

Guidance Document for processing PM-JAY packages

Management of Chest injury with fracture of Long bone

Procedures covered: 2

Specialty: Polytrauma, Orthopedics, Neurosurgery, General Surgery

Package name	Procedure name	HBP 1.0 code	HBP 2.0 code	Package price (INR)	ALOS
Management of Chest injury with fracture of Long bone	Management of Chest injury with fixation of Single Long bone	S600010	ST004A	30,000 + cost of implant	5 days
Management of Chest injury with fracture of Long bone	Management of Chest injury with fixation of 2 or more Long bones	S600011	ST004B	45,000 + cost of implant	5 days

Minimum qualification of the treating doctor:

Essential: MS/DNB/Equivalent (General Surgery); MS/DNB/Equivalent (Orthopedic surgery); MCh/DNB/Equivalent (Neurosurgery / CTVS Surgery)

Special empanelment criteria/linkage to empanelment module: Functional Operational Theatre

Disclaimer:

For monitoring and administering the claim management process of **Management of Chest injury with fracture long bone**, NHA shall be following these guidelines. This document has been prepared for guidance of PROCESSING TEAM and TRANSACTION MANAGEMENT SYSTEM of AB PM-JAY for the claims of procedures mentioned above. The hospitals can also refer to this document so that they have the insight on how the claims will be processed. However, this document doesn't provide any guidance on clinical and therapeutic management of patient. In that respect the hospitals and physicians may refer to any other relevant material as per the extant professional norms.

PART I: GUIDELINES FOR CLINICIANS AND HEALTHCARE PROVIDERS

1.1 Objective:

The purpose of this document is to act as a guidance & a clinical decision support tool for the clinicians in deciding the line of treatment, plan clinical management of patient and decide referral of cases to the appropriate level of care (as required) for treatment of patients under PMJAY and selection of corresponding Health Benefit Package.

It will also serve as a tool for hospitals to determine and submit the mandatory documents required for claiming reimbursement of health benefit package under PMJAY.

1.2 Clinical key pointers:

INTRODUCTION

1. Primary Survey and resuscitation
2. Secondary Survey
 - Adequate exposure of all areas
 - Look for any penetrating injury, air leaking /sucking
 - Abrasions or tenderness
 - Respiratory movements - any paradoxical movement.
 - Palpate for any Crepitus or surgical emphysema.
 - Percuss for any dullness or hyper resonance
 - Auscultation - Reduced or absent air entry.
3. Management
 - Emergency intubation
 - Intercostal tube drainage
 - Thoracotomy

SCOPE

➤ Rib Fractures

- Most Common chest injury encountered.
- 1-3 ribs fracture signifies high velocity impact and associated injuries to the brachial plexus and vascularity to the upper limb checked.
- 4-9 ribs fracture should rule out injury to the Liver, spleen, diaphragm & kidney. 4-9 ribs injury to the lung, bronchus, heart & pleura.
- Always palpate the sternum, clavicle and spine.

DIAGNOSIS

➤ X-ray

- CXR should be done in all cases unless patient is severely unstable.
- In X-ray look for
 - Fractures of bony thorax - ribs, clavicle, spine, scapula
 - Look for any foreign bodies
 - Lung fields - Pneumothorax, Hemothorax, lung contusion
 - Mediastinum - Widening, Pneumomediastinum or shifting - suspect Aortic transection, tracheobronchial or esophageal injury.



- Soft tissue - Subcutaneous air or foreign body.
- Cardiac Shadow – Widening

➤ CT Chest –Indications:

- Saturation in room air <95% or < 98% with oxygen
- CXR shows abnormal changes
- Respiratory rate >30 per minute
- Chest auscultation or palpation Abnormality
- High Velocity accident / Poly trauma.

