PEDIATRIC MILD TRAUMATIC HEAD INJURY

October 2011

Quality Improvement Resources

Illinois EMSC
Pediatric Mild Traumatic Head Injury
Data Dictionary
Confidential – for QI purposes only

AIM Statement:

To provide safe and effective care for pediatric patients (0 ≤ 15 years) presenting to the Emergency Department with any form of traumatic head injury (GCS ≥ 14) as evidenced by:

- Appropriate Assessment
- Appropriate Management
- Appropriate Disposition & Discharge Instructions

REVIEW THE PATIENT'S *ENTIRE* ED MEDICAL RECORD TO COLLECT THE NECESSARY DATA (i.e., BOTH MD AND RN NOTES)

Record Sampling:

Please follow these three steps when selecting patient records for review:

Step 1. Randomly select 30 patient records from all head injured pediatric patients treated in your Emergency Department during the 4th quarter of 2008 (October 1 through December 31). Each patient must meet the following inclusion criteria:

1. Age: 1 day through 15 years of age
2. Glasgow Coma Scale: 14 or 15 *(exclude cases with GCS 13 or less)* or Awake, Alert & Oriented x 3
3. Diagnosis of head injury (defined as either a or b):
   a. Within the following ICD9 Codes:
      - 800 - 801.9 -- types of skull fractures
      - 803 - 804.9 -- other types of skull fractures
      - 850 - 850.9 -- concussion
      - 851 - 854.1 -- brain injury
      - 959.01 -- other and unspecified injury to the head
   b. Discharge diagnosis of "concussion," "traumatic brain injury," "closed head injury/trauma," "CHI," "skull fracture," "hematoma/bleed," etc.

If your facility has less than 30 patient records (e.g., 25 records) for the quarter in total, then work with this smaller number of records (e.g., 25).

Step 2. From the patient records selected in Step 1, audit up to **10 records of patients who received a CT scan.** Enter data from these records in Section 1 (entitled "CT Scanned Patients") of the Web data entry system. If there are less then 10 such records (e.g., 7) available, then audit all of them. This concludes Step 2.

NOTE: If your facility *does not* perform CT imaging at all, then go to Step 3.

Step 3. From the remainder of the original patient records selected in Step 1, **audit 10 random patients who fit the inclusion criteria – with or without undergoing CT imaging**. Enter data from these patient records in Section 2 (entitled “All Head Injured Patients”) of the Web data entry system.

At most you will enter 20 records for the 4th quarter.
This process will be repeated in the 3rd and 4th quarters of 2009 (July 1 – December 31).

Answer the questions using the following acronyms (unless otherwise directed):

Y = Yes/Present
N = No/Not Present
N/D = Not Documented/Unknown
N/A = Not Applicable

Assessment:

1. Age of patient (in months or years)

2. What was the mode of arrival?
   - Prehospital (P) = transported by EMS
   - Transfer (T) = transported from one acute care facility to another acute care facility
   - Walk in (W) = brought in by family/caregiver; as a referral from an urgent care center, doctor's office, etc.

3. Was the time of the injury within the last 24 hours? Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable

4. What was the Mechanism of Injury (MOI)?
   - Motor Vehicle Crash (M) (patient in or struck by vehicle)
   - Bicycle (B)
   - Hit by object/person (H)
   - Sports related (S)
   - Fall (F)
   - Other (O)
   - N/D = Not Documented/Unknown

   4a. Was the MOI considered **severe** (based on one of the following conditions: Motor vehicle crash - ejection, rollover, death in same passenger compartment; Fall > 5 feet; Pedestrian or unhelmeted bicyclist struck by motorized vehicle; Struck by high impact object/projectile)?
   Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable

   4b. Was appropriate safety equipment used (e.g, seatbelt/car seat, bike helmet, protective sports equipment, etc.)?
   Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable
     - *Not Applicable (N/A) is appropriate in cases where safety equipment would not be expected (e.g., Fall)*

