

**Form 0: Patient Identification**

Patient identification number

Assigned by REDCap upon entry. Do NOT pre-fill.

Free Text Answer:

Medical record number

To be entered ONLY to facilitate accuracy of local data capture. Will be accessible ONLY to researchers at the specific site where the patient was treated. Will NOT be accessible to the PI or to researchers from other participating sites.

Free Text Answer:

**Form 2: Demographic Information****Instructions: Who should complete this data form?** The research nurse coordinator. **When should this data form be completed?**

As soon as possible after admission or transfer of an eligible, acutely-head injured patient to the pediatric intensive care unit (PICU).

Data entry after hospital discharge is acceptable, but suboptimal. **What is the purpose of this data form?** To capture demographic data, to verify patient meets study inclusion criteria, and to verify patient does not meet exclusion criteria. **Directions:** Answer every question in order, unless specifically directed otherwise. When accessed online, this data form utilizes embedded branching logic that facilitates skipping of some data fields when appropriate. **Sources of Information?** Caregivers, parents, EMT and ED records, inpatient medical records.**2. Inclusion and Exclusion Criteria**

Q2.2.1. Acute, closed or non-penetrating, traumatic cranial injuries confirmed by CT or MR imaging?

Answer "Yes" if: (1) cranial CT or MRI demonstrate *any* finding(s) compatible with *acute* (closed) head trauma; and (2) treating clinicians consider acute (closed) head trauma to be the most likely explanation for the child's acute clinical and radiological findings. Patients who manifest CT or MRI finding(s) of acute (closed) head trauma and *also* reveal a low attenuation subdural collection should *not* be excluded.**Choose one:**

- Yes
- No (If selected, patient is not eligible for study participation. Complete *this* data form, but there is *no* need to complete *any* additional data forms regarding this patient.)

Q2.2.2. Hospitalized in the PICU specifically for evaluation and/or treatment of the same, acute, traumatic cranial injuries?

Answer "Yes" if the child was admitted first to a general pediatric ward and then transferred to the PICU for evaluation and/or treatment of his/her acute, traumatic cranial injuries. An acutely head-injured patient admitted for intensive care whose head injury is considered an incidental finding unrelated to his/her acute clinical presentation is *not* eligible for study participation.**Choose one:**

- Yes
- No (If selected, patient is not eligible for study participation. Complete *this* data form, but there is *no* need to complete *any* additional data forms regarding this patient.)

Q2.2.3. Less than 36 months of age at the time of hospital admission?

**Choose one:**

- Yes
- No (If selected, patient is not eligible for study participation. Complete *this* data form, but there is *no* need to complete *any* additional data forms regarding this patient.)

Q2.2.4. Did the child's acute head injuries result from a collision involving a motor vehicle?

**Choose one:**

- No
- Yes (If selected, patient is not eligible for study participation. Complete *this* data form, but there is *no* need to complete *any* additional data forms regarding this patient.)

Q2.2.5. Any radiological evidence of pre-existing <i>brain</i> defect, malformation, disease, infection or hypoxia-ischemia? <b>A low attenuation subdural collection should <i>not</i> be considered evidence of pre-existing <i>brain</i> defect, malformation, disease, infection or hypoxia-ischemia.</b>	<b>Choose one:</b> <ul style="list-style-type: none"> <li>• No</li> <li>• Yes (If selected, patient is not eligible for study participation. Complete <i>this</i> data form, but there is <i>no</i> need to complete <i>any</i> additional data forms regarding this patient.</li> </ul>
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### 3. Demographics

Q2.3.1. Age (in months) at the time of hospital admission? <b>Expressed in months, rounded to the nearest whole month.</b>	Free Text Answer:
Q2.3.2. Gender?	<b>Choose one:</b> <ul style="list-style-type: none"> <li>• Male</li> <li>• Female</li> </ul>
Q2.3.3. Ethnicity? <b>Select ONLY one.</b>	<b>Choose one:</b> <ul style="list-style-type: none"> <li>• Hispanic or Latino</li> <li>• Not Hispanic or Latino</li> <li>• Ethnicity unknown, not specified or refused to answer</li> </ul>
Q2.3.4. Race? <b>Select ONLY one.</b>	<b>Choose one:</b> <ul style="list-style-type: none"> <li>• White or White-Hispanic [go to: 2.4.1]</li> <li>• Black, African American or Black-Hispanic [go to: 2.4.1]</li> <li>• Other</li> </ul>
Q2.3.5. Which other race(s)? <b>Select ALL that apply.</b>	<b>Choose all that apply:</b> <ul style="list-style-type: none"> <li>• American Indian</li> <li>• Alaskan Native</li> <li>• Native Hawaiian</li> <li>• Other Pacific Islander</li> <li>• Asian (Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese)</li> <li>• Mixed or Other</li> <li>• Race unknown, not specified, or refused to answer</li> </ul>

