

T-07 HEAD TRAUMA	Includes/Incorporates: Eye Trauma Tooth Injury/Avulsion	<table border="1"> <tr><td>First Responder</td></tr> <tr><td>EMT</td></tr> <tr><td>AEMT</td></tr> <tr><td>Paramedic</td></tr> </table>	First Responder	EMT	AEMT	Paramedic
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Initial Trauma Care T-01

Airway/O2 Maintenance A-01

Spinal Immobilization 1-06



Determine and Trend GCS BELOW



Elevated head 30-45 degrees
*if possible or place in
Reverse Trendelenburg*



Fluid Resuscitation (IV Protocol [1-03])

A	Normal Saline/Lactated Ringers 500 mL Bolus
	Peds: 20 mL/kg
	<ul style="list-style-type: none"> Repeat as needed Monitor for signs of pulmonary congestion

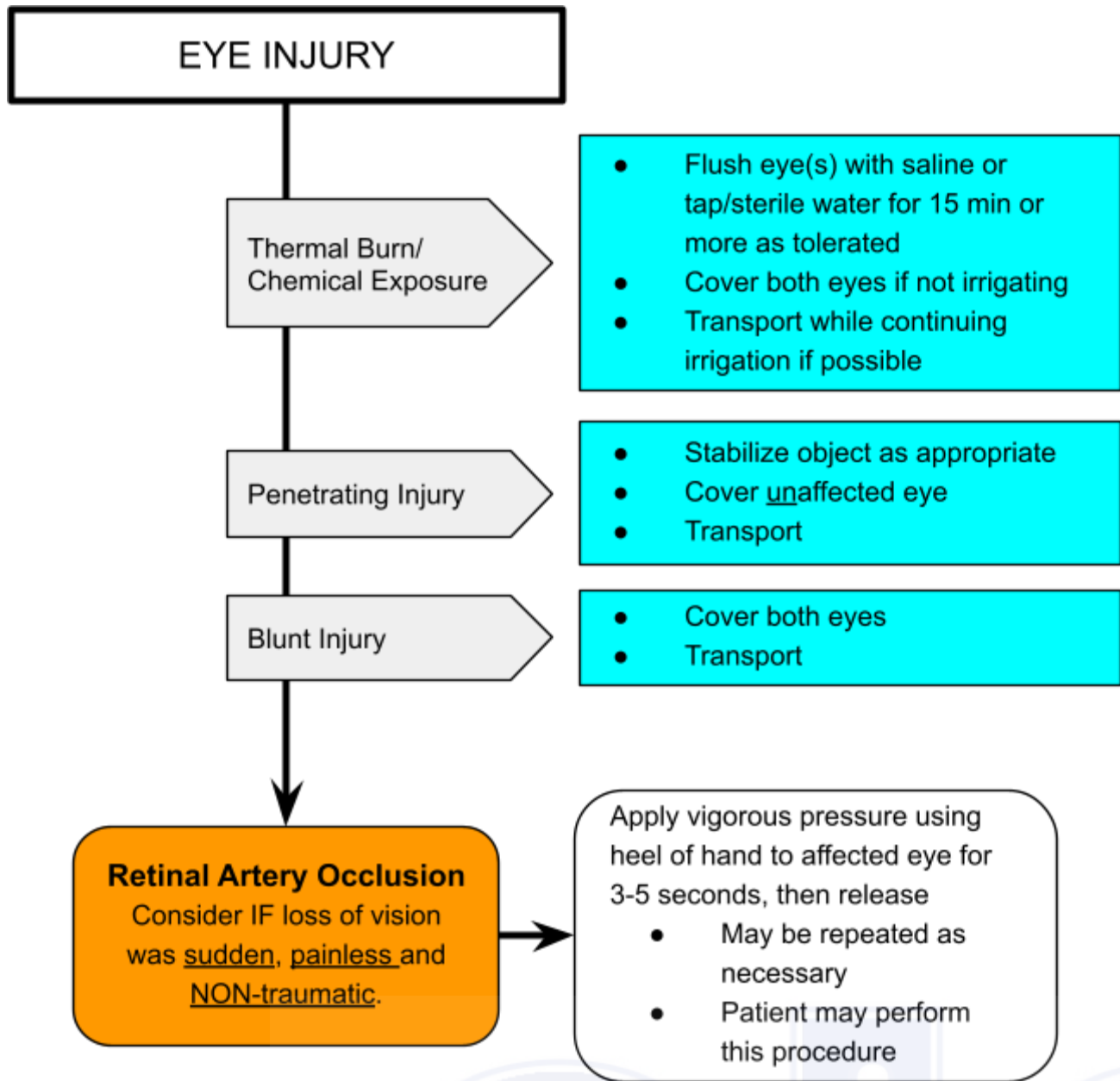
Maintain "Normal" blood pressures:
**Target SBP 90-110 mmHg in adults with
suspected severe head injury**



