22. Trauma Management Pathway

This clinical pathway is intended to supplement, rather than substitute for, professional judgment and may be changed depending upon a patient's individual needs. Failure to comply with this pathway does not represent a breach of the standard of care.

SAMPLE HISTORY
Signs and **S**ymptoms
Allergies
Medication
Past Medical History/**P**regnancy
Last meal/Last Tetanus Injection/Last Medication/Drug/Alcohol intake
Events preceding presentation

ACTIVATE THE TRAUMA TEAM (see on the next page)

PRIMARY SURVEY + RESUSCITATION (C-ABCDE)
STOP ANY EXTERNAL MASSIVE BLEEDING IMMEDIATELY
C-Spine – Cleared Clinically (**see 23. C-Spine Clearance Algorithm**)? Perform **Manual In-Line Stabilization (MILS)** then apply **Head Blocks or Blanket Rolls** taped to the patient's head and trolley. **DO NOT APPLY A C-COLLAR**
+ If suspected trauma and not cleared clinically, **Head Blocks** or **Blanket Rolls** strapped to the patient's head and trolley
Airway – Open? Maintainable? Intubate?
+ Rapid Sequence Intubation?
Breathing – Rate? SPO_2? Air Entry Bilaterally? Pneumothorax? Haemothorax? Flail Chest? Open sucking chest wound?
+ Supplementary Oxygenation? – Non-Rebreather mask
+ Immediate decompression for Tension Pneumothorax with subsequent immediate Intercostal Chest Drain Insertion?
+ Emergency Intercostal Chest Drain for Massive Haemothorax or Open sucking chest wound
Circulation – Active Bleeding Control? Pulse? CPR? BP? Signs of Shock? Open Book Pelvic Fracture?
+ Control Active Bleeding;
  - **Apply a Pelvic wrap to an Open Book Pelvic Fracture**
+ Insert 2 large bore IV lines and give appropriate fluid resuscitation (NS/RL/whole blood). Give **Tranexamic acid loading dose 15mg/kg over 10 min then infusion of 1.5mg/kg/h for 8 hours** to ALL trauma patients **with, or at risk of, significant bleeding, adults within 3 h of injury with a GCS score of 9-12 or 13-15 with any intracranial bleeding on CT scan**
+ **FHG, UEC, GXM** and request adequate supplementary blood and blood products
+ **Extended Focussed Assessment with Sonography in Trauma (EFAST) – ONLY** for;
  - Penetrating chest trauma – Pneumothorax? Haemothorax? Pericardial Effusion?
  - **Unstable** blunt chest and abdominal trauma – Haemothorax? Hemoperitoneum?
  - Unexplained hypotension - ? Free fluid in pleural, pericardial or peritoneal cavity
Disability – GCS? (available in **MDCalc**) Pupils? **RBS**?
+ Correct Hypoglycaemia – 50mls 50% Dextrose IV
+ **Give appropriate analgesia e.g. Fentanyl 1µg/kg IV (see Analgesia Chart and 41. Pain Management Algorithm for Regional Anaesthesia)**
+ **Give IV Phenytoin (20mg/kg) for Severe Head Injury (GCS ≤ 8)**
Expose patient
+ Check temperature and avoid hypo- or hyperthermia

SECONDARY SURVEY (HEAD-TO-TOE SURVEY)
CNS – Lacerations? Fractures? Signs of Base of Skull Fractures – Racoon Eyes, Battle Sign, Otorrhea, Rhinorrhoea? Focal Neurology?
Chest – Lacerations? Rib Fractures?
Abdomen – Lacerations? Distension? Tenderness? **EFAST**?
Limbs – Lacerations? Fractures? Distal Pulses and Neurology?
Log roll patient – Lacerations? Spine tenderness?

Do not forget to **CLEAN ALL OPEN WOUNDS** with running tap water for at least 10 minute and **SPLINT ALL FRACTURES.** Give **Tetanus Toxoid – see 25. Bites (Animal & Human), Tetanus & Rabies**. **Give ANTIBIOTICS within 1 hour of injury for ALL COMPOUND FRACTURES**. Therapeutic doses of cefazolin, clindamycin, for 48 hrs are appropriate; with contamination, consider anaerobic antibiotics (penicillins, clindamycin, metronidazole); **NO ANTIBIOTICS** are required for soft tissue injuries unless there is evidence of an infection.

RADIOLOGICAL INVESTIGATIONS
- **C-Spine X-rays** (AP, Lateral AND Open Mouth) – **see 23. C-Spine Clearance Algorithm**. If doing a CT head, do CT Spine instead of C-spine X-rays if indicated.
  C-spine is **NOT** cleared on X-rays/CT **BUT on resolution of patient symptoms**
- **CXR – ONLY** for patients with chest trauma - Pneumothorax? Haemothorax? Lung Contusion? Widened Mediastinum? Rib fractures? Follow-up with **CT-Chest plus angiogram** for Lung Contusion? Widened Mediastinum?
- **Pelvic X-ray – ONLY** for patients with;
  - lower abdominal pain
  - lower back pain
  - femur fractures
  - clinically tender pelvis
  - patients unable to mobilize
- **CT Head – ONLY** for;
  - GCS <15 (for GCS 15 – **see 24. Mild Traumatic Brain Injury Algorithm**)
  - Skull fractures including Base of Skull Fractures (**DO NOT ORDER SKULL X-Rays**)
- **CT-Abdomen –** For the **haemodynamically stable** patient with suspected blunt abdominal trauma
- **Knee X-ray – See Ottawa Knee Rule in MDCalc**
- **Ankle X-ray – See Ottawa Ankle Rule in MDCalc**

Where a reliable clinical assessment is not possible ALL the investigations should be done.

Trauma Team Activation Criteria

The **Trauma team** comprises a group of emergency department doctors/clinical officers and nurses, surgeons, anaesthetists and theatre staff, radiographers and other support personnel, who work together as a **team** to assess and manage the **trauma** patient. Their actions are coordinated by a **team leader** who should not touch the patient. The aim of the trauma team is to provide a safe and efficient evaluation of the patient. Identify all injuries and instigate the definitive management of such injuries. Most trauma teams will have about 30 minutes to accomplish this and should work towards achieving this goal.

The Trauma Team should be activated immediately a patient who meets ANY of the criteria below arrives:

- □ Systolic BP < 90 mmHg
- □ Respiratory rate < 10 breaths/min or > 30 breaths/min
- □ GCS < 12 with torso or extremity trauma
- □ Pregnant patient (> 20 weeks) with foetal heart rate < 120 bpm or >160 bpm
- □ Amputation proximal to elbows or knees
- □ 2 or more proximal long bone fractures
- □ Suspected spinal cord injury
- □ Severe maxillofacial injury with airway compromise
- □ Burns > 15% TBSA
- □ Pregnant patient with penetrating injury or significant blunt injury
- □ Gunshot wound proximal to knee or elbow
- □ Significant penetrating wound to head, neck, chest, abdomen or groin
- □ Ejection from vehicle
- □ Pedestrian thrown (hit by a car) or rolled over
- □ Fall from a height > 6 metres (20 feet)
- □ Simultaneous arrival of 3 or more multi-trauma patients
- □ Emergency Doctor feels trauma team is necessary for an injured patient