### 4. Miscellaneous

Q2.4.1. Additional notes or comments? <b>To complete this electronic data form, a response is required in this data field. If you have no additional notes or comments, enter 'None.'</b>	Free Text Answer:
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## Form 4: Clinical, Physical and Radiological Findings

**Instructions:** **Who should complete this data form or verify the accuracy of the data entered on this data form?** A pediatric intensive care medical provider on the child's inpatient health care team or the involved child abuse specialist or consultant. **When should this data form be completed?** Prior to hospital discharge. Data entry after hospital discharge is acceptable, but suboptimal. **What is the purpose of this data form?** To capture data regarding the child's clinical, physical, and radiological findings of abusive vs. other head trauma. **Directions:** Answer every question in order, unless specifically directed otherwise. When accessed online, this data form utilizes embedded branching logic that facilitates skipping of some data fields when appropriate. **Sources of Information:** Caregivers, parents, EMT and ED records, inpatient medical records, physical examination, and/or cranial imaging studies.

### 2. Clinical Presentation and Course

*Did your patient manifest...*

Q4.2.1. Any clinically-significant <i>respiratory</i> compromise at the scene of injury, during transport, in the ED, or prior to hospital admission?	<b>Choose one:</b> <ul style="list-style-type: none"> <li>• Yes or Probably</li> <li>• None was reported, documented or observed</li> </ul>
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<p>“Respiratory compromise” includes infrequent or labored respirations, apnea, or any requirement for intubation or assisted ventilation.</p>	
<p>Q4.2.2. Any clinically-significant <i>circulatory</i> compromise at the scene of injury, during transport, in the ED, or prior to hospital admission?  “Circulatory compromise” includes bradycardia, hypotension, delayed capillary refill, cardiac arrest, or any requirement for urgent volume expansion, chest compressions, or vasoactive therapy.</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes or Probably</li> <li>• None was reported, documented or observed</li> </ul>
<p>Q4.2.3. Seizure(s) at the scene of injury, during transport, in the ED, or prior to hospital admission?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes or Probably</li> <li>• None were reported, documented or observed</li> </ul>
<p>Q4.2.4. A clear impairment or loss of consciousness at the scene of injury, during transport, in the ED, or prior to hospital admission?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes or Probably</li> <li>• None was reported, documented or observed [go to 4.3.1]</li> </ul>
<p>Q4.2.5. Did this child’s clear impairment or loss of consciousness resolve prior to hospital admission?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes [go to 4.3.1]</li> <li>• No</li> </ul>
<p>Q4.2.6. Did this child’s clear impairment or loss of consciousness last &gt;24 hours after admission?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No [go to 4.3.1]</li> </ul>
<p>Q4.2.7. Was this child’s clear impairment or loss of consciousness ever associated with flaccidity, decorticate or decerebrate posturing?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
<p><b>3. Findings on Initial Physical Examination(s)</b></p>	
<p><i>Did your patient’s physical examination(s) reveal...</i></p>	
<p>Q4.3.1. Any craniofacial bruising, abrasion(s), subgaleal hematoma(s) or cephalohematoma(s)?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
<p>Q4.3.2. Any bruising involving the child’s ear(s), neck or torso (that is, his/her chest, abdomen, GU region, back or buttocks)?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
<p>Q4.3.3. Skin bruising, abrasion(s) or laceration(s) in two or more distinct locations other than knees, shins or elbows?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
<p>Q4.3.4. Any patterned skin bruising or dry contact burns?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes or Probably</li> <li>• No or Probably Not</li> </ul>
<p>Q4.3.5. Any scalding burn(s) with uniform depth, clear lines of demarcation and paucity of splash marks?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes or Probably</li> <li>• No or Probably Not</li> </ul>
<p><b>4. Findings on Head Imaging Studies</b></p>	
<p><i>Did your patient’s head imaging studies reveal...</i></p>	
<p>Q4.4.1. Any skull fracture(s)?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No [go to: 4.4.3]</li> </ul>

