Rib Fracture Management: Inpatient Guideline

POPULATION: All patients with traumatic rib fracture
PURPOSE: To improve clinical outcomes for patients with rib fractures

Care Guidelines

- Perform initial assessment and resuscitation
- Initiate O2 to maintain O2 saturation ≥ 92% [A]
- Obtain chest X-ray (CXR) or CT scan of chest per injury pattern
- Obtain baseline EKG [C]
- Document initial pain score and re-assess and document every 4 hours
- Instruct patient on use of incentive spirometry (IS) and document initial vital capacity.
- Initiate pain management interventions based on pain score assessment and IS volume (Table 2) [B]
- Consider pain management consultation for insertion of continuous catheter intercostal nerve block (CCICNB) (Table 4)
- If inserted monitor for any signs of infection or pain at continuous catheter intercostal nerve block (CCICNB) sites; sign of toxicity every 4 hours [B]
- Initiate cough and deep breathing exercises and IS every 2 hrs
- Admit to clinical unit based on algorithm (Table 1)
- Assist with splinting; utilize pillow
- Supervise use of incentive spirometry q 8hrs and document vital capacity; encourage patient use of incentive spiromtery every 2 hrs.
- Initiate chest physiotherapy every 2-4 hours
- Initiate inhaler/nebulized respiratory treatment as indicated (albuterol, morphine nebs, etc.)
- Early mobilization
- Obtain F/U CXR within 24 hours or with any change in status
- If febrile obtain order for CXR, CBC, sputum culture and blood cultures x 2
- Perform O2 determination study on day of discharge if patient requires supplemental oxygen at home
- Pneumococcal vaccination assessment on admission [B]
- Consider non-invasive positive pressure ventilation (NIPPV) if indicated
- Consider admission to higher level of care in patients with severe pulmonary disease.

Referral Guidelines

- Consult trauma surgeon for early evaluation
- Consult for CCICNB pain pump insertion (Table 3)
- Consult physical therapy for early ambulation
- Consult Home Health Care (HHC) for pulmonary assessment and/or CCICNB management
- Consult respiratory therapy for pulmonary management
- Out-patient Smoking Cessation Program (302) 765-4161

Key Educational Issues To Address

1. Handout Care Note: Incentive Spirometer
2. Handout Care Note: Rib Fractures
3. Handout Care Note: On-Q® Pain Relief System for Chest Trauma
4. Review with family “A Guide for Family and Friends of Trauma Patients”

Discharge Criteria

Discharge to home/outpatient rehab/subacute/extended care facility when:
- Respiratory status stable, pulse oximetry consistently ≥ 92% on room air or with supplemental oxygen
- No signs of pulmonary infection/pneumonia
- HHC nurse set up for pulmonary assessment

Key Outcomes

1. Identify clinical deterioration (i.e. decreased IS volume/lung capacity, opioid side effects, somnolence)
2. Pain tolerance at acceptable level
3. Decrease unexpected transfer to higher level of care
4. Decrease incidence of pneumonia
5. Decrease length of stay

This guideline is to assist caregivers in the management of routine patients and should be modified for patient specific clinical indications.
• For severe pain: Medications: PCA or IV prn morphine sulfate or hydromorphone, ketorolac, acetaminophen, gabapentin, muscle relaxant; Epidural nerve Block or CCICNB pain pump; May require rib stabilization
• For moderate pain: Medications: PCA, IV or po prn morphine sulfate, hydromorphone, ketorolac, acetaminophen, gabapentin, muscle relaxants, CCICNB, pain pump
• For mild pain: oral medications: oxycodone, acetaminophen, gabapentin, ibuprofen, muscle relaxants (See Table 4 for IV or po conversions)

Consider IV medications if: incentive spirometry less than 50% of predicted IS, increase in pain score, O2 saturation < 92%, increased atelectasis on CXR, chest tube, and/or persistent tachycardia.

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**CCHS Strength of Recommendation**
- A = Good evidence to support the recommendation.
- B = Fair evidence to support the recommendation.
- C = Insufficient evidence to recommend for or against but recommendation is made on other grounds.

**Table 4: Consideration for Continuous Catheter Intercostal Nerve Block (CCICNB) or insertion of Epidural Catheter Criteria:**

a. Patients with > 4 rib fractures in any group
b. Patients with flail chest
c. Patients who pain is not well controlled on escalating narcotic regime
d. Patients with multiple comorbidities or with underlying cardiopulmonary disease

- Insertion of an epidural catheter is contraindicated in patients with spine fractures, spinal hematomas and/or coagulopathy
- The presence of chest wall hematoma and/or subcutaneous air are relative contraindications for CCICNB

**Table 5: Consideration for Rib plating Criteria**

a. Patients with flail chest with/without failure to wean from the ventilator
b. Patients with significantly displaced rib fractures with/without lung impalement
c. Patients with multiple, movable rib fractures refractory to pain management strategies

**References**


Brown, Sherre and Walters, M. Patients with Rib Fractures. *Society of Trauma Nurses* 2012.


Winters, Blaine. Older Adults with Traumatic Rib Fractures: An Evidence-Based Approach to Their Care. *Journal of Trauma Nursing*, Vol 16(2), 2009, pp 93-97

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