Are any of the following present: see also Cervical Spine Injury guideline: if CT spine imaging required, this should be a CT if having a head CT

1. On warfarin
2. LOC or amnesia since injury AND any of following:
   - > 65 years
   - Any history of bleeding or clotting disorders
   - Dangerous mechanism of injury eg pedestrian vs car, fall > 1m or 5 steps
   - > 30 minutes retrograde amnesia of events immediately before injury

STOP! THINK!
Is Trauma Transfer needed before CT?
Eg penetrating head injury / rapidly falling GCS
- discuss with ED Consultant RLH

No imaging required
Re-evaluate if clinical picture changes

Orthopaedics:
- Head injury requiring admission > 12 hours, if not suitable for transfer to RLH (as advised by ED Consultant RLH)

CDU:
- Clinical concern but no indication for CT
- Delayed CT required out of hours
- GCS < 15, regardless of imaging results
- On-going worrying signs (eg persistent vomiting or severe headache)
- Inadequate social circumstances

IMMobilise C spine if any of:
- significant mechanism of injury
- GCS < 15 on initial assessment
- neck pain or tenderness
- focal neurological deficit, paraesthesia
- any other clinical suspicion of C spine injury eg distracting injury, intoxication

Request CT
Imaging to be carried out within 8 hours of injury
Provisional written report should be available within 1 hour

Admit for Observation
CDU:
- Clinical concern but no indication for CT
- Delayed CT required out of hours
- GCS < 15, regardless of imaging results
- On-going worrying signs (eg persistent vomiting or severe headache)
- Inadequate social circumstances

Major Trauma
Discuss with ED Consultant RLH
#6116 bleep 1115 or 0203 594 5722

The ED Consultant RLH will liaise with neurosurgery as required and if necessary identify a suitable bed

Time critical neurosurgical emergencies will usually be transferred by the NUH team

In certain circumstances HEMS may be able to retrieve the patient – this will be arranged by the ED Consultant at RLH if required

Discharge Criteria: [all of the following]
- GCS 15
- No criteria for observation
- No indication for CT / normal CT
- Verbal and written instructions given
- GP letter completed
- Written head injury advice given

Trauma Transfer
0207 902 2511 or #6209

Critical Transfer = within 10 minutes eg expanding extradural or major trauma

Immediate Transfer = within 1 hour

Request Immediate CT
Imaging to be carried out within 1 hour of request
Provisional written report should be available within 1 hour

GCS 13 or less?

Move to Resus

Immediate ICU Review
Indications for Ventilation:
GCS 8 or less, or rapid fall
Loss of airway reflexes
Raised ICP: blown pupil, falling pulse, rising BP
Inadequate / irregular ventilation
- \( pO_2 < 9 \) on air OR \( pO_2 < 13 \) on \( O_2 \)
- \( pCO_2 > 6 \) OR \( \leq 3.5 \)

Prior to transfer / CT:
Drop by 1 or more points on GCS
Motor score
Significant maxillofacial injury
Copious bleeding to mouth
Seizures
Uncontrollable agitation

Neuro Protection
- Manual in-line c spine immobilisation for intubation (remove hard collar)
- 30° head up tilt
- Maintain normothermia 36.5° C
- Maintain normal blood sugar
- Maintain normal BP for age (with inotropes if necessary – dopamine or noradrenaline)
- Analgesia (reduces ICP) – fentanyl boluses for procedures eg catheter
- Phenytoin if any suggestion seizure activity
- Consider mannitol or 3% saline if signs raised ICP

Ventilation:
- Normal \( pCO_2 \) 4.5 - 5
- Sats > 95% (\( paO_2 > 13kPa \)

The receiving hospital for brain injury as part of the major trauma network in East London is Royal London Hospital #6116 or mobile 07795 245 709
Consultant Emergency Medicine

Reference Documents

Triage, assessment, investigation and early management of head injury in children, young people and adults, NICE CG176, January 2014