<p>Q4.4.2. What skull fracture(s) did the child manifest?  <b>Select ALL that apply. “Complex skull fracture(s)” include skull fractures that are multiple, bilateral, branching or comminuted, diastatic, stellate or crossing suture line(s).</b></p>	<p><b>Choose all that apply:</b></p> <ul style="list-style-type: none"> <li>• Only an isolated, unilateral, nondiastatic, linear, parietal skull fracture</li> <li>• Complex skull fracture(s)</li> <li>• Other skull fracture(s)</li> </ul>
<p>Q4.4.3. Any epidural hemorrhage(s)?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
<p>Q4.4.4. Any subdural hemorrhage(s) or fluid collection(s)?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No [go to: 4.4.7]</li> </ul>
<p>Q4.4.5. How would you characterize the location(s) or distribution of the child’s subdural hemorrhage(s) or fluid collection(s)?  <b>Select ALL that apply.</b></p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Unilateral, overlying only a single cerebral hemisphere</li> <li>• Bilateral, overlying both cerebral hemispheres</li> <li>• Involving or extending from the interhemispheric space</li> </ul>
<p>Q4.4.7. Any subarachnoid hemorrhage(s)?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
<p>Q4.4.8. Any brain parenchymal contusion(s), laceration(s) or hemorrhage(s)?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No [go to: 4.4.12]</li> </ul>
<p>Q4.4.9. Did these brain parenchymal contusion(s), laceration(s) or hemorrhage(s) involve the <i>cortical</i> brain?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
<p>Q4.4.10. Did these brain parenchymal contusion(s), laceration(s) or hemorrhage(s) involve the <i>subcortical</i> brain?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
<p>Q4.4.11. Are these brain parenchymal contusion(s), laceration(s) or hemorrhage(s) reasonably characterized as <i>diffuse traumatic axonal injury</i>?  <b>“Diffuse traumatic axonal injury” is defined as multiple, small, parenchymal or intraventricular hemorrhage(s). Parenchymal contusion(s), laceration(s) or hemorrhage(s) involving both the cortical and subcortical (or deeper) brain are likely compatible with diffuse traumatic axonal injury.</b></p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes or Probably</li> <li>• No or Probably Not</li> </ul>
<p>Q4.4.12. Any brain hypoxia, ischemia and/or swelling?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No [go to: 4.5.1]</li> </ul>
<p>Q4.4.13. How would you characterize the <i>depth</i> of this child’s brain hypoxia, ischemia and/or swelling?  <b>Select ONLY one.</b></p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Limited to the cortical brain</li> <li>• Involving the subcortical (or deeper) brain</li> </ul>
<p>Q4.4.14. How would you characterize the <i>distribution</i> of this child’s brain hypoxia, ischemia and/or swelling?  <b>Select ONLY one.</b></p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Unilateral, involving only a single cerebral hemisphere</li> <li>• Bilateral, involving both cerebral hemispheres</li> </ul>

## 5. Miscellaneous

Q4.5.1. Did your patient’s physical examination or head imaging studies reveal any *other* traumatic injuries considered moderately or highly suspicious for abuse?

**Choose one:**

- Yes
- No [go to: 4.5.2]

Q4.5.1.1. Please list the “Other traumatic injuries” here.

Free Text Answer:

Q4.5.2. Additional notes or comments?

To complete this electronic data form, a response is required in this data field. If you have no additional notes or comments, enter “None.”

Free Text Answer:

## Form 5: History, Forensic Evaluations, Impression and Response

**Instructions:** Who should complete this data form or verify the accuracy of the data entered on this data form? The child abuse specialist or consultant, if he/she completed a child abuse evaluation. Otherwise, an informed pediatric intensive care medical provider. **When should this data form be completed?** Prior to hospital discharge, when more complete historical information about the child’s head injury event has become available, when tests to help confirm or exclude abuse (if ordered) are complete, and when the child’s treating and consulting physicians have formulated a final, consensus, diagnostic impression of abusive versus other head trauma. **What is the purpose of this data form?** (1) To capture information that will facilitate categorization of study patients into comparison groups of abusive vs. other head trauma, and (2) To capture information about abuse evaluations, results and final diagnostic impressions. **Directions:** Complete this data form even if the child did *not* undergo a child abuse evaluation. Answer every question in order, unless specifically directed otherwise. When accessed online, this data form utilizes embedded branching logic that facilitates skipping of some data fields when appropriate. Data entry after hospital discharge is acceptable, but suboptimal. **Sources of Information:** Caregivers, parents, police and child protection investigators, EMT and ED records, inpatient medical records, consultation reports.

## 2. History

Q5.2.1. Was the child’s head injury event witnessed and described thoroughly by an *unbiased, independent* observer?

Select **ONLY one**.

**Choose one:**

- Yes, and was described by this observer as an ‘accidental’ or ‘nonabusive’ head injury event [go to:5.3.1]
- Yes, and was described by this observer as an ‘inflicted’ or ‘abusive’ head injury event [go to: 5.3.1]
- No or Unknown

Q5.2.2. Was the person responsible for this child when he or she was head-injured—or first became clearly and persistently ill—asked to explain what happened?

Answer “Yes” if—prior to the child’s hospital discharge—any member or the child’s health care team acquired a description of the caregiver’s account of the child’s head injury event—either directly from the caregiver *or* from police or child protection investigator(s) who interviewed the caregiver.

**Choose one:**

- Yes
- No [go to: 5.2.6]

Q5.2.3. Which of the following statements best summarizes this caregiver’s explanation for the child’s head injuries and acute clinical presentation?