TREATMENT

➤ Management

- Age of the patient is important
 - Age >65 with even a single rib fracture should be admitted and observed
 - Young patients with <3 rib fracture can be observed with repeat X-ray chest after 6 hrs. and may be discharged if no Hemothorax / Pneumothorax.
- Main Pillars of management
 - Adequate Analgesia -NSAIDs, Intravenous Opiates, Epidural, Intercostal Rib Block.
 - Prevention for Atelectasis - Incentive Spirometry
 - Pulmonary Toilet - Chest Physiotherapy and coughing out Sputum.
 - Simple rib Fracture with NO HEMOTHORAX/ PNEUMOTHORAX - Analgesics, Observation with repeat X-ray.
 - Hemothorax / Pneumothorax - Tube thoracostomy
- **Hemothorax** - Usually associated with lung contusion. Tube thoracostomy done with a wide bore tube usually 32 Fr directed downwards and posteriorly.
- **Pneumothorax** - Tube thoracostomy done with smaller chest tube 24 Fr with tube directed upwards.

➤ Pulmonary Contusion

- Due to hemorrhage into the adjacent alveolar spaces
- Patient has dyspnoea, tachypnoea, hypotension and sometimes cyanosis.
- Diagnosis is better confirmed by CT chest.
- Management -



- Careful monitoring as they can deteriorate rapidly ICU Care
- Oxygen administration with a very low threshold for intubation and ventilation
- Antibiotics
- Can Progress to ARDS

➤ Flail Chest

- When 3 or more ribs fractured at two or more places.
- Unilateral or bilateral.
- Results in hypoventilation, poor pulmonary drainage and atelectasis
- Management
 - Analgesia, Pulmonary toilet and Chest Physiotherapy once better.
 - Fluid Restriction - colloids better, may require diuretics
 - Low threshold for intubation and ventilation
 - Lung protective ventilation strategies with adequate PEEP and low tidal volume.
- When to fix the Unstable chest wall –
 - Doing thoracotomy for other procedure
 - Unable to wean off from ventilator.

➤ Sternal Fracture

- Lateral Chest X-ray
- Conservative management with analgesics and chest binders
- If fractured segment unstable may require ventilation.
- Fixation

➤ Blunt Cardiac Injury

- Cardiac Box - It is defined by nipples laterally, clavicles superiorly, costal margin inferiorly. In case of any trauma to this area, cardiac injury must be ruled out.
- Hemopericardium - Hypotension, Elevated CVP.
- Auscultation - Decreased heart Sounds or new Murmur.
- ECG - New onset tachyarrhythmias, raised Cardiac troponin T & I.
- Echocardiography investigation of choice

