Queensland Trauma Education

ABDOMINAL TRAUMA

Blunt abdo and femoral trauma

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.

Developed by
Dr Fran Williamson, Emergency Staff Specialist – Metro North Hospitals and Health Service

Kimberly Ballinger, Simulation Educator - CSDS

Reviewed by
Angelka Opie, Nurse Educator – CSDS, MNHHS

Education Working Group, Queensland Trauma Clinical Network – Clinical Excellence Queensland

Queensland Trauma Education
Abdominal Trauma – Blunt abdo and femoral trauma: Immersive scenario – Facilitator resource kit
Version 1.0

Published by the State of Queensland (Clinical Skills Development Service), 2024

About this training resource kit

This resource kit provides healthcare workers with the knowledge and skills to assess and manage a patient with blunt abdominal trauma, long bone fracture and haemodynamic instability.

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:

- Demonstrate the effective assessment of a patient with blunt abdominal trauma.
- Apply CABCD approach with control of external haemorrhage.
- Recognise and effectively manage a patient who is hemodynamically unstable.

Facilitation guide

1. Facilitator to discuss the pre-simulation briefing and deliver the immersive scenario on blunt abdominal trauma.
2. Utilise the supporting documents to maximise the learning throughout immersive scenario.
3. Utilise the debriefing guide to evaluate participant performance and provide feedback.

Supporting resources (in Printable Resources)

1. EFAST: Splenorenal/LUQ: Positive.
2. EFAST: RUQ: Negative.
3. EFAST: Pelvis: Negative.
4. EFAST: Subxiphoid/cardiac: Negative.
5. Chest XRAY and Pelvic XRAY: NAD.
6. Right femoral Xray – mid-shaft femur fracture
7. Venous blood gas
8. ROTEM: Trauma induced coagulopathy (TIC)
9. Structured assessment in trauma infographic
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
    d. State 4
5. Debriefing guide

Immersive scenario

Type	Immersive scenario
Target audience	Emergency Department medical & nursing staff
Overview	26-year-old female restrained driver travelling at 60km/hr versus a telegraph pole. Initially entrapped and transported to ED complaining of diffuse abdominal pain with obvious seatbelt bruising to abdomen. Compound R femoral fracture with ongoing haemorrhage. Her haemodynamic state worsens, requiring application of tourniquet, initiation of fluid resuscitation, activation of MHP and definitive care.
Learning objectives	• Demonstrate the effective assessment of a patient with blunt abdominal trauma. • Apply CABCD approach with control of external haemorrhage. • Recognise and effectively manage a patient who is hemodynamically unstable.
Duration	45 minutes, including debrief.

Resource requirements

Physical resources

Room setup	Resus bay in emergency
Simulator/s	1 manikin – SimMan 3G/ ALS simulator
Simulator set up	• Street clothes lying supine • Cervical collar and pelvic binder insitu • Moulage: driver seatbelt bruising/abrasion to abdomen • Compound R femoral fracture, actively bleeding • HM 10L/min insitu
Clinical equipment	• Standard precautions PPE • Resus/trauma bay role identification stickers (if applicable to local area) • Standard resus bay equipment: monitors, resus trolley, infusion pumps, blood warmers • Fluids/blood products: Sodium Chloride 0.9%, Hartmann's, Packed red blood cells/blood components • Medications: IV analgesia, Tranexamic Acid 1g • Pelvic binder, vac splint to R femur, tourniquet
Access	2 x PIVC setups. • 16G cannula L) ACF with empty Sodium Chloride 0.9% 250mL bag • No IV sticker attached to R) arm.
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	1 for manikin set up and control of simulator
Confederates	Junior nurse and optional ambulance officer for handover
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 Anna. Anna is 26 years old and is the driver of a single occupant RTC about 2 hours ago. She states she swerved to avoid a dog at 60km/hr in the street and crashed into a telegraph pole snapping it in half. She was encapsulated until the Fire Service could remove her door. She was wearing a seatbelt and the airbags deployed. She has always been GCS 15, alert and complaining of pain in her abdomen and R leg. Her heart rate was initially within normal limits, but during the trip to hospital she became more tachycardic and her vital signs are now: HR 120, BP 110/80, saturations 100% 10L HM and respiratory rate 22. She is afebrile and her BSL is 7.

We have placed a 16G cannula in her L ACF and given her 10mg IV morphine in total, 8mg IV ondansetron and 250mL N/Saline IV. She has a cervical collar for mechanism but had no neurological deficits or neck pain. We have put a dressing on the R leg wound and placed it in a splint.

She has no known past medical history and no known allergies.

Thank you for continuing her care.

Scenario progression

STATE 1: INITIAL ASSESSMENT				
Vital signs		**Script**	**Details**	**Expected actions**
ECG	ST	**Anna** Can I have more pain killers, my stomach hurts	**Primary survey results** A: intact, maintaining own B: equal breath sounds, no chest wall tenderness/crepitus or subcutaneous emphysema C: cool peripherally, pink, equal radial pulses. Active bleeding from femoral fracture. D: GCS 15, PEARL 3mm, nil neurological deficits E: temperature and BGL NAD	**Commence Primary Survey** ❑ Recognise the abnormality in circulation ❑ Gain further IV access ❑ Call for help – identify available resources relevant to local area **Management** ❑ Provide analgesia ❑ Direct control of haemorrhage and applies tourniquet to R femur
HR	120			
SpO_2	100%			
BP/ART	110/80			
RR	22			
Temp	36.5			
BGL	7			
GCS	15			

