Pediatric Emergency Medicine
Simulation Course:
Traumatic Brain Injury Scenario

Created: April 4, 2012
Modified: February 7, 2015
## Resource Outline

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1. Author Contact Information

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2. Description of Scenario

Scenario Overview
This scenario teaches learners to recognize and manage pediatric traumatic brain injury.

The scenario is simulation-based, designed for manikin-based simulation equipment, with an integrated team communication focus.

Learners will participate in a simulation scenario and be asked to identify the signs and symptoms of traumatic brain injury and its management (See Appendix A).

At the end of training, the learners should be able to recognize the seriousness of the situation and effectively coordinate a full resuscitation team. The primary complication for the team to recognize and manage is increased intracranial pressure with impending cerebral herniation.

Educational Rationale on How the Scenario Generalizes to Real-Life Circumstances
Injury in general, is the leading cause of death for children in the United States and most developed countries. Of deaths, approximately 40% are attributable to traumatic brain injury (TBI). TBI is often associated with cervical spine injury.

Rapid identification and stabilization of TBI and its potential sequelae (hypoxia, hypotension, increased intracranial pressure leading to cerebral herniation and death) is critical to ensure the best long term neurological outcomes. Definitive care (surgical decompression) may only be available at pediatric trauma centers, thus prompt transfer to an appropriate pediatric trauma facility can be critical.

Traumatic brain injury is characterized by the Glasgow Coma Scale (GCS) as mild (13-15) moderate (9-12) and severe(<9). GCS scores <9 are more indicative of significant brain injury, including cerebral contusions, epidural or subdural hematomas, and cerebral edema leading to cerebral herniation.

Medical providers must recognize children in traumatic brain injury early when they are more likely to respond to treatment. Management should include monitoring (heart, respiratory, blood pressure, temperature, pulse oximetry, end tidal carbon dioxide if available), supplemental 100% oxygen, recruitment of additional resources (e.g. neurosurgery, anesthesia, radiology, intensive care, transport services, etc, depending on your institution), airway protection (cervical spine stabilization, securement), positioning (head in midline, elevate head of bed ~30 degrees), mannitol via peripheral IV or IO or (hypertonic saline if CENTRAL line available) and rapid sequence intubation.

The goal of this scenario is to provide the learner with an opportunity to manage pediatric traumatic brain injury, where the correct steps need to be taken in a limited period of time.

Key elements include the primary survey, eliciting critical history (fall from >3 feet for child <2 years), recognizing traumatic brain injury (hematoma, skull deformity, altered mental status, asymmetric pupils, Cushing’s triad- hypertension, bradycardia, irregular respirations) and treating traumatic brain injury (positioning, cervical spine stabilization, mannitol, rapid sequence intubation, coordination of definitive treatment).

Duration of Training Session: 1 hour
2. Description of Scenario

**Frequency of Scenario:** The goal is to have each learner experience this scenario approximately once/year. We have a non-mandatory curriculum that offers a different scenario every 2 weeks. This particular scenario is offered approximately 4 times a year to try to ensure that all our learners are exposed at least once.

**Number of Trainees per Session:** 5 to 10. This scenario is most realistic and achieves maximal learning if all participants are functioning in their “normal” roles, with the same number of participants as would typically be expected. E.g.: nurses perform nursing roles, physicians perform physician roles, if a more experienced physician would normally function as the team leader, s/he plays that role in the simulation. If a response team at your institution normally consists of ~7 respondents, that should be the target number of trainees. If necessary, trainees or confederates can “act” to cover any unfilled roles, or those roles can be left unfilled. The instructor should be aware that realism will be compromised and learning objectives may be harder to achieve if these compromises are made.
## 3. Target Trainees

<table>
<thead>
<tr>
<th>Primary</th>
<th>Pediatric and emergency medicine residents, fellows, faculty and nurses</th>
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<tr>
<td>Secondary:</td>
<td>N/A</td>
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4. Prerequisite Knowledge and Skills

*Required background knowledge:*

- Signs and symptoms of traumatic brain injury
- Management of trauma and traumatic brain injury
- Rapid sequence intubation medications and equipment
- TeamSTEPPS communication terminology (See Appendix B)

*Required background skills expected in trainees prior to receiving training in the target scenario:*

- Primary and Secondary Assessment of trauma patient
- How to provide cervical spine stabilization
- How to endotracheally intubate
5. Goals and Objectives

Goal 1: Recognize traumatic brain injury
The learner will demonstrate recognition of traumatic brain injury in a safe and professional manner. (ACGME Competencies: Medical Knowledge⁴, Patient Care⁶, Interpersonal and Communication Skills⁵, Professionalism⁵, Systems-based Practice⁵)

Objective 1a – Demonstrate initial patient assessment [A, B, C, D]
The learner will be expected to discuss what s/he would look for in an initial physical examination (primary survey e.g. airway, breathing, circulation, disability, exposure) and history (SAMPLE- Signs and symptoms, Allergies, Medications, Past medical history, Last meal, and Events) of any pediatric patient s/he is evaluating.

Objective 1b– Apply appropriate monitoring [A, B, C]
The learner should apply basic monitoring standards for a potential trauma patient(cardiorespiratory monitors, pulse oximetry, blood pressure, and temperature). S/he should obtain a patient weight or accurate estimate (e.g. Broselow-Luten Tape).

Objective 1c - Identification of traumatic brain injury [A, B, C]
The learner should identify risks/signs of traumatic brain injury. Historical risks: fall from greater than 3 feet (<2yrs) or greater than 5 ft (>2yrs), altered mental status, signs of skull fracture, vomiting, headache. Potential signs of traumatic brain injury: skull hematoma, stepoff, deformity or depression, hemotympanum, altered mental status, pupil asymmetry, Cushing’s Triad.

Goal 2: Manage traumatic brain injury
The learner will treat traumatic brain injury in a safe and professional manner. (ACGME Competencies: Medical Knowledge⁴, Patient Care⁶, Interpersonal and Communication Skills⁵, Professionalism⁵, Systems-based Practice⁵)

Objective 2a – Recruit additional resources [A, B, C]
The learner should initiate recruitment of additional resources, available at their institution or needed to transport the patient to definitive care. The measures presented in this scenario are temporizing: ultimately the patient will require surgical intervention. The learner should identify this early in the scenario and begin activation of personnel (e.g. neurosurgery, anesthesia, radiology, intensive care, etc) and supplies.

