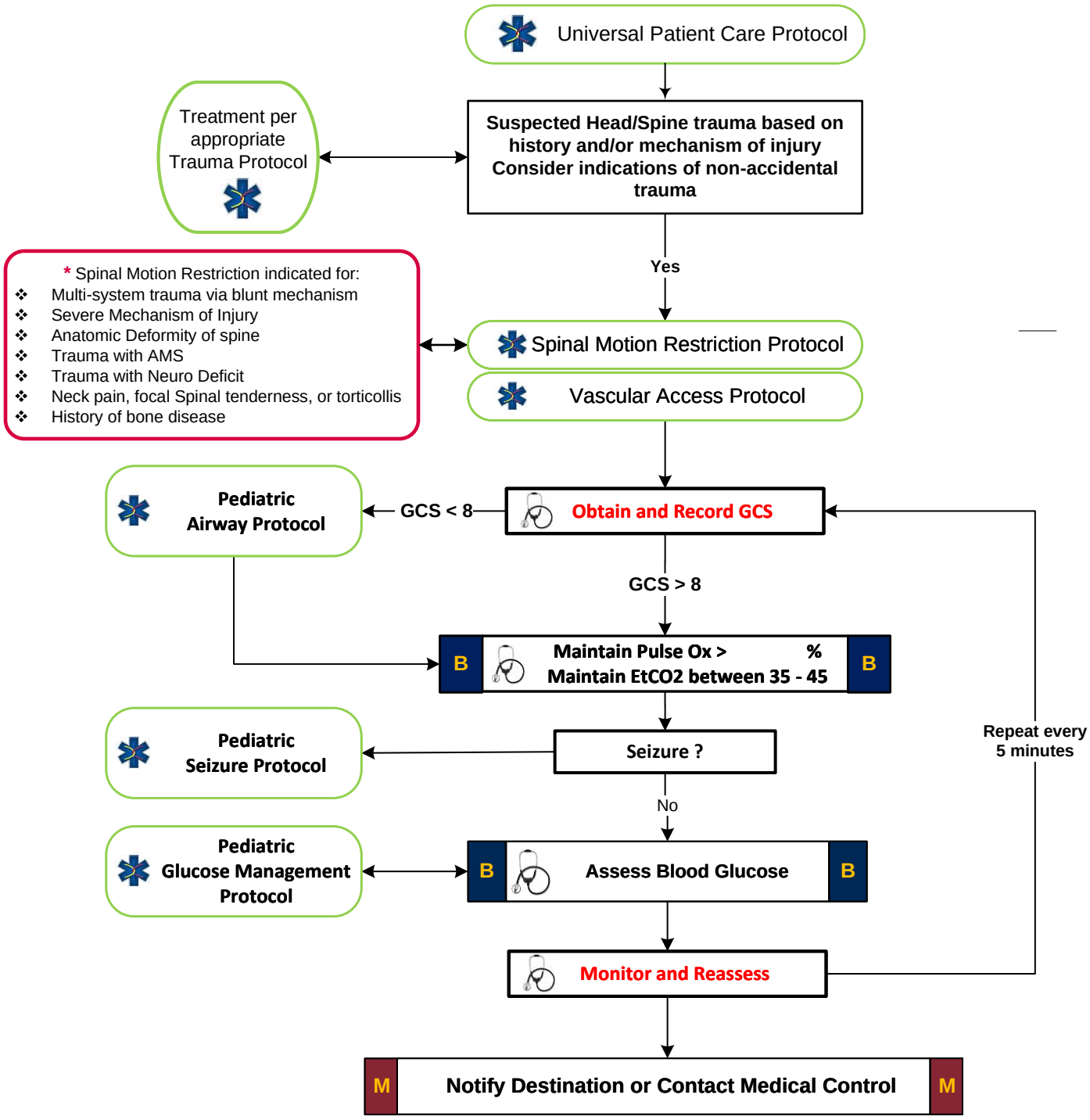
Pediatric Head Trauma

History
- Time of injury
- Mechanism (blunt vs. penetrating)
- Loss of consciousness
- Bleeding
- Past medical history
- Medications
- Evidence for multi-trauma
- Evidence of abuse

Signs and Symptoms
- Pain, swelling, bleeding
- Altered mental status
- Unconscious
- Respiratory distress / failure
- Vomiting
- Major traumatic mechanism of injury
- Seizure
- Gait Disturbance

Differential
- **Skull fracture**
- **Brain injury (Concussion, Contusion, Hemorrhage or Laceration)**
- **Epidural hematoma**
- **Subdural hematoma**
- **Subarachnoid hemorrhage**
- **Spinal injury**
- **Abuse**



PEDIATRIC TRAUMA

Pediatric Head Trauma

- **Considerations for Non-Accidental Trauma:**
  - Injuries inconsistent with mechanism or history
  - Conflicting historical reports of injury
  - Unexplained or underexplained injury
- **Severe Mechanism Events:**
  - Fall greater than 10 feet or 2-3 x height of child
  - High risk auto crash (MVA with>12 inches intrusion of roof, or >18 inches of passenger compartment, ejection, death of other occupant in vehicle) OR Auto-vs-Pedestrian
  - Axial load injuries (i.e. diving)
  - High velocity blunt trauma
- **Altered Mental Status:**
  - Inconsolable infant/child, extreme agitation
  - Decreased LOC (AVPU scale) or Pediatric GCS <15
- **Focal Neurological findings:**
  - Asymmetric movement of extremities
  - Abnormal gait/tone or abrupt change in ability to walk/stand
- **Special Considerations**
  - Spinal Motion Restriction – appropriately sized cervical collar + Spinal stabilization with head, neck, and torso in alignment. Methods of accomplishing spinal motion restriction might include a pediatric immobilization device, long backboard, scoop stretcher, vacuum mattress, or ambulance cot.
  - There is generally no role for spinal motion restriction in penetrating trauma
  - In determining method of spinal motion restriction, consider patient age, associated injuries, and ability to cooperate with motion restriction efforts
  - Appropriately sized cervical collar is critical: Chin is flush with the chin piece, collar is snug but not touching trachea.
  - If an appropriately sized cervical collar is not available or not tolerated, consider foam immobilization device or towel rolls
  - When warranted, use approved pediatric immobilization devices
  - If adult or pediatric long spine boards are used to maintain motion restriction, ensure appropriate padding for voids
  - In young children, particularly under the age of 3, variation of head size to body ratio there is significant concern in the spinal motion restriction process. It is critical to avoid flexion of the upper cervical spine. Special attention to appropriate neutral in-line positioning of the head while supine is warranted and should include attention to appropriate patient positioning and use of appropriate padding of the shoulders/torso. Failure to do so may result in unintended movement of the cervical spine or potential airway compromise.

Pearls

- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Back, Neuro**
- Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushing's Response).
- Hypotension usually indicates injury or shock unrelated to the head injury.
- The most important item to monitor and document is a change in the level of consciousness.
- Concussions are periods of confusion or LOC associated with trauma which may have resolved by the time EMS arrives. Any prolonged confusion or mental status abnormality which does not return to normal within 15 minutes or any documented loss of consciousness should be evaluated by a physician ASAP.