# H07: Abdominal Trauma

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## Introduction

Abdominal trauma is one of the major causes of preventable death. Whether blunt or penetrating, the possibility of intra-abdominal injury must be recognized and treated in a timely fashion.

All types of abdominal trauma carry the risk of significant hemorrhage and infection. Blunt abdominal trauma carries a mortality rate of up to 30% and can prove challenging to assess in the out-of-hospital environment. Penetrating trauma is easier to identify, is more often a true surgical emergency, and has a lower mortality rate than blunt trauma.

For both blunt and penetrating abdominal injury, the mainstays of treatment are virtually the same: rapid recognition and rapid conveyance, gentle patient handling, minimal crystalloid fluids to maintain vital organ perfusion, and early administration of tranexamic acid.

## Essentials

- Abdominal distension is often a late sign and is indicative of severe intra-abdominal bleeding.
- Penetrating trauma from the nipple line to the umbilicus may result in both chest and abdominal injuries.
- Early TXA administration for suspected intra-abdominal bleeding is associated with decreased mortality rates.
- Aggressive fluid resuscitation in abdominal trauma is associated with higher mortality rates. Titrate fluid administration to achieve normal mentation, peripheral pulses, or a systolic blood pressure of 80-90 mmHg.

## Additional Treatment Information

- Retroperitoneal hemorrhage, often from damage to the kidneys or their supplying vasculature, may be difficult to detect and can produce life-threatening blood loss.
- Eviscerated contents should be covered with moist, sterile dressings with an occlusive layer above.
- Blunt trauma to the abdomen is frequently associated with concurrent pelvic injury.

## Referral Information

- Triage according to the Pre-hospital Triage and Transport Guidelines for Adult and Pediatric Major Trauma decision tool, including Physiological Criteria, Anatomical Criteria, Mechanism of Injury Criteria, and Special Considerations.
- All patients with abdominal trauma should be conveyed to the closest appropriate trauma receiving hospital as per local trauma destination guidelines or clinical pathway.

## General Information

- The most common causes of intra-abdominal injuries are motor vehicle collisions followed by stabbing and gunshot wounds.
- Paramedics and EMRs/FRs should pay particular attention to visual clues on inspection prior to palpating. The 'seat belt sign' is a large bruise or abrasion across the lower abdomen and is associated with significant hemorrhage in 25% of patients. Periumbilical bruising, or Cullen's sign, is a late sign indicative of a retroperitoneal hemorrhage. A 'scaphoid' or sunken appearance to the abdomen may indicate diaphragmatic rupture.
- On physical exam, tenderness or rigidity is often a sign of blood or digestive contents in the abdomen resulting in irritation to the peritoneum. Fractures to the lower ribs may suggest splenic or hepatic injuries. Splenic injury often presents with referred pain to the left posterior shoulder while hepatic injuries refer pain to the right posterior shoulder.
- Auscultation of the abdomen in the out-of-hospital trauma setting rarely yields pertinent information.
- Administration of excessive crystalloid fluids has been shown to increase mortality due to hemorrhage and to

increase the risk of secondary abdominal compartment syndrome. When intra-abdominal hemorrhage is suspected or likely based on mechanism of injury or physical exam, crystalloid fluids should only be given when absolutely necessary to restore perfusion to vital organs.

- The application of abdominal junctional tourniquets has been shown to reduce mortality in patients with large vessel hemorrhage of the abdomen and pelvis. In some studies, the benefits of junctional tourniquet application were similar to those achieved through resuscitative endovascular balloon occlusion of the aorta.
- Out-of-hospital use of 'Focused Assessment with Sonography in Trauma' (FAST) has demonstrated a benefit in the early detection of abdominal trauma in both blunt and penetrating injuries. However, while a positive FAST is highly specific for intra-abdominal bleeding, a negative FAST by itself should not be used to rule out injury or hemorrhage.

## Interventions

### First Responder

- Control external hemorrhage
- Limit patient movement to reduce clot disruption
- Protect against heat loss: foil blanket against the skin; cover with blankets for insulation; consider chemical heating blanket
- Cover extruded bowel or eviscerated abdominal contents with moist, sterile dressings followed by an occlusive layer
- Consider application of T-POD pelvic binder if evidence suggests concurrent pelvic injury
  - → PR02: Pelvic Binders
- Correct hypoxemia from diaphragmatic or concurrent thoracic injury
  - → A07: Oxygen Administration
  - → B01: Airway Management

### Emergency Medical Responder – All FR interventions, plus:

- Initiate conveyance; consider intercept with additional resources

### Primary Care Paramedic – All FR and EMR interventions, plus:

- Obtain vascular access and correct hypoperfusion
  - → D03: Vascular Access
- Consider tranexamic acid

### Advanced Care Paramedic – All FR, EMR, and PCP interventions, plus:

- Correct hypoxemia from diaphragmatic or concurrent thoracic injury
- Needle thoracentesis as needed for suspected tension pneumothorax
  - → PR21: Needle Thoracentesis

## Evidence Based Practice

Abdominal Trauma

**Supportive**

**Neutral**

- Direct Pressure

**Against**

Pelvic Trauma

**Supportive**

- Circumfrential Sheet
- Corsette Style Compression Device (e.g. T-Pod)
- External Mechanical Compression Device

**Neutral**

- MAST

**Against**

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