

Traumatic Brain Injury



Make early contact with ARV for advice from the major trauma services and to initiate retrieval.

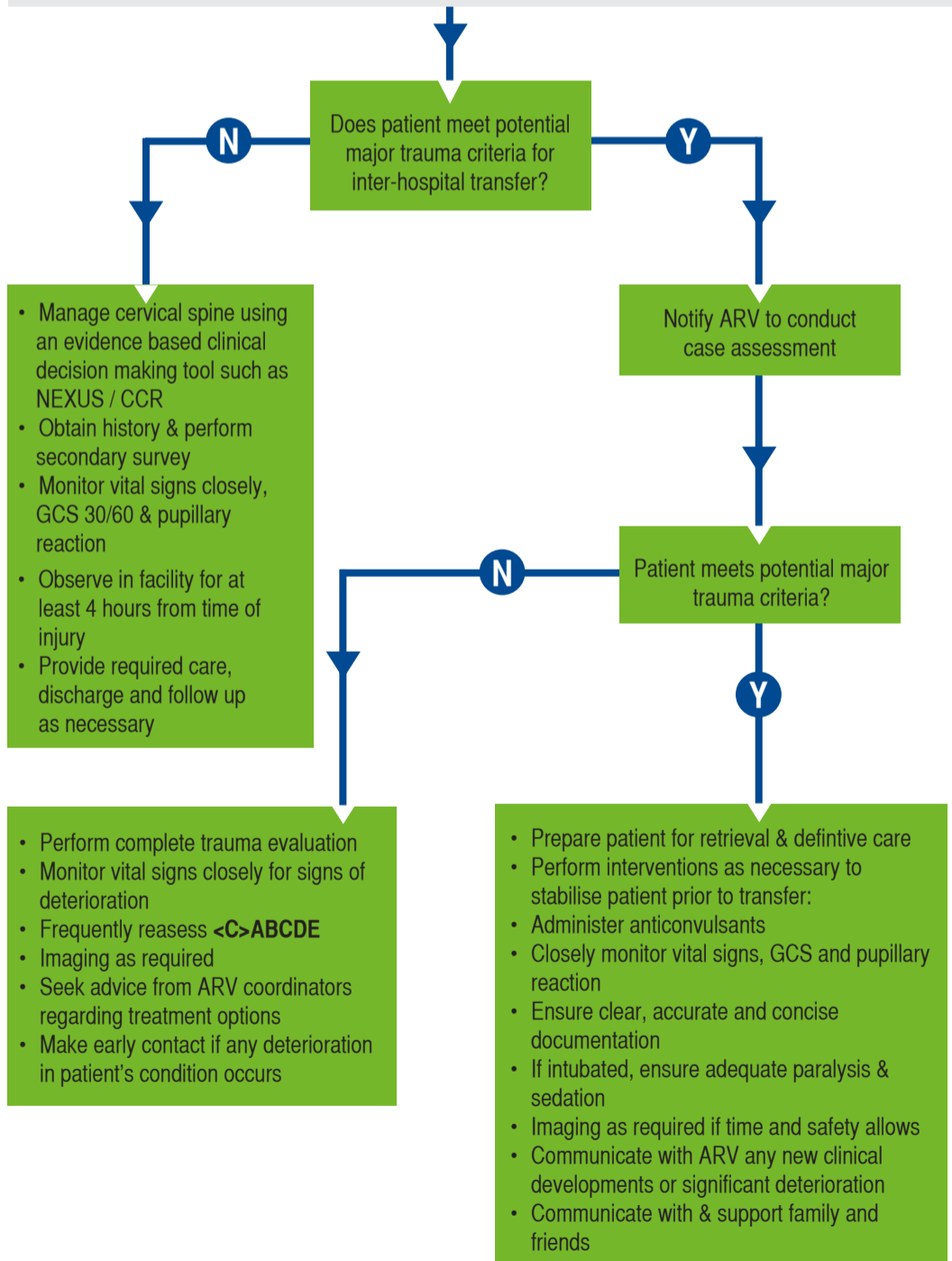
- A patient with a decreased level of consciousness (GCS \leq 8) is unable to protect their airway.
- Prevention of 2^o brain injury is vital in early management.
- Signs of deterioration may indicate impending herniation.

Early Activation

- Gather vital information
- Activate Trauma Team
- Designate roles
- Set up to receive patient
- Ensure safety using PPE

Primary Survey

CATASTROPHIC HAEMORRHAGE	AIRWAY / C-SPINE	BREATHING	CIRCULATION	DISABILITY	EXPOSURE / ENVIRONMENT	ADJUNCTS
<ul style="list-style-type: none"> • Identify large volume external bloodloss • Provide immediate management 	<ul style="list-style-type: none"> • Assess airway stability & protect as needed • Early intubation for GCS \leq8 • Maintain full spinal precautions if suspected injury 	<ul style="list-style-type: none"> • Identify & treat life threats • Assess RR, work of breathing, SpO₂ and symmetry • Oxygen therapy to maintain SpO₂ 94 - 98% • Aim for ETCO₂ 35-40mmHg if intubated 	<ul style="list-style-type: none"> • Identify & control any bleeding • Insert x 2 large bore IV cannulas • Assess HR/Cap Refill/BP & aim for SBP \geq110mmHg: • Initial management of hypovolaemia - early admin of blood products. If unavailable small boluses of crystalloid fluids to maintain end organ perfusion. 	<ul style="list-style-type: none"> • Assess level of consciousness -AVPU • Check pupils • Check BSL - Avoid hypoglycaemia 	<ul style="list-style-type: none"> • Fully expose patient • Ensure normothermia • Log roll 	<ul style="list-style-type: none"> • eFAST scan • X rays: Chest, Pelvis • 12 lead ECG • Analgesia • Bloods - FBE, X-match, U&E, Lactate, ABG • Orogastric tube if intubated • AMPLE mnemonic



Key Points

Prevention of secondary brain injury.

- It is essential to prevent secondary brain injury by maintaining oxygenation & cerebral perfusion.

Aim for:

- SpO₂ 94 - 98%
- ETCO₂ 35 - 40mmHg
- Sys BP > 110mmHg

Early Intubation

- A decreased level of consciousness puts the patient at risk of airway compromise, early intubation is recommended by a skilled practitioner.

Signs of deterioration

Early:

- Confusion
- Vomiting
- Agitation
- Severe headache
- Drowsiness

Late

- Dilated pupils
- Decrease in GCS by 2 or more.
- Cushing's response (bradycardia and hypertension).
- Seizure activity

Management Considerations

Rapid deterioration:

If there are clinical signs of deterioration & impending herniation, contact ARV for advice regarding when to initiate the following:

- Hyperventilate, aiming for an ETCO₂ of 30 mmHg. Monitor the response with ETCO₂ readings and/ or ABG.
- Consider osmotherapy such as Mannitol 20% / hypertonic saline.
- Emergency burr hole craniectomy may be necessary where time to definitive care is prolonged.

Anticoagulation and head trauma

- Patients on anticoagulation medication may deteriorate rapidly due to extension of their bleed. Reversal agents should be considered early.
- Contact haematologist via ARV.

Anticonvulsants

- Phenytoin is indicated in the early stages following moderate to severe TBI to reduce the incidence of seizures.

