

Traumatic Chest Injury - Full Clinical Guideline - Burton Sites Only

Reference no.: CG-CLIN/3028/23

1. Introduction

The aim of this guideline is to ensure that any patient with a suspected traumatic chest injury is managed promptly and appropriately.

This covers both those sets of patients **attending** Burton Hospitals NHS Foundation Trust (the Trust) and those who may be admitted on a ward who begin to **develop** symptoms.

2. Aim and Purpose

To improve recognition, understanding of impacts, and appropriate treatment, of patients with chest wall trauma.

Significant mechanisms and frail patient outline

- The primary injury mechanisms in blunt chest wall trauma patients are road traffic collisions, sporting injuries and low velocity falls in those typically aged 65 years or more (e.g., falling from standing or down a flight of stairs)
- The blunt chest wall trauma patient commonly presents to the ED initially with no respiratory difficulties, but develops complications approximately 48-72 hours later; importantly these patients often do not display any signs or symptoms other than pain for up to two days.
- Patients aged 65 years or older with 3 or more rib fractures fall into the high-risk group; however local audit has demonstrated significant morbidity in younger patients with lesser injury.
- Blunt chest wall trauma accounts for over 20% of all trauma patients presenting to the Emergency Department in 2010 (TARN 2010)
- The true incidence of bony injury to the chest wall may be underreported as up to 50% of rib fractures are undetected on plain CXR.
- Reported mortality from blunt chest wall trauma is highly significant (up to 22% often due to delayed respiratory complications)
- Incidence of pulmonary complications is reported to be as high as 36% in isolated rib fracture patients aged 65 years or older and 20% in patients of all ages.
- The mean length of stay on ICU was reported to be 3.5 days in all patients with isolated blunt chest trauma.
- 35% of elderly patients (> 65 years) with isolated chest wall trauma required ICU care, 12 had a mean stay of 6.1 days on ICU and 12% required mechanical ventilation.
- The mean hospital length of stay in elderly patients with isolated chest wall trauma is reported to be 14 day.

(Adapted from Battle C, Hutchings H and Evans PA (2013) Blunt Chest Wall Trauma: a review; Trauma 15(2): 156-175)

Risk Factors for poor outcomes in blunt chest wall trauma

- Age 65 years or older
- Three or more ribs fractured
- High/Mid chest wall rib fractures
- Flail Segments
- Chronic lung disease
- Onset of pneumonia post-injury
- Oxygen saturation < 90% in ED on air on presentation
- PaO₂/FiO₂ ratio < 33 on admission [note: normal is 12kPa: 0.21 ~ 57]
- Body Mass Index > 25kg/m²

3. Definitions, Keywords

Blunt, Chest wall, Trauma, Traumatic, Rib/s, Fracture/s, Injury, Fall, Flail, Major trauma, Traumatic chest injury.

4. Guidelines

The guidelines at the Appendix 1 (Traumatic Chest Injury Guidance), Appendix 2 (STUMBL Score) and Appendix 3 (Multiple Rib Fracture Pain Management Algorithm) must be followed at **ALL** times.

Irrespective of the STUMBL score:

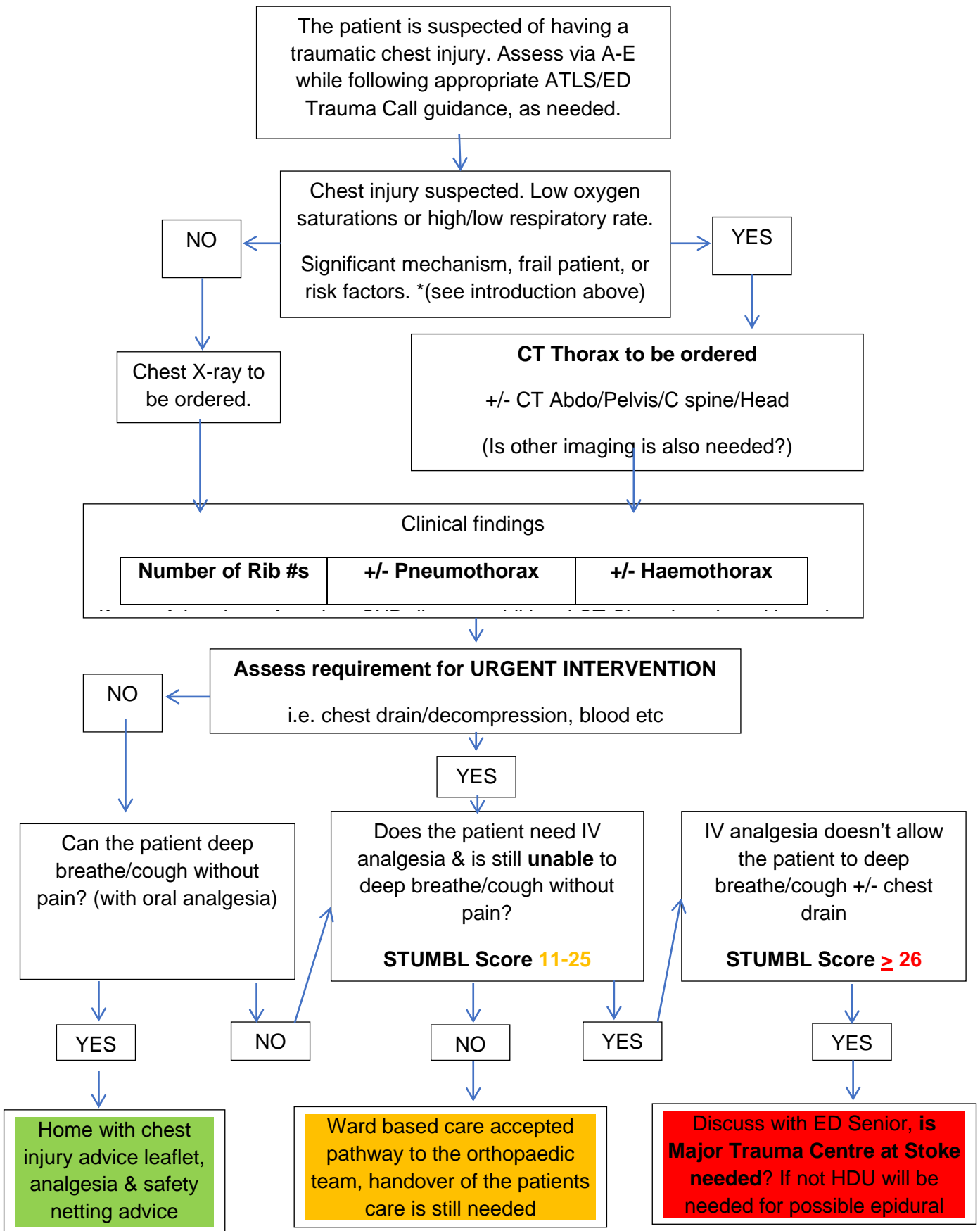
- All patients with a significantly altered GCS should go to ICU/HDU or are transferred to the Major Trauma Centre at Stoke after their trauma CT scan.
- All patients who are cardiovascularly unstable should go to ICU/HDU.
- All patients who went to theatre for a significant visceral injury and blunt chest wall trauma should go to ICU/HDU.
- Do not refer stable rib fractures with no haem/pneumo-thorax to the cardiothoracic team at Stoke (can directly referred to T&O at QHB for pain management and chest physiotherapy via this accepted pathway).
- **Presence of surgical emphysema or misalignment of ribs fractures +/- flail will all require discussion with Stoke.**

