



Queensland
Trauma Education

PELVIC TRAUMA

Haemodynamic transient responder pelvic trauma

Immersive scenario

Facilitator resource kit

CSDS



Clinical Skills Development Service



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

Pelvic Trauma – Haemodynamic transient responder pelvic trauma: Immersive scenario – Facilitator resource kit
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About this training resource kit

This resource kit provides healthcare workers with the knowledge and skills to manage a patient with an open book pelvic injury who is a transient responder following a traumatic incident.

National Safety and Quality Health Service (NSQHS) Standards



Target audience

Emergency medical and nursing clinicians.

Duration

45-60 minutes.

Group size

4-6 participants (or team composition applicable to local area).

Learning objectives

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

- perform a focussed clinical examination to assess a patient with a major pelvic injury
- identify types of pelvic injury that are associated with vascular injury and bleeding
- perform bedside interventions to aid haemorrhage management
- demonstrate early targeted management to definitive care.

Facilitation guide

1. Facilitator to discuss the pre-simulation briefing and deliver the immersive simulation on patient with pelvic trauma and transient haemodynamic responder.
2. Utilise the supporting documents to maximise learning throughout the immersive scenario.
3. Utilise the debrief guide to evaluate and support participant performance and provide feedback.

Supporting resources (in Printable resources)

1. Pre-simulation briefing poster
2. Structured assessment in trauma.
3. Pelvic Xray1: vertical shear L hemipelvis

4. Pelvic Xray2: Post binder application
5. CXR: NAD
6. EFAST: RUQ/Morrisons: negative
7. EFAST: LUQ/splenorenal: negative
8. EFAST: Bladder/pelvic: negative
9. EFAST: Cardiac/subxiphoid: negative
10. Venous Blood Gas 1
11. Venous Blood Gas 2
12. ROTEM: FFP replacement suggested

Specific management

- Recognition of open book pelvic injury.
- Application of pelvic binder.
- Haemostatic resuscitation.
- Identification of potential arterial bleeding and management options.

Simulation event

This section contains the following:

1. Immersive scenario
2. Resource requirements
3. Handover card
4. Scenario progression
 - a. State 1: Initial assessment
 - b. State 2: Ongoing management / secondary assessment
 - c. State 3: Management
5. Debriefing guide

Immersive scenario

Type	Immersive scenario
Target audience	Emergency department medical and nursing staff
Overview	<p>A 23-year-old male patient is transported to ED after falling 7 metres off an overpass 45 minutes ago.</p> <p>He is initially haemodynamically unstable, confused and pale. His haemodynamic parameters improve with fluid resuscitation. He complains of pain over L lower quadrant of his abdomen and R hip. He has a vertical sheer pelvic injury demonstrated by pelvic Xray.</p>
Learning objectives	<ul style="list-style-type: none">• The assessment of a transient responder trauma victim to identify a major pelvic injury.• Apply external pelvic compressive device to aid haemorrhage management.• Use of haemostatic resuscitation strategy.• Demonstrate early targeted management.
Duration	45-60 minutes, including debrief.

Resource requirements

Physical resources

Room setup	Resus bay in emergency
Simulator/s	1 manikin - SimMan 3G or ALS simulator
Simulator set up	<ul style="list-style-type: none"> • Street clothes, lying supine. • Cervical collar in situ. • Pelvic binder available but not applied. • Moulage: anterior bruising across lower abdomen/pelvis. • 2L via nasal prongs in situ.
Clinical equipment	<ul style="list-style-type: none"> • Standard precautions PPE. • Resuscitation/trauma bay role allocation stickers (if applicable to local area). • Standard resus bay equipment: monitors, resus trolley, infusion pumps, blood warmers. • Fluids/blood products: N/saline/Hartmann's, packed red blood cells/blood components. • Medications: IV analgesia, TXA 1g. • Pelvic binder (available for application) and sling/bandage to tie feet into internal rotation.
Access	2 x IVC setups. 18g cannula R) ACF with empty N/S 0.9% 250ml bag, No IV sticker attached to L) arm
Other	ED chart and relevant paperwork

Human resources

Faculty	2 facilitators (doctor/nurse with debriefing experience) to take on roles of scenario commander and primary debriefer
Simulation coordinators	1 for manikin set up and control
Confederates	1 confederate in room, optional 1 confederate to provide QAS handover / radiographer / other team member
Other	Trauma team composition - 2 nurses and 3 doctors in room (or team composition applicable to local area)

Handover card

Handover from ambulance officer

This is Ben Wright. Ben is 23 years old and he's fallen off the overpass approximately 45 minutes ago and was found by bystanders walking past. We estimate he has fallen over 7-metres in height.

When the first crew arrived, he was reportedly never knocked out and remains GCS 14 throughout QAS care, being confused to place and time. He has no other focal neurological deficits, pupils are 3mm and reactive bilaterally.

His other vital signs are: HR 140, BP 110/60mmHg, saturations 95% 2L NP and respiratory rate 28. He is complaining of pain in his L lower quadrant of his abdomen and R hip.

He has an 18g cannula in his R) ACF and we have given him 10mg IV morphine and 8mg IV ondansetron with minimal effect. He has also had 750mls NSaline IV and a cervical collar applied.

He doesn't have any past medical history, no medications and no known allergies.

Many thanks for your ongoing care of Ben.