Objective 2b – Demonstrate effective airway management [A, B, C]
The learner should maintain in-line cervical spine stabilization while securing the airway. Consider mild hyperventilation (rate of high 20’s - 30’s, target PaCO2 of 35-40 mm Hg) can be provided for signs of acute herniation. This practice is now controversial. Team should prepare to establish a secure airway, due to Glasgow Coma Scale < 9: organize personnel, medications and equipment.

Objective 2c – Demonstrate safe positioning [A, B, C]
The learner should continue to maintain cervical spine protection, elevate the head of the bed ~30 degrees and position the head in the midline.
5. Goals and Objectives

Objective 2d – Prepare and administer medications \([A, B, C]\)
The learner should provide medication to help decrease increased intracranial pressure. Mannitol 0.5-1 gram/kg can be given via peripheral or central IV or intraosseous line. Hypertonic saline (3% at 2 mL/kg, max rate < 20mL/minute) can be given via a CENTRAL LINE. If intubating the patient, premedication with lidocaine (1mg/kg/IV or IO) to blunt intracranial pressure spikes is now controversial. A recent review was not able to establish benefit of lidocaine. Consider atropine (0.02 mg/kg IV/IO) to blunt bradycardia. Provide a sedative and a paralytic.

Goal 3: Demonstrate effective teamwork and communication skills
The learner will become more skilled in the management and leadership of emergency personnel including physicians, nurses, and ancillary personnel. (ACGME Competencies: Medical Knowledge\(^A\), Patient Care \(^B\), Interpersonal and Communication Skills \(^C\), Professionalism \(^D\), Systems-based Practice \(^E\))

Objective 3a – Create team structure and leadership \([C, D]\)
The learner will be exposed to a full-scale manikin-based simulation, in which the learners are faced with a life threatening emergency due to traumatic brain injury. They will be expected to clearly identify and maintain a team leader and team member roles.

Objective 3b – Model effective communication skills \([C, D]\)
The learner will be required to direct available resources to manage traumatic brain injury. The team will be expected to brief at the beginning of the scenario and huddle during the scenario. The goal of briefing and huddling is to create a shared mental model, so that the team is on the same page regarding working diagnoses, treatment priorities and plan of care. S/he will coordinate, direct and communicate with a resuscitation team using directed call-out and check-back.
6. Instructor Notes

These are general “tips”. Everything in this section is included because at one time or another, we forgot to do it. The result was a suboptimal learning experience.

A. Environmental Set Up (See Section 10)
   • Try to re-create the location, look, and feel of the participants’ work environment.
   • Place simulator in a gown, diaper, etc. in order to maximize realism.

B. Pre-Simulation Introduction
   • Share a “learning contract” with participants. An example of some elements you may include: “We believe each of you is intelligent, well-trained, and doing their best” (adapted from the Center for Medical Simulation, Cambridge, MA). “We recognize this is a fictitious environment. We ask you to stretch your imagination, go beyond your comfort zone and help promote each others’ learning”.
   • Share ground rules with participants (e.g. “Treat others with respect, maintain confidentiality”).
   • Share the agenda (e.g. “We will begin with a 15 min simulation followed by a 30 min debrief.”).
   • Orient your participants (e.g. Review capabilities of simulator being used. Review location/availability of equipment/supplies. Identify facilitator to whom requests/questions should be directed during the simulation).
   • Review safety issues (e.g. correct use of defibrillator).
   • Review principles of teamwork and communication – TeamSTEPPS (See Appendix B). Review expectations of team leaders and members: take time to plan before a patient arrives (brief) and “get the team on the same page” (huddle).

C. Scenario Notes
   • A “trigger” is a critical time or event that signifies the start or end of a Stage in the scenario. These are the critical steps that help the scenario progress. Please review these prior to conducting your session.
   • Prompts. Sometimes learners get stuck- miss a physical exam finding, critical piece of history or don’t know/fail to implement a critical action that’s needed to help the team meet a learning objective or advance to the next stage. When this happens, the facilitator, who is actively monitoring the team’s progress, may choose to ask a question, state a cue or have a third party “drop a critical hint” to mobilize the team towards meeting the objectives. The instructor needs to balance “keeping the team from failing to meet the learning objectives” with the team’s opportunity to work through a problem. Careful not to shift it from self-discovery to a lecture!

D. Debriefing (See Appendix C)
   • Remember: Try to have participants step away from the simulator, into a different space (e.g. chairs in a circle or separate room). This physical cue helps participants shift from “doing” - a clinical focus to “reflecting” - a learning focus.
   • Remind participants that the debriefing time is intended to focus on the group’s performance.

E. Learner considerations
   • Over time, we have discovered that each group of learners’ needs vary. Thus, we have included a range of potential objectives, which can be tailored to suit different learner groups. E.g. for our less experienced clinical providers, we focus more on the medical
6. Instructor Notes

decision making goals. For our more advanced providers, we focus more on the team work and communication goals.

- If you are instructing more experienced learners, consider “titrating” the learning objectives. E.g. for learners that have limited medical knowledge, ordering the mannitol will be all that we require to move them from Stage 2 to Stage 4. For experienced providers, they need to administer mannitol, and begin recruiting all the additional personnel and equipment they will need for endotracheal intubation, before we will advance from Stage 2 to Optional Stage 3.

- If you are instructing more experienced learners, consider titrating the scenario’s signal to noise ratio. E.g. for resident learner groups, we will run the scenario as written. For those with more experience, we might add more “noise”. This could be an actor playing the role of a parent who gives insufficient history, is crying or questioning the team (providing a distraction).

- Participants. The most realistic and richest learning experiences occur when all the participants are performing their “normal” roles. E.g. physician functions as physician, nurse as a nurse, respiratory therapist as a respiratory therapist. If your learner group does not contain the full spectrum of “normal team members”, you may have to either ask some participants to function in different roles or provide “actors” to fill the necessary roles. Recognize that realism is going to be lost and learning opportunities missed. E.g. If the group is all physicians, none of your learners may have drug measuring/administration experience. As an instructor, you will need to make decisions on how much you want them to do to “get credit” and be able to advance to the next Stage in the scenario. Is it enough to be able to order the drug? Do they need to find the vial? Draw it up? Administer it to the simulator? Your answer should be driven on helping your learners to achieve the learning objectives.

