**Clinical Guideline Template**

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| **University Hospitals Coventry & Warwickshire NHS Trust**Clinical Guideline (full) |
| **ACUTE PAIN MANAGEMENT FOLLOWING RIB FRACTURES** |
| E-Library Reference | CG |
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| Version: | 4 |
| Approving forum (QIPS or equivalent): | Major Trauma Governance |
| Specialty Clinical Guideline Lead: | Dr Wyse - Major Trauma Lead |
| Contributing Author(s) and reviewer(s): | Sue Millerchip – Lead Nurse Acute Pain |
| Department(s) / Primary Speciality: | Anaesthetic / Trauma & Orthopaedics |
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| Approval Date: |  |
| Expiry Date: |  |
| Target Audience: |  |
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| Superseded UHCW Clinical Guideline(s):(if applicable) | CG 1770 |
| UHCW Associated Records: |  |
| Keywords: | Rib fracture, analgesia |
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| Clinical Operating Procedures relating to this guidance (please list) |  |
| Summary version available |  |

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| **Guideline clinical content**Clinical Guidelines assist in decision-making; they do not replace clinical judgement. Regardless of the strength of evidence, it remains the responsibility of the clinician to interpret the application of the clinical guidance to local circumstances and the needs and wishes of the individual patient. Where variations of any kind do occur, it is important to document the variations and the reason for them in the patient’s health record. If in doubt, seek senior advice. |
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| **Introduction** This guideline has been developed to ensure appropriate acute pain management in patients admitted with multiple rib fractures and includes an algorithm detailing choice of drug, technique and information regarding referral for specialist advice. It is designed to optimise early acute pain management and prevent complications of under treated pain. This guidance also outlines the referral criteria for surgical fixation of multiple rib fracture patients |
| Text |
| **Summary** This guideline will apply to the management of acute pain in patients following multiple rib fractures, either alone or on conjunction with associated major trauma |
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| **Definitions** None |
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| **Guideline details** Rib fractures are common injuries. Whilst the pain from a single rib fracture is usually quite easy to control, the significant pain associated with multiple rib fractures is much more difficult to manage. Multiple rib fractures are also usually associated with other injuries. Severe acute pain following multiple rib fractures can lead to complications such as chest infection due to inability to deep breathe and cough, increased length of stay and, therefore, increased health care expenditure. Mortality can be directly correlated with the number of ribs fractured and patients sustaining four or more have been deemed at greater risk (1,2) .The use of multi-modal therapies for the management of rib fracture pain has become more common and include the use of oral and parenteral analgesics and regional anaesthetic techniques.6.1 The algorithm below details an evidence based acute pain management pathway \\netapp-ict\FldRedir$\millercs\Desktop\rib fracture algorithm 2 Nov 2016.jpg**Rib fracture fixation**:Modern rib fracture stabilization techniques have evolved from earlier forms of stabilization. Using the modern indications and techniques, there is some evidence that it can reduce pneumonia; chest deformity; tracheostomy; duration of mechanical ventilation; and length of ICU stay, when compared to non-operative treatment. In addition to its efficacy, there are no major safety concerns, and the National Institute for Health and Clinical Excellence have issued guidance supporting its use.**Indications for rib fracture fixation**Patients with severe chest wall injuries, including flail and / or multiple displaced rib fractures AND one or more of the following:* Respiratory compromise
* Pain control not achieved with medical management

**Imaging prior to stabilisation:**Patients being considered for stabilisation should have 3D reconstruction of their chest wall, ideally within 24hours of admission. The reporting radiologist can usually perform this from the initial trauma scan in the Emergency Department. This should be sought before referral, as long as it does not cause significant delays. **Where to refer the patient?** The acute pain team at UHCW can be contacted during normal working hours and they will assess the patient and contact the appropriate consultant. The surgeons undertaking rib fracture fixation are Mr Sunit Patil (ortho) and Mr Mateen Arastu (ortho), Miss Jane Ward (ortho) and Mr Martin-Ucar (cardio-thoracic). The surgeons will take it in turns to co-ordinate review and management of the patient.Out of hours the on call orthopaedic or cardiothoracic specialist registrar can be contacted. **When to refer the patient?**It is thought that early stabilisation of rib fractures reduces the rate of associated fracture complications. Therefore, early referral is advantageous. If a patient has a severe chest wall injury, an early referral to the pain team should be considered; even if the criteria for rib fracture stabilisation is not yet met.  |
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| .**Guideline Governance** |
| **Implementation**To be used in conjunction with CG 1961 – Physiotherapy Respiratory Management of Patients with Multiple Traumatic Rib Fractures |
| Text |
| **Training** The guideline will be disseminated to all users via the e library and the Central England Trauma Network. |
| Text |
| **Patient Information**Patient Information – Physiotherapy for Broken Ribs |
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| **Audit & Monitoring** |
| Aspect being monitored | Monitoring method | Responsible department(s) | Frequency  | Group / committee receiving report & responsible for actions |
| Compliance with guideline | Audit | Anaesthetic / trauma | Annual | Anaesthetic / T&O QIPs |
|  |  |  |  |  |
|  End of Governance content  |

**Guideline References**

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| **CEBIS Evidence Summary**NICE (2010) Insertion of metal rib reinforcements to stabilise a flail chest wall  |
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| **References cited in guideline** | Grade\* |
| Holcomb J et al (2003) Morbidity from rib fractures increases after age 45. American College of Surgeons. Vol 196, no 4 (April) | 3 |
| May L, Hillermann C, Patil S (2016) Rib fracture management BJA Education , Vol 16, Issue 1 Page 26 | 5 |
| Battle CE, Hutchings H, Evans PA (2012) Risk factors that predict mortality in patients with blunt chest wall trauma: A systematic review and meta-analysis.), Injury [Injury], ISSN: 1879-0267, 2012 Jan; Vol. 43 (1), pp. 8-17; PMID: 21256488 | 1 |
| Easter A ( 2001) Management of patients with multiple rib fractures. American Journal of Critical Care vol 10.5; proQuest Hospital Collection 320 - 326 | 5 |
| Carrier FM, Turgeon AF, Nicole PC, Trépanier CA, Fergusson DA, Thauvette D, Lessard MR. (2009) Effect of epidural analgesia in patients with traumatic rib fractures: a systematic review and meta-analysis of randomized controlled trials**.** Can J Anaesth. Mar;56(3):230-42. Epub 2009 Feb 11. | 1 |
| Mohta M, Verma P, Saxena AK, Sethi AK, Tyagi A, Girotra G.(2009) Prospective, randomized comparison of continuous thoracic epidural and thoracic paravertebral infusion in patients with unilateral multiple fractured ribs--a pilot study**.** J Trauma. Apr;66(4):1096-101 | 2 |
| Cataneo AJM, Cataneo DC, de Oliveira FHS, Arruda KA, El Dib R, de Oliveira Carvalho PE. Surgical versus nonsurgical interventions for flail chest. Cochrane Database of Systematic Reviews 2015, Issue 7. Art. No.: CD009919. | 1 |

**\*Grade:- The references are graded through the CEBIS process according to the criteria outlined below.**

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| **Grade of evidence** | **Based on** |
| **1** | Systematic review or meta-analysis |
| **2** | Randomised controlled trial/s |
| **3** | Controlled study without randomisation (e.g. case controlled) or quasi-experimental study, such as a cohort study |
| **4** | Descriptive studies such as case series and reports. |
| **5** | Expert opinion, narrative review |

**Add any Appendices below**