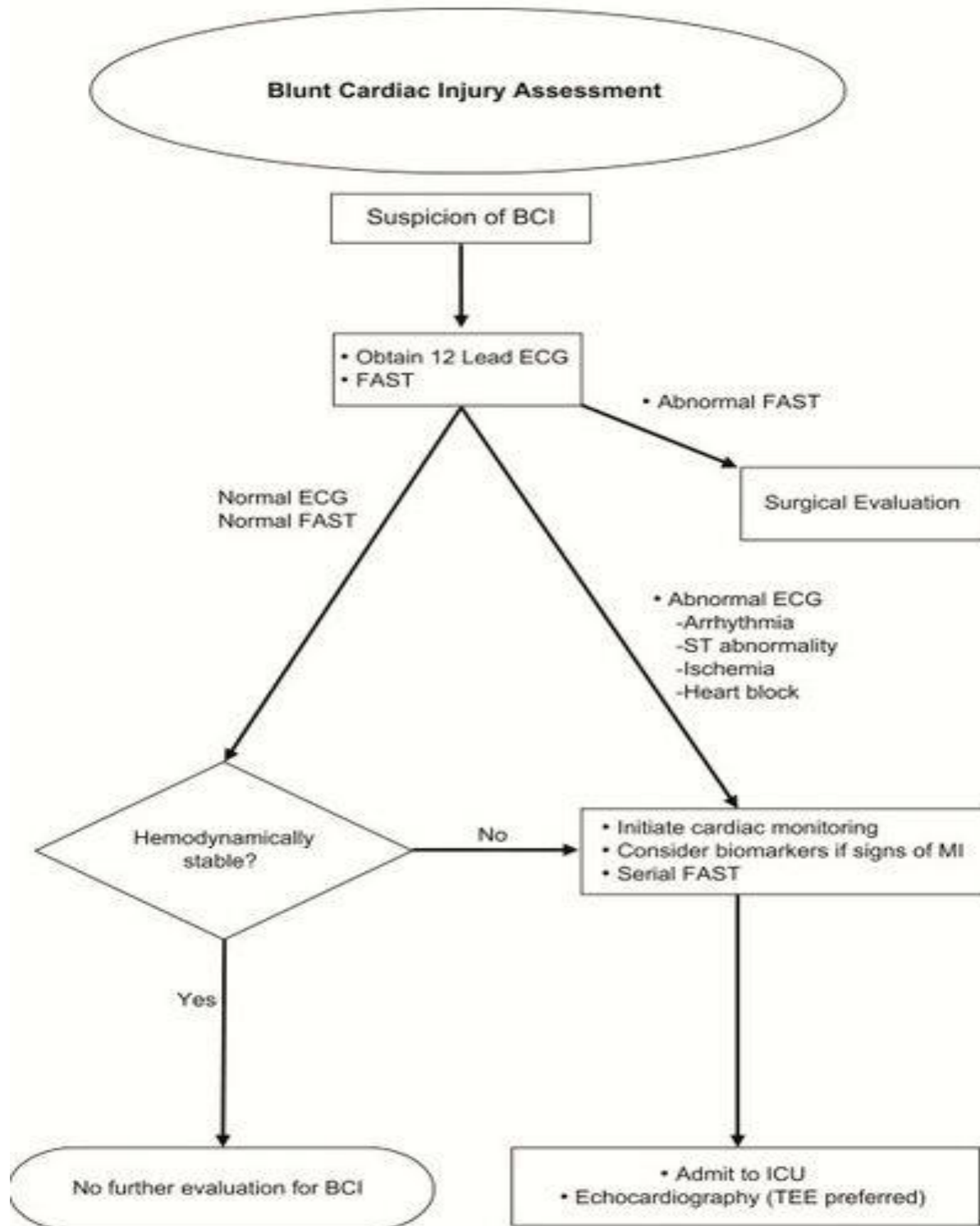
➤ Great Vessel Injury

- Aorta & branches
- Pulmonary artery & veins
- Vena cava & Azygos veins

- X-ray findings
 - Widened mediastinum (>10cm)
 - Loss of Aortic Knob Contour
 - Shift of ET tube and trachea to right
 - First rib fracture
 - Acute left sided hemothorax
 - Retro-cardiac density
- Echocardiography
 - Investigation of choice
 - Trans-thoracic / trans -esophageal.
- Management
 - Maintain Low BP with NTG / SNP infusion
 - Endovascular stenting / Open repair.

➤ Surgical Emphysema

- Leakage of air into subcutaneous space. Patient will have a blotted appearance.
- History- from where surgical emphysema started will usually indicate the side.
 - If started from neck suspect airway injury, may need bronchoscopy.
- X-ray chest - Look for pneumothorax; put chest tube on that side
- If no pneumothorax - conservative management surgical emphysema will subside; wait and take repeat X-ray.
- No role for surgical incisions to let out trapped air.



Focused Assessment with Sonography for Trauma (FAST) scan is a point-of-care ultrasound examination performed at the time of presentation of a trauma patient.