- This scenario is part of the Pediatric Emergency Medicine Simulation Curriculum. The curriculum includes didactic sessions, skills sessions, and patient based education on topics ranging from septic shock to resuscitation skills to communication and teamwork. In addition, it includes several simulation scenario modules, presented on a rotating basis. We are in the process of submitting all of the scenario modules to MedEdPORTAL.

- Impact of the curriculum. We have studied our Pediatric Emergency Medicine Simulation Curriculum as a whole, and are in the process of submitting our results for publication. We have observed that over the course of a year, our learners’ performance (in medical decision making, technical skills and teamwork) improves. There is a dose response (greater exposure, better performance).
Common Errors and Prevention Strategies:

A. **Failure to recognize traumatic brain injury.**
   **Strategy:** Review risks/signs of traumatic brain injury: fall from greater than 3 or 5 feet (depending on age), loss of consciousness, signs of injury to skull (hematoma, bony tenderness, depression, hemotympanum), altered mental status, vomiting, severe headache (see PECARN criteria) or Cushing’s Triad (hypertension, bradycardia, irregular respirations).

B. **Failure to treat traumatic brain injury.**
   **Strategy:** Review treatment for traumatic brain injury: cervical spine protection, positioning, airway securement, mannitol (or consider hypertonic saline if CENTRAL LINE), definitive surgical intervention.

C. **Failure to rapidly recruit additional resources.**
   **Strategy:** Review goal of rapidly achieving definitive treatment (e.g. surgical intervention). Discuss steps necessary to achieve this at your institution (e.g. neurosurgery, anesthesia, radiology, transport services, intensive care, etc).

D. **Failure to consider pain/neuroprotective medications prior to intubation.**
   **Strategy:** Review medication choices. Lidocaine historically has been recommended to blunt increased intracranial pressure spikes associated with intubation- recent reviews do not validate its efficacy. Fentanyl has been recommended as a pre-medication for pain, to help blunt increased intracranial pressure spikes, but lacks literature to validate its use in pediatrics. In general, rapid sequence intubation should include a sedative and a paralytic.

E. **Inefficient teamwork**
   **Strategy:** Review need to brief (discuss team roles) prior to a critical situation and huddle (ad-hoc planning to re-establish situation awareness) during a crisis.

F. **Inefficient communication: lack of call-out**
   **Strategy:** Review importance of directed communication:
   “Survey physician- What’s the mental status?”

G. **Inefficient communication: lack of check-back**
   **Strategy:** Review use of closed-loop communication:
   Team Leader: “Mannitol, 1 gram/kg, total of 12 grams”.
   Medication Preparation Nurse: “Mannitol 12 grams”.
   Team Leader: “Correct”.

H. **Inefficient communication: lack of shared mental model**
   **Strategy:** Review use/request for team summaries with the establishment of a working diagnosis, rhythm change, clinical change, or lack of response to intervention:
   Medication Administration Nurse: “Team leader, can you summarize?”
7. Common Errors & Prevention Strategies

General strategies to solve the problems

- Increase knowledge base: assigned reading, lectures, teamwork and communication training
- Debriefing focused to re-evaluate critical thinking and structure planning of actions
- Teaching points based on errors
- Regular simulation training to avoid previous mistakes
- Behavior change comes slowly, over time. We believe it’s critical to create opportunities for your learners to develop their skills over time.
8. Cognitive Training

Key methods for delivering cognitive training include the following:

Traumatic Brain Injury Learner Handout (See Appendix D).

- We recommend sharing these with your learners BEFORE your simulation, if you want them to have the information “freshly reviewed” and ready to apply, AVAILABLE DURING your simulation if you want them to have a “reference” to turn to, or AFTER your simulation, if you want them to be able to compare their actions to a reference. When you share it with them it should match your educational goals and philosophy: formative, summative, etc.
9. Skill Training

Skills Training Scenario:

**Patient**

| Age: 18 Months | Weight: 12 kg | Gender: Male |

**Scenario:** Initially the patient is moaning and minimally responsive. Anticipated interventions include primary assessment, obtaining history, oxygen and IV access. The patient then becomes unresponsive. Anticipated interventions include securing the airway and mannitol. The patient stabilizes after either mannitol or intubation.

**Learning Objectives:**

1. Recognize traumatic brain injury
   a. Initial patient assessment
      i. SAMPLE history, initial physical
   b. Appropriate monitoring
      i. Heart & respiratory, oximetry, blood pressure, temperature
   c. Identification of traumatic brain injury
      i. History of fall from >3 feet (<2 yrs old) or >5 feet (>2 yrs old)
      ii. Hematoma, skull deformity, altered mental status, asymmetric pupils
      iii. Cushing’s Triad: bradycardia, hypertension, irregular respirations

2. Manage traumatic brain injury
   a. Recruit additional resources
      i. Neurosurgery, anesthesia, radiology, intensive care, etc.
   b. Airway
      i. Provide cervical spine protection
      ii. Consider mild hyperventilation (rate of high 20’s - 30’s, target PaCO2 of 35-40 mm Hg) for imminent herniation
      iii. Prepare to secure airway (intubation)
   c. Positioning
      i. Elevate head of bed ~30 degrees
      ii. Position head in midline
   d. Mannitol or hypertonic saline
      i. Mannitol
         • 0.5-1 gram/kg IV/IO
      ii. 3% hypertonic saline
         • 2 mL/kg, via a CENTRAL LINE, rate ≤ 20 mL/minute

3. Teamwork skills
   a. Team structure and leadership
      i. Determine and indicate team leader and member roles
   b. Communication skills
      i. Brief prior to starting the scenario
      ii. Huddle as needed during the scenario
      iii. Utilize directed communication
      iv. Utilize check-back for closed loop communication
9. Skill Training

Scenario Intro:

**ED:** The patient is an 18 month-old boy who fell off his back porch. He was initially unconscious for about a minute. His mother brought him to the ED. He has been more awake but crying.

Facilitator Notes:
Give team intro outside the simulation area. Patient is initially clothed, no triage vitals, not on monitors.