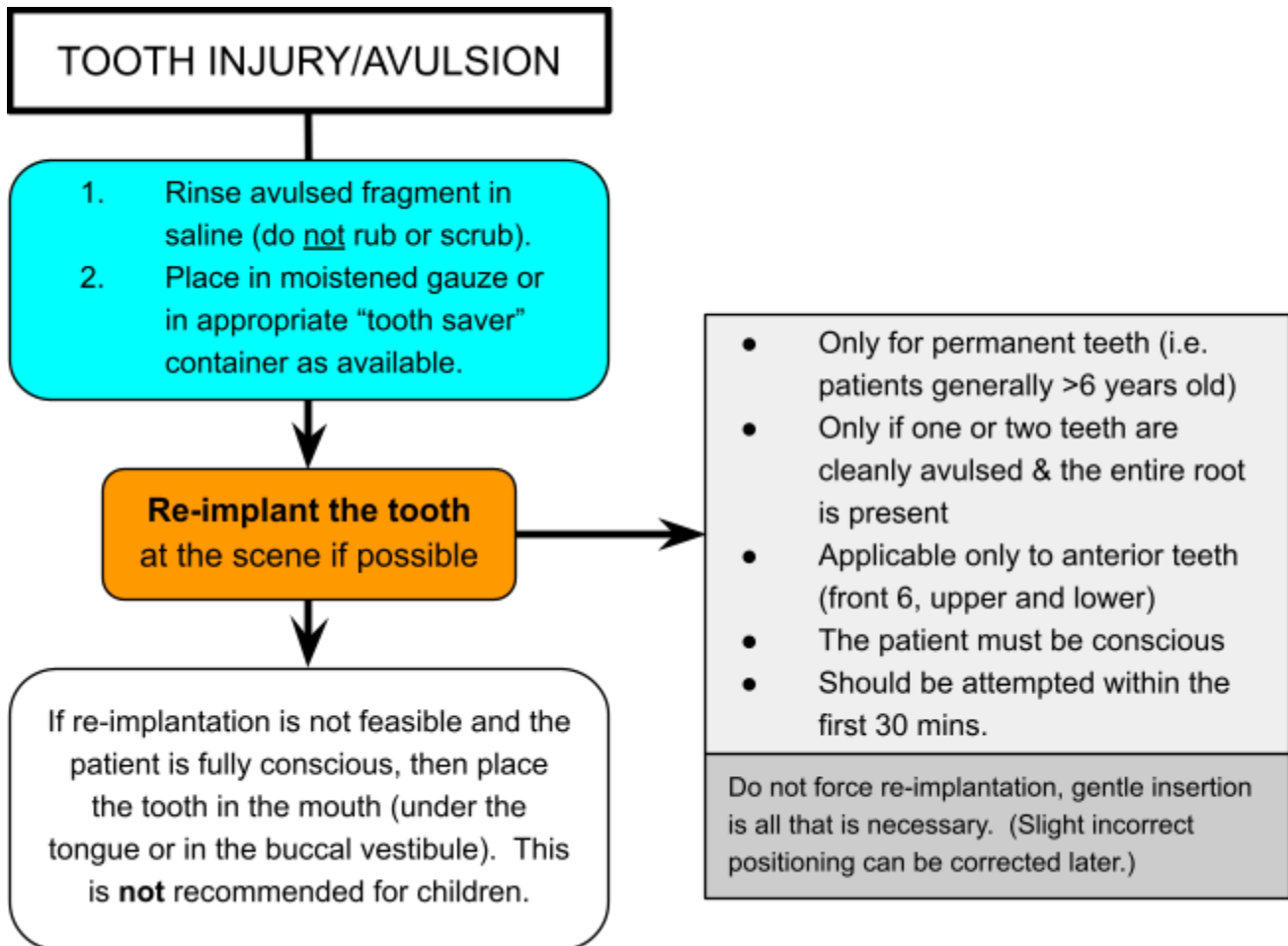
Consider as needed:

Tooth Injury/Avulsion BELOW	Eye Trauma BELOW
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KEY POINTS

- Always consider other injuries or medical problems for patients with low-energy mechanisms (e.g. falls from standing)
 - Stroke - look for localized weakness, gaze deviation, etc.
 - Sepsis - eval for SIRS sx's (hypotension, tachycardia, fever, etc.)
 - Overdose
 - Hypoglycemia - **check blood glucose on all altered patients**
- Injury
 - Primary brain injury = immediate (damage is done)
 - Concussion = continued neuro symptoms with no abnormalities on CT scan
 - Epidural = middle meningeal artery
 - Rapid collection (arterial)
 - Lucid interval (classic presentation) followed by rapid deterioration
 - Dilated pupil on affected side (ipsilateral) + hemiparesis on contralateral (opposite side)
 - Subdural
 - Slow venous bleeding
 - May be rapid (immediate) or may be delayed (occult) by days or weeks
 - Subarachnoid = smaller arterial bleed
 - May be Aneurysm (non-traumatic) or Traumatic (more peripheral)
 - Generally see meningeal sx's - HA, stiff neck, etc.
 - Intraparenchymal/Intracerebral
 - Trauma may cause "bruising" within the brain
 - Hypertension may cause a spontaneous bleed
 - Secondary = **PREVENT further injury**
 - **Hypotension (<90 mmHg) or Hypoxia (<90%) = 50% Mortality increase**

Management of Head Injuries

- Management = AVOID H-Bombs!
 - Hyperventilation → normal ventilatory rate/ETCO₂ 35-45 mmHg
 - Hypotension → *see below*
 - Hypoxia → supplemental O₂/maintain sats >94%

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- Hypoglycemia → check blood glucose
- Approach to Maintaining **Blood Pressure** (i.e. hemorrhagic shock vs isolated head injury)
 - Multisystem Injury: treat as hemorrhagic → permissive hypotension
 - Isolated head Injury = treat as medical → aggressive fluids +/- vasopressors
- Approach to Maintaining Airway/**Oxygenation**
 - Early O2 placement (non-rebreather)
 - Early airway management
 - NPA/OPA with BVM or BIAD (iGel or KingLT) for any compromise
 - ET Tube placement for GCS < 9
 - *Be concerned if GCS decreases by 2 or more points*
 - Avoid hyperventilation → Goal EtCO2 of 35-45 mmHg
- Approach to managing increase Intracranial Pressure (ICP)
 - Monro-Kellie Doctrine
 - Intracranial volume does not change
 - Pressure will increase unless volume can increase
 - Autoregulation processes can compensate to an extent
 - Increased ICP → hypertension and bradycardia (Cushing's Response)
 - Excessive pressure → herniation
 - Cerebral Perfusion Pressure (CPP) = MAP (Mean Arterial Pressure) - ICP (Intracranial Pressure)
 - Treatment:
 - Elevate HOB 30-45 degrees if able
 - Maintain blood pressure in normal range

QI Review Parameters:

1.