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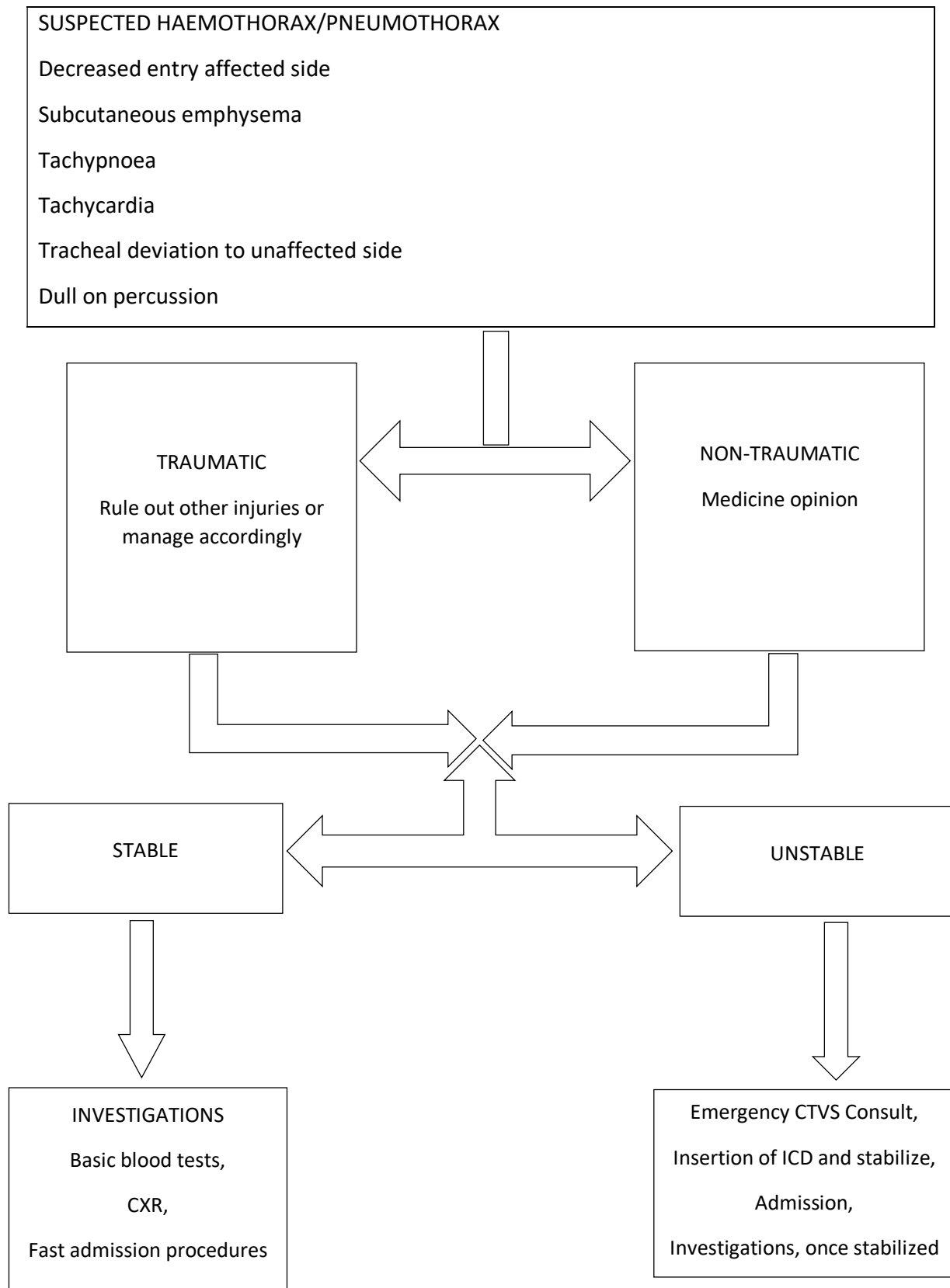
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➤ Penetrating Chest Trauma

- Whether hemodynamically stable or not.
- If unstable, emergency tube thoracostomy and echo.
- If sucking wound is present, wound dressing and shift to OR for exploration
- Emergency Thoracotomy Indications after chest tube placement
 - Initial output >1.5L blood
 - > 250ml for more than 3hrs
 - > 1.5L for 24 hrs.

➤ Emergency Room Thoracotomy

- Indications
 - Unresponsive Hypotension (SBP<60mm Hg)
 - Rapid Exsanguination from indwelling chest tube (>1500ml)
 - Traumatic arrest with previously witnessed cardiac activity after penetrating thoracic injuries
 - Persistent Hypotension (SBP <60 mm Hg) with diagnosed cardiac tamponade, air embolism.
- Done through 4th Left Intercostal Space.