**SAMPLE History:** *(If asked)*

- **Signs/symptoms:** initially unconscious, then fussy
- **Allergies:** none
- **Medications:** none
- **Past medical history:** no hospitalizations, no surgeries, immunizations up to date
- **Last oral intake:** 2 hours prior to fall
- **Events prior:** he fell through a separation in the back porch railing, about 10 feet onto paved surface below, no vomiting

Prelude. 0-3 minutes
Give team the scenario intro outside the simulation area. You may answer any questions *(if asked)* which include the SAMPLE medical history. Give them up to three minutes to plan: decide on roles *(you may pre-assign or allow self-determination depending on your learning objectives and institutional policies)*, identify priorities, and organize before entering the simulation area.

Stage 1. Initial assessment: 3-5 minutes

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>HR</td>
<td>142</td>
</tr>
<tr>
<td>Spo2</td>
<td>98% RA</td>
</tr>
<tr>
<td>BP</td>
<td>98/52</td>
</tr>
<tr>
<td>RR</td>
<td>36</td>
</tr>
<tr>
<td>Temp</td>
<td>37.5</td>
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</tbody>
</table>

Technologist Information

- Quiet. Cry with IV attempt *(painful stimuli).*
- Clear breath sounds, shallow.
- After 2 minutes in this Stage → Go to Stage 2

Teaching Objectives

- Primary Assessment
  - ABCDE
  - Stabilize cervical spine
- Apply monitors
- Identify probable traumatic brain injury
  - Identify hematoma, skull deformity
- Obtain IV/IO access

Instructor Information

**Exam *(if asked):***

- Opens eyes to pain, withdraws to painful stimuli, cries to pain *(GCS = 9)*
- Pupils are 4 mm and reactive bilaterally
- Depressed skull fracture and boggy hematoma on left temporal-parietal area
- Capillary refill 3 sec
- Normal extremity and abdominal exam
- Normal back and rectal exam

Traumatic Brain Injury
9. Skill Training

| Responses: |
| SAMPLE history as above, all else “pending”
| After 2 min in Stage 1 → Go to Stage 2 |

### Stage 2. Increased intracranial pressure, impending herniation: 6 minutes, maximum

<table>
<thead>
<tr>
<th>HR</th>
<th>72</th>
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<tbody>
<tr>
<td>Spo2</td>
<td>94% RA</td>
</tr>
<tr>
<td>BP</td>
<td>144/100</td>
</tr>
<tr>
<td>RR</td>
<td>12 irregular</td>
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<tr>
<td>Temp</td>
<td>37.5</td>
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</tbody>
</table>

### Patient stops crying.
Breathing becomes irregular. Hypertension and bradycardia.

After hyperventilation **or** Mannitol/hypertonic saline **or** 6 minutes maximum in this Stage → Go to Optional Stage 3 for Intubation **OR** Stage 4 for Resolution

### Identify Cushing’s Triad
- Hypertension, bradycardia, irregular respirations

### Treat increased intracranial pressure, impending herniation
- Positioning (elevate head, midline)
- Consider mild hyperventilation for imminent hypertension (rate of high 20’s - 30’s, target PaCO2 of 35-40 mm Hg)
- Mannitol 0.5-1 gram/kg IV/IO
- Neurosurgery, anesthesia,

### Responses:
Any requested additional personnel “on their way”.

After mannitol **or** hypertonic saline **or** 6 min max in this Stage → Go to Optional Stage 3 **or** Stage 4

### Exam (If asked):
Glasgow Coma Scale 5 (no eye opening, no response to pain, abnormal flexion to pain)
- If team fails to identify clinical change after 1 min in this Stage, announce that patient is unresponsive. Irregular respiratory effort
Pupils asymmetric(right pupil 4mm - sluggishly reactive to light, left pupil 7 mm – unreactive)

### Responses:
Any requested additional personnel “on their way”.

After mannitol **or** hypertonic saline **or** 6 min max in this Stage → Go to Optional Stage 3 **or** Stage 4
## 9. Skill Training

### Optional Stage 3. Intubation: 6 minutes, maximum

<table>
<thead>
<tr>
<th>Vital signs normalizing After intubation or 6 minutes, maximum in this scenario</th>
<th>Teaching Objectives</th>
<th>Instructor Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR 98</td>
<td>Establish secure airway while maintaining cervical spine precautions</td>
<td><strong>Exam (If asked):</strong> Glasgow Coma Scale 8 (eye open to pain, moans to pain, withdraws to pain)</td>
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<tr>
<td>Spo2 96%</td>
<td>▪ Maintain cervical spine precautions (collar or in-line stabilization)</td>
<td><strong>Responses:</strong></td>
</tr>
<tr>
<td>BP 92/78</td>
<td>▪ Consider pre-medications to treat pain (e.g. lidocaine or fentanyl).</td>
<td>▪ After intubation or 6 minutes in Stage 3 → Go to Stage 4</td>
</tr>
<tr>
<td>RR 22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temp 37.5</td>
<td>▪ Note: current literature does not validate neuroprotective benefit of lidocaine or fentanyl for increased ICP in children. No adverse effects reported. Recommendations may vary locally.</td>
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<tr>
<td></td>
<td>▪ Rapid sequence intubation</td>
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<tr>
<td></td>
<td></td>
<td>▪ Atropine 0.02 mg/kg IV/IO to decrease additional bradycardia</td>
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<td></td>
<td></td>
<td>▪ Sedative (choose 1)</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>▪ Etomidate 0.3 mg/kg IV/IO or</td>
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<td></td>
<td></td>
<td>▪ Midazolam 0.1 mg/kg IV/IO</td>
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<td>▪ Rocuronium 1 mg/kg IV/IO</td>
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9. **Skill Training**

**Stage 4. Resolution: 2 minutes, maximum**

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<tr>
<td><strong>HR</strong></td>
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<tr>
<td><strong>BP</strong></td>
<td>88/68</td>
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<tr>
<td><strong>RR</strong></td>
<td>22 or rate of bagging</td>
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<tr>
<td><strong>Temp</strong></td>
<td>37.5</td>
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### Technologist Information

Vital signs normalizing
After 2 min → end scenario

### Teaching Objectives

Reassess ABC’s
Begin coordinating disposition, definitive treatment

### Instructor Information

**Exam (If asked):**
- If intubated:
  - Sedated, paralyzed
- If not sedated and paralyzed:
  - Glasgow Coma Scale 11 (eye open to voice, cries with pain, withdraw to touch)
  - Pupils 4 mm, reactive bilaterally.