Scenario progression

STATE 1: INITIAL ASSESSMENT				
Vital signs		Script	Details	Expected actions
ECG	ST	Ben Moaning loudly, "I am in so much pain - please help me."	Primary survey results A: Cervical collar in situ - nil midline tenderness, airway patent, nil anterior neck injury B: Nil chest wall tenderness, nil crepitus, nil subcutaneous emphysema, equal breath sounds bilaterally C: Nil external bleeding, poor perfusion peripherally, L pelvis and lower abdo tenderness, bruising across lower abdomen/pelvis, scrotal/penile bruising D: GCS 14 (confused), nil neurological deficits E: temp. 35.6	Commence primary survey <ul style="list-style-type: none"> <input type="checkbox"/> Assess airway/breathing <ul style="list-style-type: none"> ○ optimise oxygenation and ventilation. <input type="checkbox"/> Assess circulation <ul style="list-style-type: none"> ○ recognise abnormality in circulation ○ gain further IV access. <input type="checkbox"/> Assess disability and expose patient <input type="checkbox"/> Call for help early. Identify resources available to local area.
HR	140			
SpO₂	95% 2LNP			
BP/ART	110/60mmHg			
RR	28			
Temp	35.6			
BGL	7			
GCS	14 E4V3M6			

STATE 2: ONGOING MANAGEMENT / SECONDARY ASSESSMENT				
Vital signs		Script	Details	Expected actions
ECG	ST	Ben Complains of pain to pelvis.	Secondary survey results If not examined above: Abdomen/pelvis: pelvis and lower abdo tenderness, bruising across lower abdomen/pelvis, scrotal/penile bruising, L ASIS higher than R. No wounds to suggest compound injury. Long bones: NAD Log roll: sacral midline bony tenderness/bruising, perianal sensation normal. Results CXR: NAD Pelvic Xray: vertical sheer pelvic fracture EFAST: negative	Secondary survey <ul style="list-style-type: none"> <input type="checkbox"/> Perform head to toe assessment <input type="checkbox"/> Identify major pelvic injury and circulation compromise <input type="checkbox"/> Arrange analgesia <input type="checkbox"/> Ensure oxygenation is adequate - can change sats to 100% with increased FiO2. Initiate investigations <ul style="list-style-type: none"> <input type="checkbox"/> Bloods - trauma panel - FBE, chem20, XMatch, lipase, coags/ROTEM <input type="checkbox"/> Bedside tests: UA, ECG, VBG <input type="checkbox"/> Imaging: CXR, Pelvic Xray & EFAST Management <ul style="list-style-type: none"> <input type="checkbox"/> Apply pelvic binder and strap feet in internal rotation <input type="checkbox"/> Reduce vertical sheer fracture <input type="checkbox"/> Commence fluid/haemostatic resuscitation - blood/blood products as preference <input type="checkbox"/> Warm patient <input type="checkbox"/> Administer analgesia
HR	120			
SpO ₂	100% 15l NRB			
BP/ART	80/50mmHg			
RR	28			
Temp	35.6			
BGL	7			
GCS	14			

STATE 3: MANAGEMENT				
Vital signs		Script	Details	Expected actions
ECG	ST	Ben "I still have pain but it feels a little better since the thing on my hips was put on..."	<i>If pelvic binder applied and fluid resuscitation commenced patient - haemodynamics improve.</i> <i>If no pelvic binder or fluid resuscitation initiated - haemodynamic parameters worsen.</i>	Assessment <input type="checkbox"/> Repeat primary survey Management <input type="checkbox"/> CTA abdo/pelvis with improvement in haemodynamic status for IR OR <input type="checkbox"/> OT if remains unstable Referral to surgical/ortho team for ongoing operative management.
HR	100			
SpO ₂	100% 15L NRB			
BP/ART	100/70mmHg			
RR	26			
Temp	35.6			
BGL	7			
GCS	14			

Debriefing guide

Scenario objectives

- The assessment of a transient responder trauma victim to identify a major pelvic injury.
- Apply external pelvic compressive device to aid haemorrhage management.
- Use of haemostatic resuscitation strategy.
- Demonstrate early targeted management.

Example questions

Exploring diagnosis

- Explain your thought process for the rapid assessment of haemodynamically unstable trauma patient for identification of life-threatening injuries.
- What clinical findings aided in the identification of bleeding source?
- Do the radiological investigations and EFAST help you identify the type of bleeding - arterial or venous?
- What clinical features aided the classification of shock state for this patient into mild/moderate/severe?
- What are the signs of associated urethral injury with a vertical sheer pelvic fracture?

Discussing management

- What was your priority to manage the haemodynamic instability?
- Why is binding the feet in internal rotation useful?
- What do the terms transient responder and non-responder mean in trauma?
- How does this affect your management decisions?
- What is a system for classification of pelvic fractures and how does this affect your management?
- Is interventional radiology available at your hospital? What processes need to occur to activate this service?
- How do you activate a massive transfusion/VHA guided resuscitation protocol?
- Are there challenges in placing an indwelling catheter in this patient?

Discussing teamwork / crisis resource management

- Calling for help early - did you have enough team members to simultaneously manage the patient?
- How do you prioritise the management to improve his haemodynamic state?
- Do you use a shared mental model as the team leader?

Key moments

- Rapid recognition of haemodynamic instability and assessment focused on identification of source of bleeding.
- Early application of pelvic binder with internal rotation of feet to aid haemorrhage control.
- Institution of haemostatic resuscitation.
- Decision making for disposition - CTA and IR vs OT.

Acronyms and abbreviations

Term	Definition
CTA	Computed tomography arterial
IR	Interventional radiology
OT	Operating theatre
VHA	Viscoelastic haemostatic assays
EFAST	Extended Focused Assessment with Sonography in Trauma
UA	Urinalysis
ECG	Electrocardiogram
NAD	No abnormality detected
ASIS	Anterior superior iliac spine

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