5. Did the child suffer a recent recurrent traumatic head injury (e.g., within the last 12 weeks)?
   Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable

6. Were vital signs documented (per hospital policy)? Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable

7. Was the child screened for signs of child maltreatment/neglect (e.g., history is inconsistent with injuries, delay in seeking medical care, history isn't plausible for age and development of child, etc.)?
   Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable

8. Was the pain level documented?
   Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable

9. Did the child demonstrate any abnormal behavior per a reliable parent/caregiver (e.g., mood swings, excessive sleepiness, etc.)?
   Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable

10. Did the child have any emesis within the last 24 hours?
    Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable

11. Did the child have a positive Loss of Consciousness (LOC)?
    Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable

12. Were any focal neurologic findings/deficits present (e.g., paralysis, weakness, sensory level deficit, cranial nerve deficit, etc)?
    Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable

13. Was physical/palpable evidence of any kind of skull fracture present *prior to CT imaging* (e.g., Battle's sign, raccoon eyes, hemotympanum, CSF rhinorrhea, etc)?
    Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable

14. Was physical/palpable evidence of scalp abnormality present *prior to CT imaging* (e.g., hematoma, laceration, etc.)?
    Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable

15. Were other body systems involved (e.g., bruises, suspected fractures, suspected abdominal trauma, etc)?
    Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable

Management:

16. Was head CT imaging performed?
    Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable

    16a. If yes, were the initial CT findings/results in the ED positive (e.g., signs of fracture, bleed, etc.)? Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable

    16b. If no, specify the reason:
    - CT was not available
    - CT was not ordered per physician decision
    - Other
    - N/D = Not Documented/Unknown

17. Was a neurosurgical consultation ordered?
    Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable

    17a. If no, specify the reason:
    - Child's history/condition and diagnostic findings did not warrant a consultation (per physician decision)
    - No pediatric neurosurgical service was available in-house
    - Only phone consultation with adult neurosurgical service was available
    - Decision was made to transfer because of the need for neurosurgical consultation
    - Other
    - N/D = Not Documented/Unknown

Disposition/Discharge:

18. Was a neurologic reassessment documented before disposition (e.g., GCS, AVPU, LOC assessment, brief neuro exam, parent reports that child is at baseline, etc.)?
    Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable

19. What was the child's disposition from the ED?
    - Admitted (A) = admitted to a hospital unit (> 23 hours)
    - Transferred (T) = transferred to a higher level of care
    - Direct to the Operating Room (D) = transferred to the OR from the ED

- Observed (O) = admitted to an observation unit and/or observed in the ED (≤ 23 hours)
- Home (H) = discharged home after a brief period of observation (≤ 6 hours)
- Expired (E) = expired in the ED

19a. If transferred, specify the reason:

- Higher level of care
- Higher level of care – specifically for CT neuroimaging
- Higher level of care – specifically for neurosurgical consultation
- Lateral transfer for CT neuroimaging only (i.e., if in-house CT is down/busy)

20. Were pediatric head injury discharge instructions/patient education given to patient/family (including information such as: S/S postconcussive syndrome; when to return to ED; safety information; when to return to sports/gym; pain control issues; referral/emergency # to call, expected course of illness/recovery, potential for cognitive/behavioral changes, etc)?
    Y = Yes/Present; N = No/Not present; N/D = Not Documented/Unknown; N/A = Not Applicable

Illinois EMSC
Pediatric Mild Traumatic Head Injury
Record Review Monitor Tool

Record Number: _________

1. Age (if < 1yr, enter months)

Years:

Months:

2. What was the mode of arrival?

__Prehospital ___Transfer ___Walk in

3. Was the time of the injury within the last 24 hours?

_____Yes _____No _____N/D _____N/A

4. What was the Mechanism of Injury (MOI)?

_____Motor Vehicle Crash _____Fall

_____Bicycle _____Other

_____Hit by object/person _____N/D

_____Sports related

4a. Was the MOI considered severe (based on one of the following conditions: Motor vehicle crash - ejection, rollover, death in same passenger compartment; Fall > 5 feet; Pedestrian or unhelmeted bicyclist struck by motorized vehicle; Struck by high impact object/projectile)?