**Responses:**
- After 2 min → end scenario
9. Skill Training

Debriefing the Team:
Below are examples of learning objective based statements & questions you may use to debrief the team. (Please see Appendix C) Debriefing Overview for general recommendations on overall debriefing format.

### Examples of debriefing for different learning objectives

#### Recognizing traumatic brain injury

<table>
<thead>
<tr>
<th>Debriefer Script</th>
<th>Reference Material</th>
<th>Instructor Notes</th>
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<tr>
<td>I noticed you <em>(were quick/took a while)</em> to identify the risk for traumatic brain injury. This was <em>(great/could harm your patient)</em> since delays in recognition can result in clinical deterioration.</td>
<td>Risks/signs of traumatic brain injury  - Fall from &gt;3 feet (&lt;2 yrs old) or &gt;5 feet (&gt;2 yrs old)  - Skull trauma (hematoma, skull deformity, hemotympanum)  - Altered mental status  - Asymmetric pupils  - Cushing’s Triad (hypertension, bradycardia, irregular respirations)</td>
<td></td>
</tr>
<tr>
<td>- What risks/signs of traumatic brain injury did you notice?  - What helped/hindered you?</td>
<td></td>
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</tr>
</tbody>
</table>

#### Managing traumatic brain injury

<table>
<thead>
<tr>
<th>Debriefer Script</th>
<th>Reference Material</th>
<th>Instructor Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>I noticed you <em>(were quick/ took a while)</em> to treat the traumatic brain injury.  <strong>OR</strong>  I noticed you <em>(were complete/missed some opportunities)</em> for treating this patient’s traumatic brain injury. I thought this was <em>(great/could have been even better).</em></td>
<td>Managing traumatic brain injury  - Recruit additional resources  - Airway management (cervical spine stabilization, mild hyperventilation, secure airway  - Positioning (midline, elevate head ~30 degrees)  - Mannitol (0.5-1 gram/kg IV/IO)  - Consider hypertonic saline (3% at 2mL/kg, max rate &lt;20mL/minute via CENTRAL LINE)  - If signs of impending herniation, temporary hyperventilation (rate 20’s to 30’s, temporarily may achieve PaCO2 &lt;35mm, but target PaCO2=35-40mm)</td>
<td></td>
</tr>
</tbody>
</table>
## 9. Skill Training

### Selection of rapid sequence intubation medications

<table>
<thead>
<tr>
<th>Debriefers Script</th>
<th>Reference Material</th>
<th>Instructor Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>I noticed that you <em>(were complete/could include more)</em> neuroprotective medications for rapid sequence intubation. Your choices <em>(were great/could be more neuroprotective)</em> against intracranial pressure spikes.</td>
<td>Review neuroprotective rapid sequence intubation medications</td>
<td></td>
</tr>
<tr>
<td>• How did you select your intubation medications?</td>
<td>▪ Premedication</td>
<td></td>
</tr>
<tr>
<td>• What helped/hindered you?</td>
<td>o Atropine 0.02 mg/kg IV/IO to decrease additional bradycardia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Consider pain medications, e.g. fentanyl 1-2 mcg/kg IV/IO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Sedative (choose 1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Etomidate 0.3 mg/kg IV/IO or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Midazolam 0.1 mg/kg IV/IO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Paralytic (choose 1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Rocuronium 1 mg/kg IV/IO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Succinylcholine 1-2 mg/kg IV/IO</td>
<td></td>
</tr>
</tbody>
</table>
## 9. Skill Training

### Examples for debriefing different Teamwork Learning Objectives

<table>
<thead>
<tr>
<th>Debriefer Script</th>
<th>Reference Material</th>
<th>Instructor Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Roles and Responsibilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Let’s talk about how you functioned as a team.</td>
<td><strong>Team leader</strong></td>
<td></td>
</tr>
<tr>
<td>It looked like you <em>did/did not</em> have a clear team leader and defined team roles. I think this is <em>great/concerning</em> because clear team roles can help a team function smoothly- improving how quickly interventions take place and reducing errors.</td>
<td>- Clear direction, coordination, timely interventions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Foot of patient</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Airway/Procedure MD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Manage airway/c-spine</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Head of patient</td>
<td></td>
</tr>
<tr>
<td>Survey MD</td>
<td>- Primary, Secondary survey, pulses with CPR, reassess</td>
<td></td>
</tr>
<tr>
<td>Nursing roles</td>
<td>- Medication Prep (draw-up meds)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Medication Admin (give meds)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Documenting (time keeper)</td>
<td></td>
</tr>
</tbody>
</table>

### Brief and Huddle

<table>
<thead>
<tr>
<th>Debriefer Script</th>
<th>Reference Material</th>
<th>Instructor Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>I noticed that your team <em>(did/didn’t/took a while to) (brief prior to the patient’s arrival/huddle after the initial evaluation).</em> I thought this was <em>(great/could have helped you work better as a team).</em></td>
<td><strong>The goal of a brief/huddle is to create a shared mental model. Assure all team members know what the working diagnosis is, treatment priorities and next steps in care.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Everyone on the team is responsible for making this happen. Anyone can ask for a brief/huddle. Brief/huddle is usually led by team leader.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- If one team member doesn’t know what’s up or what’s next- s/he is probably not alone.</td>
<td></td>
</tr>
</tbody>
</table>
### Directed call out

<table>
<thead>
<tr>
<th>Debriefer Script</th>
<th>Reference Material</th>
<th>Instructor Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>I noticed that you (did/didn’t/intermittently) used (peoples names/roles/eye contact) when (calling out orders/asking for assistance). I thought this was (great/could have been more directed).</td>
<td>Directed call out. A tactical communication skill to assure that important orders/questions are specifically directed to one individual (rather than called out into the air).</td>
<td></td>
</tr>
<tr>
<td>- What did you notice about orders/questions that were asked?</td>
<td>- “Jennifer-What’s the airway status?”</td>
<td></td>
</tr>
<tr>
<td>- How did this impact your team?</td>
<td>- “Kim- Give epinephrine .3mg IM”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- “Team leader- We lost the pulse”</td>
<td></td>
</tr>
</tbody>
</table>

