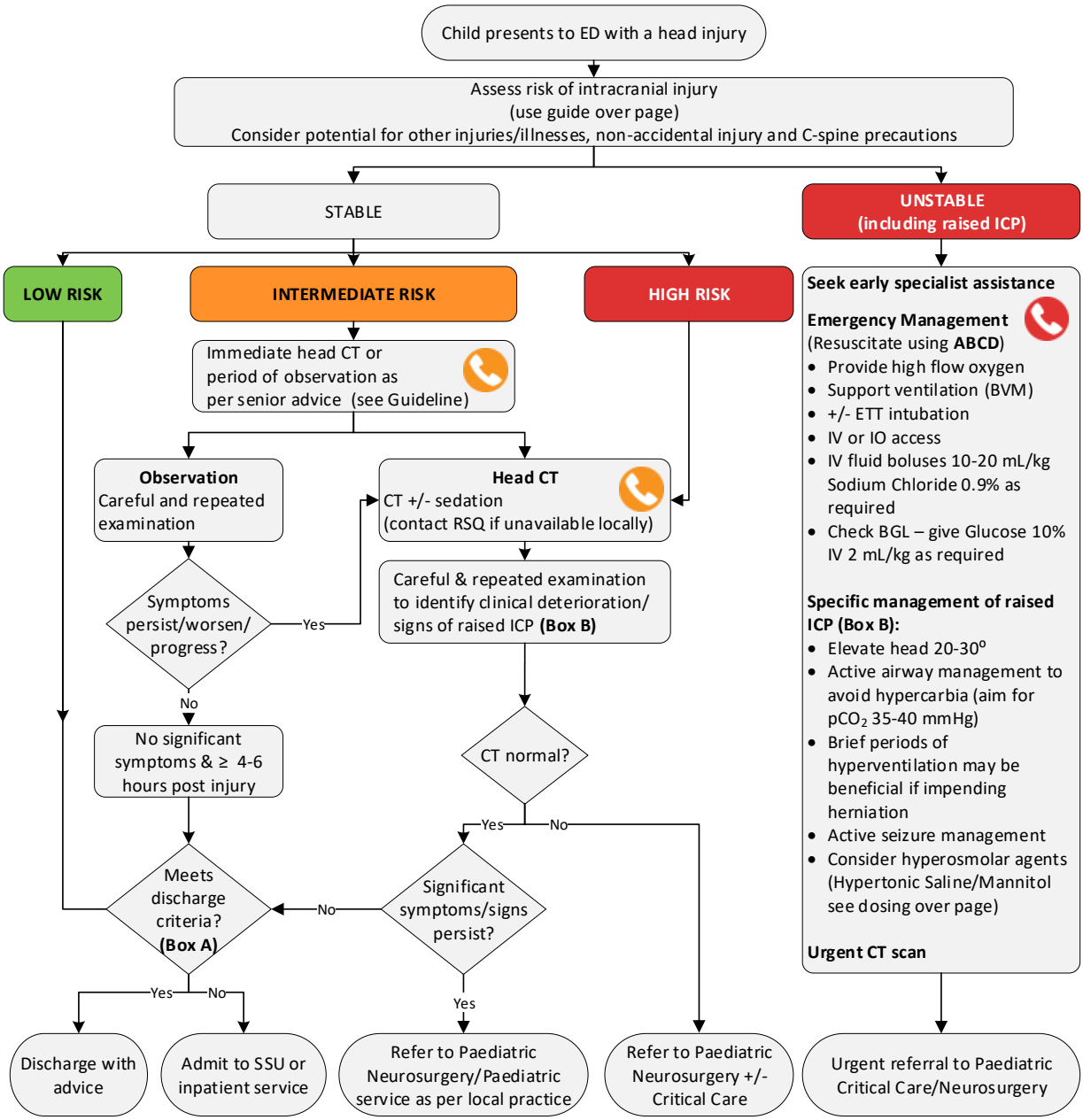
Head injury – Emergency management in children – Flowchart



ALERT – Low risk/minor head injury is **not** no risk.
All carers of children discharged, whether or not imaging has been performed, should receive verbal and written head injury advice including to seek medical care if low grade or vague symptoms persist +/- return to sport advice.

Box A: Discharge criteria
Child may be safely discharged if **all** of the following are met:
- GCS remains at 15
- No concerns of non-accidental injury
- No concerns of serious alternate/concurrent diagnosis
- Caregiver concern addressed
- Caregiver can safely manage the child at home and can return in event of deterioration

Box B: Signs of raised intracranial pressure (ICP)
- Deteriorating or diminished level of consciousness
- Abnormal posture (decorticate or decerebrate)
- Abnormal pupillary responses, unilateral or bilateral dilation
- Abnormal oculocephalic reflexes (doll's eye movement or dysconjugate upward gaze)
- Abnormal breathing patterns (hyperventilation, Cheyne-Stokes, apnoea)
- Cushing's triad (hypertension + bradycardia + breathing abnormalities) is a late sign.

Consider seeking senior emergency/paediatric advice as per local practice

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Seek urgent paediatric critical care / neurosurgical advice (onsite or via Retrieval Services Queensland (RSQ) on 1300 799 127)

Head injury – Emergency management in children – Medications

Risk stratification of intracranial injury in children following head trauma		
Low risk **ALL of the following:**	**Intermediate risk** **No high-risk features and** **≥1 of the following:**	**High-risk** **≥1 of the following:**

• well appearing child
• GCS 15
• no intermediate or high-risk features present
	• severe headache
	• vomiting
	• amnesia
	• post-traumatic seizure
	• altered mental status (including drowsiness, agitation, repetitive questioning, slow verbal response)
	• significant mechanism of injury including:
	  ○ fall from a significant height
	  ○ following MVAs -high-speed, ejected from vehicle or with others significantly injured in the same crash
	  ○ pedestrian/cyclist impacted by car
	  ○ impact from high-speed projectile e.g. golf ball, ceiling fan
		• GCS <14
		• focal neurological deficit
		• clinical suspicion of:
		  • basal skull fracture (raccoon eyes, haemotympanum, Battle's sign, CSF leak via nose or ears)
		  • depressed skull fracture (boggy haematomas, palpable depressions)
		  • penetrating injury
		  • open skull fracture
		  • large haematoma, laceration or bulging fontanelle in young child suspicious for underlying fracture
		  • NAI
		  • extensive other injuries

Sodium Chloride 3% (IV) dosing for the treatment of raised ICP	
Sodium Chloride 3% (Hypertonic Saline 3%) (IV)	3 mL/kg/dose (1–5 mL/kg/dose) over ten to fifteen minutes
Risks	Rebound ICP Central pontine myelinosis Subarachnoid haemorrhage Renal failure

Mannitol (IV) dosing for the treatment of raised ICP	
Mannitol (IV)	0.25-0.5 g/kg over ten to fifteen minutes Higher doses i.e. 1 g/kg may be administered on senior advice.
Risks	Hypotension Hyperosmolality Rebound elevations in ICP Renal failure Extravasation