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All feedback and suggestions are welcome. Please forward to: Clinical.Guidelines@ambulance.qld.gov.au

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Hypovolaemic shock

Acute haemorrhage, secondary to trauma, is the major cause of hypovolaemic shock. However, non-haemorrhagic causes of hypovolaemic shock must also be considered, that is, gastro-intestinal (GI) losses, environmental exposure and neglect.

Blood loss can be ‘hidden’ and not immediately apparent, for example pelvic injury, ruptured ectopic pregnancy, GI haemorrhage or intracranial bleeding in small children.

Awareness of the clinical features of shock is of paramount importance, as early recognition of hypovolaemia can be life-saving. Assessment of volume status extends beyond the vital signs and requires a comprehensive review of the patient. ‘Treat the patient, not the vital signs.’[1]

The pre-hospital measurement of external blood loss is inherently inaccurate,[2,3,4] however an indicative estimate must be recorded on the eARF to aid patient care considerations.

Clinical features

<table>
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<tr>
<th>Blood loss</th>
<th>Signs</th>
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| 15% (750 mL in 70 kg) | - Minimal or no tachycardiac response  
- Blood pressure changes do not usually occur |
| 15–30% (750 mL–1500 mL) | - Tachycardia  
- Hypotension  
- Peripheral hypoperfusion  
- ALOC |
| > 40% (> 2 L) | - Haemodynamic compensation at its limit  
- Decompensation imminent  
- ALOC |

Other clinical features

- CVS:
  - pale, cool peripheries, with or without being clammy
  - tachycardia > 100 bpm or bradycardia < 60 bpm
  - decreased pulses peripherally
  - capillary refill > 3 seconds
  - SBP < 100 mmHg

  **NOTE:** Older people may not be tachycardic. Fit/young patients may have normal vital signs and yet be very volume depleted.[3]

- NEURO:
  - ALOC
    - initially quiet with decreased alertness
    - confusion/agitation
    - obtundation (mental blunting)

  **NOTE:** Be cautious interpreting ALOC as being due to substance misuse or alcohol.

Hypotension in trauma patients may not be secondary to haemorrhage – consider other causes (e.g. obstructive shock (tension pneumothorax tamponade), spinal cord injuries, or toxins.)
Note: Clinicians are only to perform procedures for which they have received specific training and authorisation by the QAS.
Limb injury

Limb injuries can be very painful and visually distressing for a patient. As such, they can distract the patient and the clinician from more serious injuries in a multitrauma situation. Gaining a good history of the event to assess the mechanism of injury, and completing a thorough primary and secondary survey are always essential.

Clinical features

A fracture should be suspected if one or more of the following are present:

- Pain
- Swelling
- Bruising
- Loss of function
- Deformity
- Bony crepitus

Where communication is difficult (e.g. young children or dementia patients) the reluctance to move a limb may be the only sign of a fracture.

**NOTE:** soft tissue injuries can include all but the latter two presentations.

Suspect neurovascular damage if there is poor distal perfusion, or reduced distal sensation or movement.

Risk assessment

- Appropriate analgesia is very important.
- Procedural sedation (ketamine) may be required when managing complicated injuries (e.g. grossly displaced open fractures with compromised vascular supply).[
- Limb immobilisation should generally be in near-anatomical position.
**CPG: Clinician safety**
**CPG: Standard cares**

**Transport to hospital**
Pre-notify as appropriate

**Consider:**
- Analgesia
- Positioning
- Immobilisation

**Patient shocked?**

**Y**

**Consider:**
- Traction and splinting
- Analgesia

**N**

**Limb poorly perfused?**

**Y**

**Consider:**
- IV access
- IV fluid
- Analgesia
- Positioning
- Fracture reduction
- Traction splinting

**N**

**Note 1:** Clinicians are only to perform procedures for which they have received specific training and authorisation by the QAS.

**Note 2:** Open wounds/fractures should be washed out with 1–2 litres of normal saline following adequate analgesia.

**Note 3:** Crush injuries to limbs should be treated as per CPG: Crush Injury.