1.3 Mandatory documents- For healthcare providers

Following documents should be uploaded by the concerned hospital staff at the time of pre-authorization and claims submission:

Mandatory document	Management of Chest injury with fixation of Single Long bone	Management of Chest injury with fixation of 2 or more Long bones
i. At the time of Pre-authorization		
a. Clinical Notes detailing the injury and need for surgery	Yes	Yes
b. Medico legal case report/ FIR copy of accident	Yes	Yes
c. X-ray/ CT report of fractured limb	Yes	Yes
d. CT chest film and report	Yes	Yes
ii. At the time of claim submission		
a. Detailed Indoor case papers	Yes	Yes
b. Detailed Procedure/Operative notes	Yes	Yes
c. Post op X-ray film and report of chest	Yes	Yes
d. Invoice/Barcode of implant, if used	Yes	Yes
e. Detailed discharge summary	Yes	Yes

PART II: GUIDELINES FOR PROCESSING TEAM

2.1 Objective: To provide guidance to the pre-authorization and claims processing team in ascertaining the medical necessity of procedure carried out vis a vis the patient's medical condition as evidenced by supporting documents/investigation reports etc, in deciding the admissibility and quantum of claim and compliance with mandatory documents by the hospital.

2.2 Following mandatory documents to be diligently reviewed by the pre-auth / claims processing personnel:

Mandatory document	Management of Chest injury with fixation of Single Long bone	Management of Chest injury with fixation of 2 or more Long bones
i. At the time of Pre-authorization		
a. Clinical notes – details of accident, signs & symptoms, indication for surgery and planned line of treatment	Yes	Yes

b. Was the Medico legal report/ FIR copy of the accident submitted?	Yes	Yes
c. Did X-ray/ CT report suggest fracture of one long bone?	Yes	No
d. Did X-ray/ CT report suggest fracture of more than one long bone?	No	Yes
e. Was CT chest report submitted?	Yes	Yes
ii. At the time of claim submission		
a. Were the indoor case papers submitted?	Yes	Yes
b. Are the detailed Procedure/ Operation notes submitted?	Yes	Yes
c. Did the post op X-ray film show repair of chest injury and fixation with implant?	Yes	Yes
d. Was the Barcode of implant, if used submitted?	Yes	Yes
e. Is there a Detailed Discharge Summary mentioning date of follow-up submitted?	Yes	Yes

PART III: GUIDELINES FOR IT

3.1 Objective: To enable setting up of cross check mechanisms/rule engines within the IT platform (TMS) to ensure compliance with STGs and to prevent fraud / abuse of the Health Benefit Package.

3.2 Below mentioned are the scenarios where a provision would be built in TMS for pop-ups:

1. Was CT chest report suggestive of chest injury? Yes
2. Did X-ray/ CT report suggest fracture of one or more long bone? Yes

Till the time the functionality is being developed, the processing doctors shall check the above manually.

References

1. Thoracic Injuries, Protocol for emergency and trauma care, Govt Medical College Thiruvananthapuram.pg: 23-32.
2. <https://radiopaedia.org/articles/focussed-assessment-with-sonography-for-trauma-fast-scan>



Abbreviations

CXR – Chest X-ray

NSAIDs – Non-steroidal anti-inflammatory drugs

ICU – Intensive care unit

ARDS – Acute respiratory distress syndrome

PEEP – Positive end-expiratory pressure

CVP – Central venous pressure

ECG – Electrocardiogram

BP – Blood pressure

NTG – Nitroglycerin

SNP – Single nucleotide polymorphisms

BCI – Blunt cardiac injury

FAST – Focused assessment with sonography for trauma scan

MI – Myocardial infarction

TEE – Transoesophageal echocardiogram test

OR – Operating room

OT – Operation theatre

SBP – Systolic blood pressure

FIR – First information report