_____Yes _____No _____N/D _____N/A

4b. Was appropriate safety equipment used (e.g, seatbelt/car seat, bike helmet, protective sports equipment, etc.)? Not Applicable (N/A) is appropriate in cases where safety equipment would not be expected (e.g., Fall)

_____Yes _____No _____N/D _____N/A

5. Did the child suffer a recent recurrent traumatic head injury (e.g., within the last 12 weeks)?

_____Yes _____No _____N/D _____N/A

6. Were vital signs documented (per hospital policy)?

_____Yes _____No _____N/D _____N/A

7.Was the child screened for signs of child maltreatment/neglect (e.g history is inconsistent with injuries, delay in seeking medical care, history isn't plausible for age and development of child, etc.)?

_____Yes _____No _____N/D _____N/A

8. Was the pain level documented?

_____Yes _____No _____N/D _____N/A

9. Did the child demonstrate any abnormal behavior per a reliable parent/caregiver (e.g., mood swings, excessive sleepiness, etc.)?

_____Yes _____No _____N/D _____N/A

10. Did the child have any emesis within the last 24 hours?

_____Yes _____No _____N/D _____N/A

11. Did the child have a positive Loss of Consciousness (LOC)?

_____Yes _____No _____N/D _____N/A

12. Were any focal neurologic findings/deficits present (e.g., paralysis, weakness, sensory level deficit, cranial nerve deficit, etc)?

_____Yes _____No _____N/D _____N/A

13. Was physical/palpable evidence of any kind of skull fracture present *prior to CT imaging* (e.g., Battle's sign, raccoon eyes, hemotympanum, CSF rhinorrhea, etc)?

_____Yes _____No _____N/D _____N/A

14. Was physical/palpable evidence of scalp abnormality present *prior to CT imaging* (e.g., hematoma, laceration, etc.)?

_____Yes _____No _____N/D _____N/A

15. Were other body systems involved (e.g., bruises, suspected fractures, suspected abdominal trauma, etc)?

_____Yes _____No _____N/D _____N/A

16. Was head CT imaging performed?

_____Yes _____No _____N/D _____N/A

Note: The same tool applies for All Head Injured Patients and CT Scanned Patients

Illinois EMSC
Pediatric Mild Traumatic Head Injury
Record Review Monitor Tool

Record Number: _________

16a. If yes, were the initial CT findings/results in the ED positive (e.g., signs of fracture, bleed, etc.)?

_____Yes _____No _____N/D _____N/A

16b. If no, specify the reason:

_____CT was not available _____CT was not ordered per physician decision _____Other _____N/D

17. Was a neurosurgical consultation ordered?

_____Yes _____No _____N/D _____N/A

17a. If no, specify the reason:

_____Child's history/condition and diagnostic findings did not warrant a consultation (per physician decision)

_____Only phone consultation with adult neurosurgical service was available

_____Other

_____No pediatric neurosurgical service was available in-house

_____Decision was made to transfer because of the need for neurosurgical consultation

_____N/D

18. Was a neuro reassessment documented before disposition (e.g., GCS, AVPU, LOC assessment, brief neuro exam, parent reports that child is at baseline, etc.)?

_____Yes _____No _____N/D _____N/A

19. What was child's disposition from the ED?

_____Admitted _____Observed

_____Transferred _____Home

_____Direct to the Operating Room _____Expired

19a. If transferred, specify the reason:

_____Higher level of care

_____Higher level of care – specifically for neurosurgical consultation

_____Other

_____Higher level of care – specifically for CT neuroimaging

_____Lateral transfer for CT neuroimaging only (i.e., if in-house CT is down/busy)

20. Were pediatric head injury discharge instructions/patient education given to patient/family(including information such as: S/S postconcussive syndrome; when to return to ED; safety information; when to return to sports/gym; pain control issues; referral/emergency # to call, expected course of illness/recovery, etc)?

