

H06: Chest Trauma

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Updated: November 28, 2023

Reviewed: March 01, 2021

Introduction

Management of chest injuries represents a challenge in out-of-hospital care. Common chest trauma injuries seen by paramedics and EMRs/FRs include rib fractures, flail chest, simple pneumothorax, hemothorax, open pneumothorax and tension pneumothorax. Paramedics and EMRs/FRs must maintain a high index of suspicion for underlying life-threatening injuries as many patients may present with initially stable vital signs.

Essentials

- Closely monitor all patients with chest trauma for signs of deterioration, with particular attention to respiratory status. Be prepared to support oxygenation and ventilation as necessary.
- Be suspicious of the potential for underlying torso injuries in cases of high mechanisms. Injuries to the great vessels, diaphragm, abdominal organs, and the myocardium can occur.
- Differentiate between blunt and penetrating mechanisms of injury.
- For open chest wounds, utilize a commercial vented chest seal (preferred) or leave open. If bleeding control necessary, gauze may be used.

Additional Treatment Information

- Sealing of open chest wounds may place patients at risk for a tension pneumothorax.
- Monitor these patients closely and relieve pressure by lifting the chest seal or occlusive dressing if a tension pneumothorax may be developing.
- Entonox is contraindicated in patients with a suspected pneumothorax or inhalation injury.
- Decompression of a suspected tension pneumothorax should be rapidly performed in patients with deteriorating respiratory and hemodynamic status (ACP/CCP).
- Positive pressure ventilation may worsen clinical status in patients with an untreated tension pneumothorax.

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 chest trauma should be conveyed to the closest appropriate trauma receiving hospital as per local trauma destination guidelines or clinical pathway.

General Information

- Palpation of the chest wall, axilla and neck can be helpful in feeling for the presence of subcutaneous emphysema.
- CPAP is contraindicated in patients with a suspected pneumothorax.

Interventions

First Responder

- Position patient sitting if other injuries permit
- Perform basic airway interventions and be prepared to provide ventilatory support as needed
 - → [B01: Airway Management](#)
- Administer high flow oxygen

- → [A07: Oxygen Administration](#)
- Cover open chest wounds with three-sided occlusive dressing

Emergency Medical Responder – All FR interventions, plus:

- Initiate conveyance; consider intercept with additional resources
- Apply chest seal to open chest wounds

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

- Insert supraglottic airway as indicated to support oxygenation and ventilation
 - → [PR08: Supraglottic Airways](#)
- Consider vascular access
 - → [D03: Vascular Access](#)
- [Tranexamic acid](#) if indicated

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

- Perform needle decompression in signs of decompensating obstructive shock secondary to a suspected tension pneumothorax
 - → [PR21: Needle Thoracentesis](#)
- Consider advanced airway management as necessary to support oxygenation and ventilation in deteriorating patients
 - → [PR18: Anesthesia Induction](#)
- Manage cardiac dysrhythmias associated with myocardial injury as indicated
 - → [C02: Bradycardia](#)
 - → [C03: Narrow Complex Tachycardia](#)
 - → [C04: Wide Complex Tachycardia](#)
- Administer analgesia as necessary
 - → [E08: Pain Management](#)

Critical Care Paramedic – All FR, EMR, PCP, and ACP interventions, plus:

- Perform ultrasound assessment for pneumothorax
 - Consider [Turkel](#) insertion
- Consider rapid sequence intubation for patients requiring oxygenation and ventilator support
- Secure and manage chest drainage system in the interfacility transfer environment as necessary

Evidence Based Practice

Chest Trauma

Supportive

- [Chest Tube \(CCT\)](#)
- [Ultrasound](#)
- [Needle Decompression](#)

Neutral

Against

References

1. Ambulance Victoria. Clinical Practice Guidelines: Ambulance and MICA Paramedics. 2018. [\[Link\]](#)
2. Alberta Health Services. AHS Medical Control Protocols. 2020. [\[Link\]](#)
3. Campbell JE, et al. International trauma life support for emergency care providers. 8th edition. 2016.
4. Greaves I, et al. The trauma care pre-hospital manual. 2018.