### Closed loop communication/Check back

<table>
<thead>
<tr>
<th>Debriefer Script</th>
<th>Reference Material</th>
<th>Instructor Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>I noticed that you used closed-loop communication (consistently/a lot/rarely). Closed-loop communication can be critical for catching errors and assuring that (information/an order/a request) is heard.</td>
<td>Closed loop communication/check back is a strategy that requires verification of information. This enables the sender of the message to verify it has been heard, and heard correctly. It enables the receiver to confirm what they heard is correct.</td>
<td></td>
</tr>
<tr>
<td>- What did you think about your communication loops?</td>
<td>- Team leader - “epinephrine .3 mg IM”</td>
<td></td>
</tr>
<tr>
<td>- How did that impact your team?</td>
<td>- Medication preparation nurse- “epinephrine .3 mg IM”</td>
<td></td>
</tr>
<tr>
<td>- Has anyone seen problems with this in a patient resuscitation?</td>
<td>- Team leader - “correct”</td>
<td></td>
</tr>
<tr>
<td>- Has anyone seen closed loop communication prevent an error?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- How could you do it differently next time?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
10. Equipment Set-up

Simulation Environment preparation

Before each simulation, ensure the anticipated resuscitation equipment is available for the team’s use.

Resources

- PALS reference cards, material
- Patient Weight Estimator
- Pediatric Resuscitation Medication references (e.g.: Broselow tape, reference cards)
- Documentation forms

Universal Precautions

- Staff gowns
- Gloves
- Mask and face shields

Medications (consider having all or only a limited number of medications available)

- Adenosine
- Amiodarone
- Atropine
- Etomidate
- Fentanyl
- Ketamine
- Lidocaine
- Midazolam
- Normal Saline/Lactated Ringers
- Rocuronium
- Succinylcholine
- Epinephrine 1:10,000
- Epinephrine 1:1,000

Equipment

- Simulator in hospital gown, on bed
- Monitor – NIBP, HR, RR, Oxygen saturation, temperature
- Blood Pressure cuff, Heart Rate monitor leads, Oxygen saturation probe, defibrillator cables
- Oxygen hook-up on wall or cylinder
- Bag-mask system, multiple size masks
- O2 Mask, simple and/or non-rebreather
- Suction
- Thermometer
- Temperature probe
- Nasal, oral airways, multiple sizes
- Shoulder roll
- Endotracheal tubes- 3.0, 3.5, 4.0, 4.5, 5.0, cuffed or uncuffed, stylets
10. Equipment Set-up

Equipment Cont’d

- Laryngoscope, Miller and Mac blades, multiple sizes
- End-tidal CO2 colorimeter
- Nasogastric tube(s)
- Stethoscopes
- IV/Angiocaths, various sizes
- IO needles, 2 sizes
- Gauze, Tape
- IV tubing
- IV pumps, pressure bags
- Syringes, multiple sizes
- Bedside blood sample processors: glucose, electrolytes, gases
- Specimen tubes
- Crash cart & backboard
- Defibrillator / AED
- Cervical spine collars (1-3 different sizes)
11. Assessment Methods

Type(s) of Assessment Methods Used in This Scenario:

☑ Pre-test Only
☑ Pre-test & Post-test
☑ Post-test Only

☑ Medical Management Evaluation/Debriefing Form (Appendix E)
☑ Teamwork and Communication Evaluation/Debriefing Form (Appendix F)
☑ Simulation Session Evaluation (Appendix G)
## 12. Appendices

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<th>Appendix</th>
<th>Description</th>
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<tbody>
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<td>Appendix A</td>
<td>Pediatric Traumatic Brain Injury Scenario Algorithm</td>
</tr>
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<td>Appendix B</td>
<td>Teamwork and Communication (TeamSTEPPS) References</td>
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<tr>
<td>Appendix C</td>
<td>Debriefing Overview</td>
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<td>Appendix E</td>
<td>Pediatric Traumatic Brain Injury Medical Management Evaluation/Debriefing Form</td>
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<tr>
<td>Appendix F</td>
<td>Pediatric Traumatic Brain Injury Teamwork and Communication Evaluation/Debriefing Form</td>
</tr>
<tr>
<td>Appendix G</td>
<td>Pediatric Traumatic Brain Injury Simulation Session Evaluation Form</td>
</tr>
<tr>
<td>Appendix H</td>
<td>References</td>
</tr>
</tbody>
</table>
Appendix A: Scenario Algorithm

**SCENARIO TIMELINE**
- Prelude:
  - Start Timer: 0-3 min.
  - Scenario intro and team brief

**Stage 1:** Initial Assessment
- 3-5 min.
- Triggers: Start 3 min into scenario
- End: 5 min into scenario
  - Rhythm: sinus
  - HR: 142 bpm
  - BP: 98/62
  - SAT: 99%
  - RR: 36/min
  - Temp: 37.5 C

**Stage 2:** Increased Intracranial Pressure, Impending Herniation
- 5-11 min.
- Triggers: Start 5 min into scenario
- End: After hyperventilation or mannitol/hypertonic saline or 11 min into scenario
  - Go to optional Stage 3 or Stage 4 for Resolution
  - Rhythm: sinus
  - HR: 72
  - BP: 144/100
  - SAT: 94% RA
  - RR: 12/min irregular
  - Temp: 37.5 C

**OPTIONAL Stage 3:** Intubation
- 6 min max.
- Triggers: Start after Stage 3
- End: After intubation or 6 min into Act 3. Go to Stage 4: Resolution
  - Rhythm: sinus
  - HR: 98 bpm
  - BP: 92/78
  - SAT: 96%
  - RR: 22
  - Temp: 37.5 C

**Stage 4:** Resolution
- 2 min max.
- Triggers: Start after Stage 3
- End: After 2 minutes in Act 4.
  - Rhythm: sinus
  - HR: 128 bpm
  - BP: 88/88
  - SAT: 97%
  - RR: 22 or rate of bagging
  - Temp: 37.5 C

**FACILITATOR INFORMATION**
- Allow team to brief outside the simulation room
- Quiet: Cry with IV attempt
- Clear breath sounds, shallow
- Additional exam information available upon request
- Glasgow Coma Scale 5: No eye opening, no response to pain, abnormal flexion to pain
- Additional exam information available upon request
- Glasgow Coma Scale 6: Eye opens to pain, moans to pain, withdraws to pain
- If intubated: sedated/paralyzed
- If not intubated:
  - GCS: 11
  - Pupils 4 mm, reactive bilaterally