_____Yes _____No _____N/D _____N/A

Note: The same tool applies for All Head Injured Patients and CT Scanned Patients

Illinois EMSC
Pediatric Mild Traumatic Head Injury
Emergency Department (ED) Survey (2008)

Job Title of Survey Respondent(s) *Check all that apply*

- CQI Liaison
- ED Medical Director
- ED Nurse Manager
- ED Staff Nurse
- ED Physician
- ED Educator
- Trauma Coordinator
- Radiologist
- Neurologist/Neurosurgeon
- Chief/staff Department of Neurology
- Chief of Staff
- Other ______________________

Traumatic Head Injury

Definition: A blow or jolt to the head or penetrating injury that disrupts the normal function of the brain.
Examples: Scalp hematoma or laceration, skull fracture, intracranial hemorrhage, cerebral contusion, diffuse axonal injury, etc.
Source: American Association of Neurological Surgeons

Mild Traumatic Head Injury: Awake; eyes open. Often referred to as "concussion." Symptoms can include confusion, memory difficulties, headache & behavioral problems.
Source: Brain Trauma Foundation

1. How does your emergency department define the pediatric population? *Check one answer only*

	0 through 12 years old		0 through 18 years old
	0 through 13 years old		0 through 19 years old
	0 through 14 years old		0 through 20 years old
	0 through 15 years old		0 through 21 years old
	0 through 16 years old		Not defined specifically
	0 through 17 years old		Other

2. What is the average volume of pediatric (defined as 0 through 15 years old) ED visits per year in your facility? *Check one answer only*

	0 – 2,000/year		7,001 – 9,000/year
	2,001 – 3,000/year		9,001 – 11,000/year
	3,001 – 5,000/year		11,001 – 13,000/year
	5,001 – 6,000/year		13,001 – 15,000/year
	6,001 – 7,000/year		15,001+/year

3. What is the average volume of ALL patient (adult and pediatric) ED visits per year in your facility? *Check one answer only*

	0 – 4,000/year		40,001 – 50,000/year
	4,001 – 10,000/year		50,001 – 60,000/year
	10,001 – 20, 000/year		60,001 – 70,000/year
	20,001 – 30,000/year		70,001 – 80,000/year
	30,001 – 40,000/year		80,001+/year

4. Does your ED have a documented traumatic head injury policy/guideline/clinical pathway?
   - o Yes (if yes, answer Q.4a, b, c & d)
   - o No (skip to Q.5)

   4a. Does your ED's traumatic head injury policy/guideline/clinical pathway specifically address pediatrics?
   - o Yes
   - o No

   4b. Within your ED's traumatic head injury policy/guideline/clinical pathway, is there a process for screening for signs of child maltreatment/neglect?
   - o Yes
   - o No

   4c. Does your ED's traumatic head injury policy/guideline/clinical pathway identify any specific criteria to use in determining the need for CT neuroimaging? *Check all that apply*

Criteria to Determine Need for CT Neuroimaging	
a. Time of injury (e.g., within the last 24 hours)	0
b. Patient's age (e.g., < 2 years of age)	0
c. History of recent recurrent head injury	0
d. Severity of mechanism of injury	0
e. Abnormal vital signs	0
f. Abnormal pupillary reactivity	0
g. Moderate/severe pain (headache) (per hospital's pain assessment policy)	0
h. Glasgow coma score (e.g., < 14)	0
i. Suspicion of child maltreatment/neglect	0
j. Positive loss of consciousness	0
k. History of emesis	0
l. History of seizure	0
m. Changes in mental status/history of abnormal behavior	0
n. Physical/palpable signs of skull fracture	0
o. Physical/palpable signs of scalp abnormalit(ies)	0
p. Focal neurologic findings/deficits	0
q. Multi-system trauma	0
r. Need for neurosurgical consult	0
s. None	0
Other ____________________	0

