Clinical Practice Guideline

THORACIC TRAUMA (STABLE)
Age ≥ 16 years

CT chest
Include assessment of aortic arch as indicated based upon mechanism of injury or trauma imaging guidelines

Stable

Unstable
see Thoracic Trauma (Unstable)

- Respiratory instability (hypoxemia [O_2 saturation <90%, PaO_2/FO_2 <200], tachypnea, hypercapnia, respiratory distress) **or**
- Hemodynamic instability (heart rate >100, SBP <90 mmHg) **or**
- 1.5 L immediate chest tube drainage

Stop here if CT is unavailable on site and indicated contact PTN for management disposition

Flail chest*

1. Admit to monitored care unit
2. Supportive care
3. **Rib Fracture Pain Management Strategy**
4. Consider BiPAP or intubation for hypoxemia
5. Consult Trauma/Thoracics for chest trauma care (including rib fixation)

If Trauma/Thoracics unavailable on site, contact **PTN** for management & disposition

Multiple rib fractures

Initiate Rib Fractures Pain Management Strategy

Rib Fracture Grade 6 or less**

- Decreased level of consciousness/confusion (GCS ≤14), **or**
- Inadequate pain control (unable to cough or deep breathe), **or**
- Respiratory rate >25, or
- SPO2 <90% on room air?

Yes → Acute Pain Service/ Anaesthesia consult; Respiratory therapy assessment (vital capacity monitoring); Baseline arterial gas; Physiotherapy referral

No → Is patient otherwise fit for discharge?

No → Acute Pain Service/ Anaesthesia consult; Respiratory therapy assessment (vital capacity monitoring); Baseline arterial gas; Physiotherapy referral

Yes →

- Deep breathing & coughing exercises and incentive spirometry hourly when patient is awake
- Follow **Rib Fracture Pain Management strategy**
- Activity:
  - C-spine precautions: turn at least 30 degrees every 2 hours
  - C-spine clear: Activity as injuries allow

Rib Fracture Grade 7 or higher**

- Acute Pain Service/ Anaesthesia consult
- Respiratory therapy assessment (vital capacity monitoring)
- Baseline arterial gas
- Physiotherapy referral

Does the patient's needs exceed resources at your facility?

No → Admit to monitored care unit

Yes → Arrange for transport to higher level of care via **PTN**

Legend

- Assessment
- Action
- Diagnosis
- Teleconsult

Abbreviations

BIPAP — Bilevel positive airway pressure
GCS — Glasgow coma scale
OR — Operating room
PTN — Patient Transfer Network

Definition

***Flail chest** is the paradoxical movement of a segment of chest wall caused by fractures of three or more ribs anteriorly and posteriorly within each rib, which can affect respiratory function. The actual motion of the flail segment is usually limited by the surrounding structural components, the intercostals, and the surrounding musculature. Underlying cardiopulmonary disease and injury contributes to the actual physiologic perturbations to respiration caused by the flail segment.

**Rib Fracture Grade Calculation

Step one: Determine number of sides
Unilateral = **1**
Bilateral = **2**

Step two: Determine number of fractures

Step three: Determine Age Score
0 = <50 years
1 = 51–60 years
2 = 61–70 years
3 = 71–80 years
4 = >80 years

Step four: Calculate Rib Fracture Grade

(# of rib fractures x # of sides)
+ Age Score

Rib Fracture Grade

Easter A. Management of patients with multiple rib fractures. Am J of Critical Care. 2001;10:320–9.

May L, Hillermann C, Patil S. Rib fracture management. BJA Education. 2016 Jan 1;16(1):26–32.

Ziegler DW, Agarwal NN. The morbidity and mortality of rib fractures. J Trauma. 1994;37:965–979.