STATE 2: ONGOING MANAGEMENT / SECONDARY ASSESSMENT				
Vital signs		**Script**	**Details**	**Expected actions**
ECG	ST	**Anna** Continues to c/o pain, distressed *moaning* **Confederate** Points out seatbelt bruising to abdo (if not recognised)	• Worsening distress from pain if no analgesia given. • Increase tachycardia and hypotension if no recognition of circulatory compromise. **Secondary survey results** **Abdomen**: diffusely tender, seatbelt abrasion across abdomen, no wounds **Pelvis**: non-tender, bony margins aligned **Long bones**: R leg 5cm wound distal femur, bone on view, active haemorrhage **Log roll**: nil bony midline tenderness, no bruising/wounds, perianal sensation normal	**Secondary survey** ❑ Recognition of abdominal injury **Initiate Investigations** ❑ Blood tests: FBE, chem20, lipase, coags, blood group and hold/XMatch, ROTEM/TEG (if applicable) ❑ Bedside tests: UA, ECG, VBG, BHCG ❑ Imaging: CXR, pelvis Xray and EFAST. Can consider R femoral Xray. **Management** ❑ Commence fluid resuscitation ○ consider crystalloid bolus ❑ Discuss minimising crystalloid – plan for haemostatic resuscitation ❑ Wound management R femur
SpO_2	99%			
BP/ART	90/60			
RR	24			
Temp	36.5			
BGL	7			
GCS	15			

<table>
<tr><th colspan="4">STATE 3: ONGOING DETERIORATION</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">Anna
What’s going on… I am in so much pain, can you help me? *Moaning*.</td><td rowspan="9">Progression of hypotension and circulatory collapse despite fluid and haemostatic resuscitation

Results

EFAST: positive free fluid in splenorenal angle</td><td rowspan="9">Assessment
❑ Worsening circulatory collapse SBP<90

Investigations
❑ Positive EFAST for free fluid

Management
❑ Commence Haemostatic resuscitation
○ Commence PRBC
○ Administer Tranexamic Acid 1g
❑ Activate Massive Haemorrhage Protocol OR give blood products as per local guidelines
❑ Referral for Surgical management or consult RSQ for retrieval</td></tr>
<tr><td>HR</td><td>120</td></tr>
<tr><td>SpO_2</td><td>99%</td></tr>
<tr><td>BP/ART</td><td>70/40</td></tr>
<tr><td>RR</td><td>28</td></tr>
<tr><td>Temp</td><td>36.3</td></tr>
<tr><td>BGL</td><td>7</td></tr>
<tr><td>GCS</td><td>14</td></tr>
<tr><td></td><td></td></tr>
</table>

STATE 4: DEFINITIVE CARE				
Vital signs		**Script**	**Details**	**Expected actions**
ECG	ST		***Discussion with surgeon for operative management*** **Options for Senior participants:** • Push back from surgical team for OT >1hr to table • Interpretation of ROTEM/TEG	**Management:** ❑ Use of TEG/ROTEM for guided haemostatic resuscitation
HR	120			
SpO_2	99%			
BP/ART	70/40			
RR	28			
Temp	36.5			
BGL	7			
GCS	14			

Debriefing guide

Scenario objectives

- Demonstrate the effective assessment of a patient with blunt abdominal trauma.
- Apply CABCD approach with control of external haemorrhage.
- Recognise and effectively manage a patient who is hemodynamically unstable.

Example questions

Exploring diagnosis

- What role does an EFAST play in the assessment of blunt trauma?
- When should an EFAST be performed?
- What is a 'positive' EFAST?
- (Have you seen a DPA/DPL performed?)
- Do you always need a CT scan to confirm the injury profile?
- What blood tests are useful for diagnosis of injury in blunt trauma cases?
- What constitutes a Massive Haemorrhage Protocol (MHP)?
- How do you activate a Massive Haemorrhage Protocol in your facility?
- What end points do you use to determine the massive transfusion?
- What is a ROTEM/TEG?
- How do you interpret the ROTEM/TEG?

Discussing management

- How would you approach this scenario in your department?
- Are there any protocols or guidelines to seek urgent help?
- What are your strategies if you encounter a difference of opinion from the surgical team?

Key moments

- Recognition and response to hypotension in trauma
- Utilisation of bedside investigations to identify bleeding source
- Early referral to surgical team or retrievals/tertiary facility for definitive care
- Use of adjunct investigations to provide haemostatic resuscitation for critically bleeding trauma patient

Acronyms and abbreviations

Term	Definition
MHP	Massive haemorrhage protocol
PRBC	Packed red blood cells
OT	Operating theatre
EFAST	Extended focussed assessment with sonography in trauma
VBG	Venous blood gas
UA	Urinalysis
ECG	Electrocardiogram
CXR	Chest Xray
FBE	Full blood examination
NAD	Nil abnormalities detected
BHCG	Beta human chorionic gonadotropin
LUQ/RUQ	Left/right upper quadrant
ED	Emergency Department
PPE	Personal protective equipment
PIVC	Peripheral intravenous cannula
ACF	Antecubital fossa
RTC	Road traffic collision
BGL	Blood glucose level
PEARL	Pupils equal and reactive to light
RSQ	Retrieval Services Queensland
SBP	Systolic blood pressure
DPA/DPL	Diagnostic peritoneal aspiration/lavage
CT	Computed tomography
ROTEM/TEG	Rotational thromboelastometry/thromboelastography

Share your feedback

Please complete our survey to help make Queensland Trauma Education better

The survey should take no more than 5 minutes to complete.

Scan the QR code or visit:
Evaluation Form - Clinical Skills Development Service (csds.qld.edu.au)

Queensland Trauma Education

Queensland Trauma Education
Abdominal Trauma – Blunt abdo and femoral trauma: Immersive scenario – Facilitator resource kit

Published by the State of Queensland (Clinical Skills Development Service), 2024

Visit csds.qld.edu.au/qte
Email CSDS-Admin@health.qld.gov.au

Queensland Government