Traumatic Brain Injury
### Appendix B: TeamSTEPPS References

#### Teamwork and Communication (TeamSTEPPS) Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptableity</td>
<td>The ability to adjust strategies and altering a course of action in response to changing conditions (internal and external).</td>
</tr>
<tr>
<td>Brief</td>
<td>Discussion prior to start that assigns essential roles, establishes expectation, anticipated outcomes and likely contingencies.</td>
</tr>
<tr>
<td>Call-Out</td>
<td>A tactic used to communicate critical information during an emergent event. Helps the team prepare for vital next steps in patient care. <em>(Example: “Airway status?” – “Airway clear”; “Breath sounds?” – “Breath sounds decreased on right”)</em></td>
</tr>
<tr>
<td>Check-Back</td>
<td>A communication strategy that requires a verification of information. The sender initiates the message; the receiver accepts it and restates the message. In return, the sender verifies that the re-statement of the original message is correct or amends if not. <em>(Example: “Give Benadryl 25 mg IV push” – “Benadryl 25 mg IV push” – “That’s correct”)</em></td>
</tr>
<tr>
<td>CUS</td>
<td>Signal phrases that denote “I am Concerned, I am Uncomfortable, This is a Safety Issue.” When spoken, all team members will understand clearly not only the issue but the magnitude of the issue.</td>
</tr>
<tr>
<td>Debrief</td>
<td>Brief, informal information exchange session designed to improve team performance and effectiveness.</td>
</tr>
<tr>
<td>DESC Script</td>
<td>A technique for managing and resolving conflict. Describe the specific situation or behavior; provide concrete data. Express how the situation makes you feel/what your concerns are. Suggest other alternatives and seek agreement. Consequences should be stated in terms of impact on established team goals; strive for consensus.</td>
</tr>
<tr>
<td>Huddle</td>
<td>Ad hoc planning to re-establish Situation Awareness; designed to reinforce plans already in place and assess the need to adjust the plan.</td>
</tr>
<tr>
<td>SBAR</td>
<td>A framework for team members to structure information when communicating to one another. S = Situation (What is going on with the patient?) B = Background (What is the clinical background or context?) A = Assessment (What do I think the problem is?) R = Recommendation (What would I do to correct it?)</td>
</tr>
<tr>
<td>Shared Mental Model</td>
<td>An organizing knowledge structure of relevant facts and relationships about a task or situation that are commonly held by team members</td>
</tr>
<tr>
<td>Situation Awareness</td>
<td>The ability to identify, process, and comprehend the critical elements of information about what is happening to the team with regards to the mission. It’s knowing “What is going around you” and “What is likely to happen next”.</td>
</tr>
<tr>
<td>Situation Monitoring</td>
<td>The process of actively scanning and assessing elements of the situation to gain information or maintain an accurate awareness or understanding of the situation in which the team functions.</td>
</tr>
<tr>
<td>Two-Challenge Rule</td>
<td>Assertively voicing concern at least two times to ensure it has been heard.</td>
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</tbody>
</table>
Appendix C: Debriefing Overview

Simulation creates the opportunity to debrief.
We believe that the focus of each simulation should be the DEBRIEF.
Simulation creates the opportunity to examine our medical management, technical skills and teamwork and communication skills. It facilitates discussion about challenges in a safe environment in order to improve the quality of patient care.

Framework for debriefing:
Each debrief should consist of 4 components:
- Introduction
- Discussion of emotions
- Discussion of medical management and technical skills
- Discussion of teamwork and communication skills

1) Introduction
This “sets the stage” for debriefing and creates expectations.
What you might say:
- This is an opportunity to reflect and learn, improve our medical care, team work, and communication.
- Everyone should be able to ask questions and share their thoughts.
- Once you leave this session, we encourage open discussion of the concepts, but ask you to not to discuss individual performance.

2) Emotional experience discussion
There are a couple of camps regarding discussing emotions. One perspective is that until emotions are dealt with, it’s difficult for adult learners to “move on”: switching gears to process thoughts, actions and opportunities for improvement. Another perspective is that adult learners should process their emotions independently.

Our perspective is the first. If a group or team member is emotionally charged (sad, mad or frustrated) regarding something that did or didn’t happen in a scenario, it’s usually difficult for the individual or the group to be actively engaged, receptive to feedback and able to promote learning, until the emotions are addressed.

An example: a medication error occurs. One team member may think it is all his/her fault. S/he may feel embarrassed, judged, etc. If he/she can verbalize this, other team members may offer different perspectives, which enable the team to process the error together, potentially identifying contributing systems issues. If the emotions aren’t addressed- 3 separate people may feel embarrassed, responsible and not engage in a discussion, failing to identify systems issues which led to the error.

What you might say:
- How did that feel?
- Can you tell me more? Why?
3) **Medical management and technical skills**
This portion of the discussion focuses on the medical aspects of the scenario. It’s usually more comfortable to begin with these “facts”.

*What you might say:*
- *Let’s begin by discussing medical management.*
- *What did you think was wrong with the patient? Can someone briefly summarize what happened in this scenario?*
- *How did you reach those conclusions?*

4) **Teamwork and communication** (a. k. a. crew resource management, non-technical skills, human factors)
This portion of the discussion focuses on how the team worked together. It can be emotionally charged and difficult to discuss without feeling personal. The challenge is to try to generalize specifics into themes.

*What you might say:*
- *Let’s talk about how you functioned as a team.*
- *What did your team do well?*
- *What could your team do differently next time?*
- *That is something I see often. Has anyone else experienced that? How have you seen that handled?*

4) **Summarizing**
- *This is your opportunity to ensure the key learning points are highlighted*
- *Try to identify approximately three take-home points*
- *You may ask the participants’ to identify take home points or call them out yourself.*

**Medical management/technical skills examples:**
(a) This was a scenario of pediatric traumatic brain injury.
(b) Signs of traumatic brain injury: history of significant fall, signs of skull trauma, loss of consciousness, vomiting, severe headache, altered mental status and Cushing’s triad.
(c) Treatment of traumatic brain injury: C-spine stabilization, airway management, mannitol or hypertonic saline, potential rapid sequence intubation, consider pre-medications.