   4d. How recently has your ED's traumatic head injury policy/guideline/clinical pathway been updated/reviewed?
   - o In the past 6 months
   - o In the past 12 months
   - o It has not been updated/reviewed in the past year

5. Does your ED have access to a CT scanner in-house?
   - o Yes (if yes, answer Q.5a, b, c & d)
   - o No (skip to Q.6)

5a. Is your CT scanner available at all times (24/7)?
- Yes
- No

5b. Does your ED have access to a CT Technician at all times (24/7)?
- Yes
- No

5c. Typically, who reads the pediatric head CT scans? *Check all that apply*
- Radiologist in-house
- Neurologist in-house
- Neurosurgeon in-house
- EM/ED Physician in-house
- Radiology Resident in-house
- Consult with a hospital staff Radiologist via telemedicine
- Consult with a hospital staff Neurosurgeon via telemedicine
- Consult with a hospital staff Neurologist via telemedicine
- Consult with a non-hospital staff Radiologist via telemedicine (e.g., NightHawk Radiology Services™ type service)

5d. Does your ED have a process in place to address/resolve discrepancies between preliminary CT scan findings and final CT scan findings?
- Yes
- No

6. What neurosurgical services does your hospital provide? *Check all that apply*
   - Pediatric Neurosurgeon – at all times (24/7)
   - Pediatric Neurosurgeon – limited coverage
   - Adult Neurosurgeon with pediatric neurosurgical privileges – at all times (24/7)
   - Adult Neurosurgeon with pediatric neurosurgical privileges – limited coverage
   - Adult Neurosurgeon (provides no/minimal pediatric consultation services) – at all times (24/7)
   - Adult Neurosurgeon (provides no/minimal pediatric consultation services) – limited coverage
   - None
   - Other ______________

6a. Approximately, what percentage of pediatric neurosurgical cases has your ED transferred for neurosurgical consultation/services in the past 3 months?
- None
- Half or less
- More than half
- All

7. Does your ED provide pediatric-specific traumatic head injury discharge instructions/patient education to the patients/families?
   - Yes (if yes, answer Q.7a)
   - No (skip to Q.8)

7a. What elements are included in your Emergency Department's discharge instructions/patient education?
Check all that apply

Discharge Instruction/Patient Education Elements	
a. Signs/symptoms of Postconcussive Syndrome	0
b. Expected course of recovery	0
c. Signs/symptoms to prompt a return visit to the ED for immediate care	0
d. Emergency phone # to call	0
e. Referral to Primary Care Provider for follow up	0
f. Pain management measures	0
g. When to return to sports/gym/play	0
h. Safety information (e.g., proper helmet use, seatbelt use, etc.)	0
i. Information specifically regarding possible cognitive problems (e.g., changes in performance and/or behavior in the classroom, in organized activities, etc.)	0
j. Links to additional Traumatic Head Injury resources	0
Other ____________________	0

8. Does your ED have a process in place to ensure the patient/caregiver understands the discharge instructions/patient education provided to them?
   - o Yes (if yes, go to Q.8a)
   - o No (skip to Q.9)

   8a. What is your process to ensure the patient/caregiver understands the discharge instructions/patient education provided to them? *Check all that apply*
   - o Patient/caregiver signs a copy of the form to be included in the medical record to demonstrate understanding
   - o Clinical ED staff member (MD/RN) documents the discussion in the medical record
   - o Clinical ED staff member (MD/RN) conducts a follow up phone call to patient/caregiver within a specified length of time (e.g., within 24 hours of discharge)
   - o Non-medical/clerical ED staff member conducts a follow up phone call to patient/caregiver within a specified length of time (e.g., within 24 hours of discharge)
   - o As part of a routine QI review process for patients who return within a 72-hour time frame
   - o Other