5. Documentation Controls

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6. Appendices

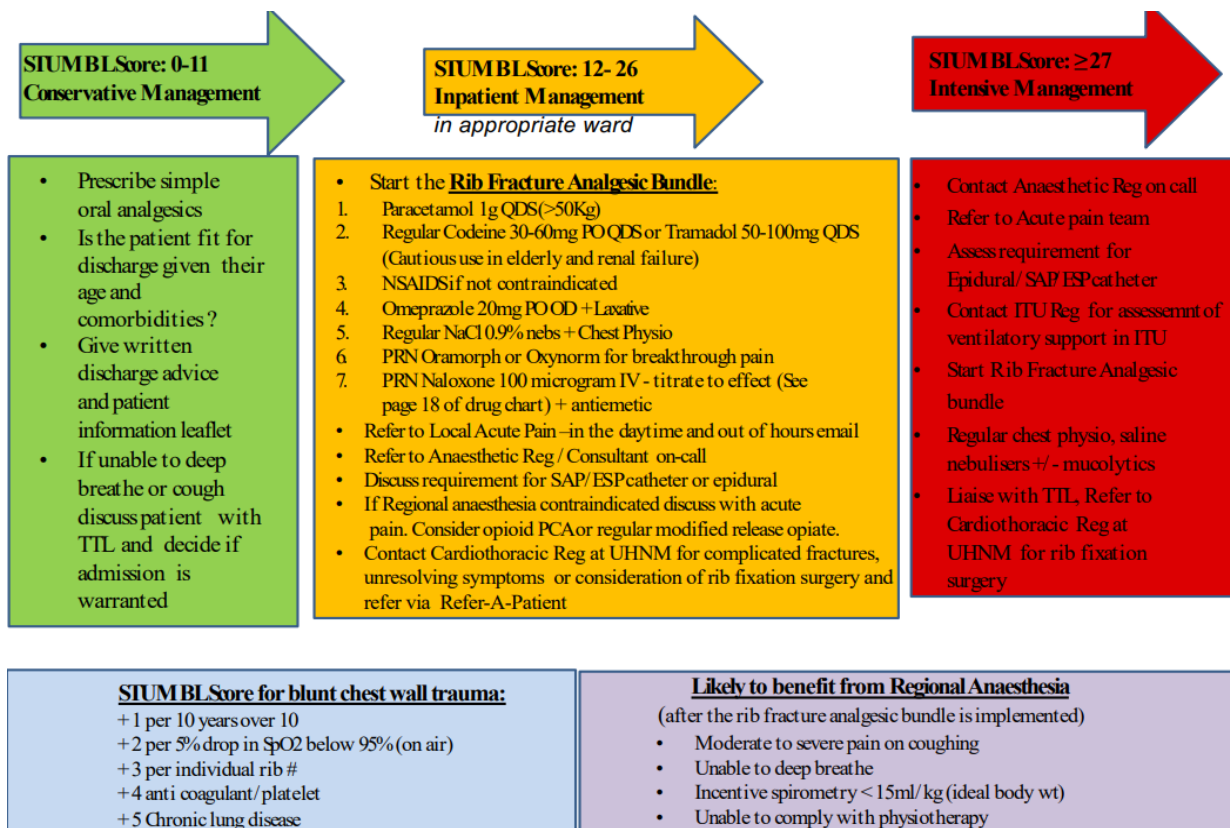
Traumatic Chest Injury Guidance



STUMBL Score

Pathway for the patient presenting with isolated chest wall trauma or patients with chest wall trauma associated with other traumatic injuries that have NOT been transferred to the MTC:

1. Obtain a STUMBL Score



2. Use score obtained to score to guide admission and referral

- Score of < 10: Patient may be transferred for care in ward under the admitting orthopedic team with initiation of the NEWS2 score unless need for epidural takes precedence as below when a referral to HDU will be required.
- Score of 11-25: Patient to be considered for HDU unless additional head injury or cardiovascular instability as below; they are under the care of the admitting ITU team.
- Score > 26: Patient to be considered for ICU or transfer to a Major Trauma Centre at Stoke as they are at high risk of deterioration and likely will require NIV or IPPV; they are under the care of the admitting Cardiothoracic team.

Referral

MTC discussions should happen via 'refer a patient' format online. The selection is 'Chest Wall Reconstruction' for the cardiothoracic team.

Please ensure CT images are sent across to Stoke via a 'blue light' PACS transfer, through the PACS team (ext 5219) before 6pm or via the CT scan room out of hours. Please note this can take up to 1hr from request so should be done as soon as possible. Call Stoke PACS or Cardiothoracic team for more help

Multiple Rib Fracture Pain Management Algorithm
 Burton Hospitals NHS Foundation Trust Acute Pain Team