**Teamwork/ communication examples:**
(a) Effective coordination of a full resuscitation team when a patient presents with traumatic brain injury.
(b) Designate leadership and team member roles to ensure coordinated team functioning.
(c) Use *brief or huddle* to create a shared mental model for the working diagnosis and treatment plan.
Appendix C: Debriefing Overview

General Debriefing Goals:
- Try to facilitate the TEAM’s discussion (avoid dominating the conversation)
- Ask open ended questions (avoid yes/no questions)
- Discuss the team performance (not the individual)
Traumatic Brain Injury Learning Objectives

1. Recognize traumatic brain injury
   a. Historical risk factors: fall from >3 feet (<2 yrs old) or >5 feet (>2 yrs old), loss of consciousness, headache, vomiting, altered mental status
   b. Physical signs: skull hematoma, deformity, hemotympanum
   c. Altered mental status
   d. Pupillary asymmetry
   e. Cushing’s triad (hypertension, bradycardia, irregular respirations)

2. Treat traumatic brain injury
   a. Monitoring (heart, respirator, pulse oximetry, blood pressure, end tidal carbon dioxide, temperature)
   b. Recruit additional resources (e.g. neurosurgery, anesthesia, radiology, intensive care, transport, equipment)
   c. Apply 100% oxygen
   d. Airway management. Maintain cervical spine stabilization. Prepare to secure airway (personnel, medications, equipment).
   e. Positioning. Cervical spine stabilization, maintain head in midline, elevate head of bed ~30 degrees.
   f. Mannitol 0.5-1 gram/kg IV/IO
      - Consider hypertonic saline (3% at 2mL/kg, maximum rate of <20mL/minute) if CENTRAL LINE
   g. Temporary hyperventilation
      - For signs and symptoms of impending herniation, not recommended routinely
      - Rate high 20’s to 30’s. Goal PaCO2 35mm-40mm, temporary goal of <35mm with impending herniation only
   h. Definitive decompression: surgical intervention

3. Rapid sequence intubation medication considerations
   a. Premedication - consider
      - Lidocaine 1mg/kg IV/IO (current literature inconsistent evidence of benefit for decreasing ICP, no reported adverse effects)
      - Fentanyl 1-2 mcg/kg IV/IO (indication: pain, pediatric literature neither validates nor reports adverse effects)
      - Atropine 0.02 mg/kg IV/IO to decrease additional bradycardia
   b. Sedative (choose 1)
      - Etomidate 0.3 mg/kg IV/IO) or
      - Midazolam (0.1 mg/kg IV/IO)
   c. Paralytic (choose 1)
      - Rocuronium 1 mg/kg IV/IO
      - Succinylcholine 1-2 mg/kg IV/IO (risk of arrhythmias in patients with undiagnosed neuromuscular disease or electrolyte imbalances due to rhabdomyolysis or burns)
### Appendix E: Medical Management Evaluation/Debriefing Form

**Pediatric Traumatic Brain Injury**  
**Medical Management/Technical Skills**

This checklist identifies core medical management/technical skills. It’s hard to discuss more than 3 of these during one debriefing session. We recommend focusing on 2-3 of these issues.

<table>
<thead>
<tr>
<th>Assessment of ABCDE’s</th>
<th>□ Done Well</th>
<th>□ Needs Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific comments:</td>
<td></td>
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</tbody>
</table>

*What did you think of the assessment of the ABCDE’s? What could you do differently?*

<table>
<thead>
<tr>
<th>Recognizing traumatic brain injury</th>
<th>□ Done Well</th>
<th>□ Needs Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific comments:</td>
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</tbody>
</table>

*Discuss Points: What are the signs of traumatic brain injury? skull injury, altered mental status, bradycardia, irregular respirations*

<table>
<thead>
<tr>
<th>Managing traumatic brain injury</th>
<th>□ Done Well</th>
<th>□ Needs Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific comments:</td>
<td></td>
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</table>

*Discuss Points: What’s the treatment for traumatic brain injury? Recruit resources, stabilize cervical spine, midline head, elevate head ~30 degrees, mild hyperventilation, airway securement with rapid sequence intubation, mannitol (or hypertonic saline if central line), definitive decompression*

<table>
<thead>
<tr>
<th>Rapid sequence intubation medication selections</th>
<th>□ Done Well</th>
<th>□ Needs Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific comments:</td>
<td></td>
<td></td>
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</tbody>
</table>

*Discuss Points: Premedication with to blunt ICP spikes (lidocaine, literature unclear), atropine to blunt bradycardia, sedative to blunt pain, paralytic to blunt movement*
Appendix F: Teamwork and Communication Evaluation/Debriefing Form

**Pediatric Traumatic Brain Injury**  
**Teamwork and Communication Evaluation**

This checklist identifies core teamwork and communication skills. It’s hard to discuss more than 3 of these during one debriefing session. We recommend focusing on 2-4 of these issues.

<table>
<thead>
<tr>
<th><strong>Leader/Roles Identified &amp; Maintained</strong></th>
<th>□ Done Well □ Needs Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific comments:</td>
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</table>

_Discussion Points: What helped/hindered having clear leadership and roles?_

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<thead>
<tr>
<th><strong>Directed Call out</strong></th>
<th>□ Done Well □ Needs Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific comments:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

_Discussion Points: How were orders given- “Into the air” or directed at specific individuals? How did that impact you? How could they be delivered more effectively?_

<table>
<thead>
<tr>
<th><strong>Check back/Closed loop communication</strong></th>
<th>□ Done Well □ Needs Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific comments:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

_Discussion Points: describe closed loop communication_

<table>
<thead>
<tr>
<th><strong>Shared Mental Model</strong></th>
<th>□ Done Well □ Needs Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific comments:</td>
<td></td>
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</tbody>
</table>

_Discussion Points: How did team members share information/working diagnosis/treatment plan ([brief/huddle])?_
## Appendix G: Simulation Evaluation Form

### Simulation Session Evaluation Form

**Instructor:** ______________________________  
**Date:** __________________

**Case Presented:** Pediatric Traumatic Brain Injury

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>This simulation case provided is relevant to my work.</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. <strong>The simulation case was realistic.</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. <strong>This simulation case was effective in teaching basic resuscitation skills.</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. <strong>This simulation case was effective in teaching pediatric traumatic brain injury management skills.</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. <strong>The debrief created a safe environment.</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. <strong>The debrief promoted reflection and team discussion.</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Can you list/describe 1 or more ways this simulation session will change how you do your job?

How could we improve this scenario?

Comments:
Appendix H: References


