Guidelines for North Bristol Trust

NBT Guidelines for the Management of Patients with Fractured Ribs

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Related guidelines:	
Further information:	
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Aims:

GUIDELINES FOR THE ANALGESIC MANAGEMENT OF PATIENTS WITH CHEST INJURIES INCLUDING FRACTURED RIBS

Chest injuries are a common occurrence following minor and major trauma. They are associated with pulmonary and cardiac complications, with certain patients being at particularly high risk. Appropriate analgesic management of these patients will reduce the rate of complications. This management will include the following components:

- **High risk** patient identification
- **Assessment** of injury
- **Multidisciplinary** team input
- **Regular monitoring** – physiological markers and pain scores
- **Analgesia** strategy appropriate to patient and injury

High risk patient identification

Certain patient groups are associated with a higher rate of complications within the first 24 to 48 hours following injury[1]. Early identification will guide management: reducing complications.

High risk patient factors[2,3,4]

- Age over 60
- Smokers and/ or chronic respiratory disease
- Obesity or malnourished
- Reduced oxygen saturations, requiring therapy post injury
- Pre-injury anticoagulation
- Major trauma: Notably head injuries, abdominal injuries, fractures of the pelvis and multiple limb fractures.
- Multiple ribs fractured (> 2), flail segment, pulmonary contusion or other chest injuries.

Assessment of injury

The assessment of injury will be guided by the mechanism of injury; the patients pre-injury medical conditions; any high risk patient factors.

Multidisciplinary team input

Patients with two or more high risk factors and/or requiring more than “simple” analgesia management should be referred to:

- In-patient respiratory physiotherapy Bleep **1395** or **9552.**
- Acute pain service Bleeps **1509** or **9670** (07:30 to 17:30). Out of hours anaesthetics on call Bleep 9032.

In the elderly population it may be appropriate to involve a care of the elderly specialist team.
Intensive care referral should be considered in those with significant injuries and multiple risk factors.

[1] Alexander JQ *et al*: Blunt chest trauma in the elderly patient: How cardiopulmonary disease affects outcome. *Am Surg* 2000, **66**:854–857.
[2] Battle CE, Hutchings H, Evans PA: Risk factors that predict mortality in patients with blunt chest wall trauma: A systematic review and meta-analysis. *Injury* 2012, **43**:8–17.
[3] Battle CE, Hutchings H, Evans PA: Expert opinion of the risk factors for morbidity and mortality in blunt chest wall trauma: Results of a national postal survey of Emergency Departments in the United Kingdom. *Injury* 2013, **44**:56–59.
[4] Battle et al. Predicting outcomes after blunt chest wall trauma: development and external validation of a new prognostic model. *Critical Care* 2014, **18**:R98 available at http://ccforum.com/content/18/3/R98 *accessed Jan 2014*

Regular monitoring

In addition to routine observations, the following should be recorded.

- Regular pain and sedation scores
- Pulse oximetry
- Oxygen therapy required
- Respiratory rate

Analgesia

Analgesia should be instituted as soon as possible after injury. It must be adequate to allow the patient to take deep breaths and cough. The pain score should be less than "2" on a "0" to "3" Verbal Rating Scale (VRS) (0=None, 1=Mild, 2=Moderate, 3=Severe).

1. Simple

2 or less undisplaced fractures and no "high risk" factors.

Oral Paracetamol 1g 6 hourly

Oral Ibuprofen 400mg 8 hourly (Naproxen second line)*****

Oral Codeine phosphate 60mg 6 hourly PRN

* NSAIDs caution in those with risk of renal impairment, recurrent peptic ulceration or Aspirin sensitive asthma. Consider oral Tramadol** 50-100mg, 4-6 hourly.

** Tramadol should be avoided in patients with epilepsy or those taking MAOIs.

2. Moderate - severe

"High risk" factors, pain scores greater than "2" or ability to cough is seriously impaired by pain:

As per "**Simple",** excluding codeine.

Patient controlled analgesia (PCA) – available from Medi-rooms, Level2, Gate 20. Ext 48207 or 48206.

3. Severe

"High risk" factors, multiple rib fractures/ significant injury and unable to cough or comply with physiotherapy.

As per "**Moderate - severe"**

PCA or Thoracic epidural with Bupivacaine +/- opiate

Patients requiring epidurals should be discussed with the acute pain service or the anaesthetic on call team if out of hours Bleep 9030 (9034 out of hours). These should be inserted in medi-rooms, theatres or another appropriate clean area where there are the facilities and staff to look after them until they are stable enough to return to the ward. The insertion should ideally be performed within 6 hours of injury where appropriate. Epidural policy here.

Additional notes

- Aim for a VRS pain score of less than “3” to enable deep breathing and coughing.
- Additional analgesic therapies, (e.g. Ketamine infusions, Lignocaine patches, paravertebral blocks etc.) should be guided by the acute pain service, or anaesthetic on-call team out of hours.
- In patients receiving opiates consider:
    - Antiemetics
    - Laxatives (to reduce abdominal distension and aid breathing)