Select **ONLY one**.

**Choose one:**

- The caregiver described an ‘accidental’ or ‘nonabusive’ head injury event
- The caregiver clearly admitted ‘inflicted’ or ‘abusive’ head trauma [go to: 5.3.1]
- The caregiver specifically denied that the child experienced any head trauma before he or she became symptomatic [go to: 5.2.6]
- The caregiver refused to explain what

	happened [go to: 5.2.6]
<p>Q5.2.4. Was the caregiver's explanation <i>developmentally</i> consistent with the child's known (or expected) gross motor skills?</p> <p>Select <b>ONLY one</b>. "Developmentally consistent" means that the caregiver's explanation did <i>not</i> include a requirement for the child to have utilized gross motor skills that he or she had not previously demonstrated.</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes or Probably</li> <li>• No or Probably Not</li> </ul>
<p>Q5.2.5. Did the caregiver provide an explanation that was <i>historically consistent</i> with repetition over time?</p> <p>Select <b>ONLY one</b>. An explanation that is "historically consistent" with repetition over time is one that did not change substantively over time with repetition. As used here, "historical consistency" has <i>nothing</i> to do with whether or not you believe that the caregiver's explanation actually explains the child's injuries and acute clinical presentation.</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes or Probably</li> <li>• No or Probably Not</li> </ul>
<p>Q5.2.6. To the best of your knowledge, was the child cruising or walking prior to hospital admission?</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>

### 3. Child Abuse Evaluations and Results

<p>Q5.3.1. Which of the following diagnostic tests were completed on this child?</p> <p>Select <b>ALL</b> that apply.</p>	<p><b>Choose all that apply:</b></p> <ul style="list-style-type: none"> <li>• Cranial CT scan(s)</li> <li>• Cranial MRI scan(s)</li> <li>• Abdominal CT scan(s)</li> <li>• Complete blood count</li> <li>• Coagulation testing or screening</li> <li>• Liver function tests</li> <li>• Pancreatic function tests</li> <li>• Radiological skeletal survey</li> <li>• Bone scan</li> <li>• Ophthalmology evaluation</li> </ul>
<p>Q5.3.2. Which of the following <i>additional</i> traumatic injuries (or potential markers of traumatic injuries) did this child reveal?</p> <p>Select <b>ALL</b> that apply. A response is required. If none of the listed injuries or 'potential markers' were revealed, select the final answer: "None of the above."</p>	<p><b>Choose all that apply:</b></p> <ul style="list-style-type: none"> <li>• Classic metaphyseal lesion fracture(s) or epiphyseal separation(s)</li> <li>• Rib fracture(s)</li> <li>• Fracture(s) of the scapula or sternum</li> <li>• Fracture(s) of digits</li> <li>• Vertebral body fracture(s) or dislocations or fracture(s) of spinous process(es)</li> <li>• Serum hepatic transaminase (AST or ALT) &gt;80 IU/L any time after hospital admission</li> <li>• Confirmed intra-abdominal injuries</li> <li>• Retinoschisis confirmed by an ophthalmologist</li> <li>• Retinal hemorrhage(s) described by an ophthalmologist as dense, extensive, covering a large surface area and/or extending to the ora serrata</li> <li>• None of the above</li> </ul>

### 4. Treating Physicians' Final Diagnostic Impression and Response

<p>Q5.4.1. Which of the following best describes the final, consensus, diagnostic impression of the treating and consulting physician(s) caring for this child at the time of the child's hospital discharge?</p> <p>Select <b>ONLY one</b>.</p>	<p><b>Choose one:</b></p> <ul style="list-style-type: none"> <li>• Definitive abusive head trauma</li> <li>• Probable abusive head trauma</li> <li>• Undetermined</li> <li>• Probable nonabusive head trauma</li> <li>• Definitive nonabusive head trauma</li> </ul>
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Q5.4.2. Did a child abuse consultant evaluate this patient and contribute to this final diagnostic impression?	<b>Choose one:</b> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
Q5.4.3. Did any professional from your medical treatment facility make (or verify) a report of suspected child maltreatment regarding this child to a child protection or investigative agency?	<b>Choose one:</b> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
<b>5. PICU Length of Stay</b>	
Q5.5.1. How many days did this patient remain in the PICU before his/her discharge, transfer or death?	
<b>6. Miscellaneous</b>	
Q5.6.1. Additional notes or comments? To complete this electronic form, a response is required in this data field. If you have no additional notes or comments, enter "None."	Free Text Answer:
Q5.6.2. Did this patient—or any of the PICU providers or child abuse consultants involved in his or her care—experience any adverse event(s) that were possibly, probably, or definitively related to their participation in this research study? If “Yes”, notify the Study PI and your local IRB representative ASAP.	<b>Choose one:</b> <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>