Continue airway support ❑ Consider decompression of R chest ❑ Reapply pelvic binder ❑ Apply femoral traction splint ❑ Manage compound tib/fib fracture
HR	135			
SpO_2	92% 15L NRB			
BP/ART	85/50			
RR	30			
Temp	37			
BGL	6			
GCS	13 (E3V4M6)			

STATE 3: MANAGING DETERIORATION				
Vital signs		**Script**	**Details**	**Expected actions**
ECG	ST	**BP improves if:** • PRBC transfusion commenced • Bilateral chest thoracostomy performed • Pelvic binder applied correct position • R femoral fracture reduced and splinted	**Results:** **CXR:** Significant Ptx given bilateral subcutaneous emphysema, suspect ribs fracture. **Pelvic Xray:** pelvic binder high, warming blanket insitu. Fractures: L iliac crest, L acetabulum, L superior and inferior pubic rami. **L femur:** L midshaft and distal femoral fracture **R tib/fib:** Compound R tib/fib fracture with vac splint ***Pause and discuss:*** • *Identify the injury on imaging* • *Discuss the effect of each injury on haemodynamic state* *Explore the options for:* • *Haemostatic resuscitation* • *Chest decompression* • *Splint application* • *Compound wound care management*	**Team to utilise:** • CRM principles • Closed loop communication **Investigations** ❑ Interpretation of imaging results **Management** ❑ Haemostatic resuscitation ❑ Chest decompression- bilateral ❑ +/- intubation ❑ Reposition pelvic binder ❑ Reduce L femoral fracture and R tib/fib fractures- apply traction splint, back-slab. ❑ Wound care- irrigation of compound wounds ❑ Ensure ADT/prophylactic antibiotic given
HR	135			
SpO_2	90% 15L NRB			
BP/ART	80/45			
RR	28			
Temp	36.5			
BGL	5.6			
GCS	11 (E2V4M5)			

Debriefing guide

Scenario objectives

- Identify roles and responsibilities in trauma team activation and mobilisation
- Effectively manage a multidisciplinary team
- Perform the initial reception and primary management in a trauma presentation

Example questions

Exploring diagnosis

- What were the main priorities identified in this scenario?
- What injury profile was suspected from the presentation and primary survey findings?
- What investigations were performed to help identify the injury profile? And the severity each injury?
- What is the role for a CXR and Pelvic Xray in the trauma bay? Why should they be performed in the initial 10 minutes after patient arrival?

Discussing management

- How do you prioritise the clinical needs of this patient?
- What factors determine the need for thoracostomy vs formal ICC insertion?
- What determines the need for intubation prior to thoracostomy?
- What options/equipment are available for fracture reduction and splinting?
- What additional wound care considerations are required with compound fractures?
- Regarding haemorrhage control, what options are available for this patient?
- How does the team determine what transfusion strategy to use?
- What adjuncts to blood are included in a haemostatic resuscitation?

Discussing teamwork / crisis resource management

- In a complex trauma case what factors can aid teamwork?
- What makes an effective team leader?
- What is the role of the ‘trauma team leader’?
- What strategies can be used to ensure the team are ‘on the same page’?
- What is the ‘shared mental model’ concept?
- How is crowd control achieved?
- What other roles are important to identify in managing a complex trauma presentation?

Key moments

- Use of closed loop communication for effective trauma team leadership
- Identification of multiple life-threatening injuries
- Management of undifferentiated shock following trauma

Acronyms and abbreviations

Term	Definition
RTC	Road traffic collision
ACF	Antecubital fossa
PIVC/IVC	Peripheral intravenous cannula/intravenous cannula
NRB	Non-rebreather
ECG	Electrocardiogram
WTU	Ward test urine
CXR	Chest xray
EFAST	Extended focussed assessment with sonography in trauma
PRBC	Packed red blood cells
PTx	Pneumothorax
ST	Sinus tachycardia

References

1. Härgestam, M., Lindkvist, M., Jacobsson, M., Brulin, C., & Hultin, M. (2016). Trauma teams and time to early management during in situ trauma team training. *BMJ open*, *6*(1), e009911. https://doi.org/10.1136/bmjopen-2015-009911
2. Georgiou, A., & Lockey, D. J. (2010). The performance and assessment of hospital trauma teams. *Scandinavian journal of trauma, resuscitation and emergency medicine*, *18*, 66. https://doi.org/10.1186/1757-7241-18-66

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