9. Does your hospital conduct chart reviews of patients with ***SEVERE*** or ***MODERATE*** traumatic head injuries (e.g., GCS $\leq$ 13) for QI purposes?
   - o Yes (if yes, answer Q.9a & b)
   - o No (skip to Q.10)

9a. What QI indicators are included in the ***SEVERE*** or ***MODERATE*** traumatic head injury chart reviews? *Check all that apply*

QI Indicators	
a. Mechanism of injury	0
b. Appropriate use of safety equipment (when applicable)	0
c. Vital signs	0
d. Screening for child maltreatment/neglect	0
e. Pain level	0
f. GCS upon initial assessment	0
g. Pupillary assessment	0
h. History of abnormal behavior	0
i. History of emesis	0
j. History of positive loss of consciousness	0
k. Focal neurologic findings/deficits assessment	0
l. Skull fracture assessment	0
m. Scalp abnormality assessment	0
n. Other body system involvement/multi-trauma assessment	0
o. Neurologic reassessment	0
p. CT scan consent	0
q. Follow up with patient re: discrepancies between preliminary and final CT scan findings	0
r. Neurosurgical consult ordered	0
s. Patient disposition	0
t. Reason for transfer (when applicable)	0
u. Patient/caregiver discharge instructions/education	0
Other ____________________	0

9b. Is this information reviewed at some type of formal QI committee/process within your organization?

- o Yes
- o No

10. Does your hospital conduct chart reviews of patients with ***MILD*** traumatic head injuries (e.g.., GCS ≥ 14) for QI purposes?
    - o Yes (if yes, answer Q.10a & b)
    - o No (end survey)

10a. What QI indicators are included in the ***MILD*** traumatic head injury chart reviews? *Check all that apply*

QI Indicators	
a. Mechanism of injury	0
b. Appropriate use of safety equipment (when applicable)	0
c. Vital signs	0
d. Screening for child maltreatment/neglect	0
e. Pain level	0
f. GCS upon initial assessment	0
g. Pupillary assessment	0
h. History of abnormal behavior	0
i. History of emesis	0
j. History of positive loss of consciousness	0
k. Focal neurologic findings/deficits assessment	0
l. Skull fracture assessment	0
m. Scalp abnormality assessment	0
n. Other body system involvement/multi-trauma assessment	0
o. Neurologic reassessment	0
p. CT scan consent	0
q. Follow up with patient re: discrepancies between preliminary and final CT scan findings	0
r. Neurosurgical consult ordered	0
s. Patient disposition	0
t. Reason for transfer (when applicable)	0
u. Patient/caregiver discharge instructions/education	0
Other ____________________	0

10b. Is this information reviewed at some type of formal QI committee/process within your organization?

- Yes
- No

THANK YOU FOR COMPLETING THE SURVEY!

Illinois EMSC
Pediatric Mild Traumatic Head Injury
Emergency Department (ED) Survey (2009)

Job Title of Survey Respondent(s) *Check all that apply*

- CQI Liaison
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- ED Staff Nurse
- ED Physician
- ED Educator
- Trauma Coordinator
- Radiologist
- Neurologist/Neurosurgeon
- Chief/staff Department of Neurology
- Chief of Staff
- Other ______________________

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	0 through 14 years old		0 through 20 years old
	0 through 15 years old		0 through 21 years old
	0 through 16 years old		Not defined specifically
	0 through 17 years old		Other

2. What is the average volume of pediatric (defined as 0 through 15 years old) ED visits per year in your facility? *Check one answer only*

	0 – 2,000/year		7,001 – 9,000/year
	2,001 – 3,000/year		9,001 – 11,000/year
	3,001 – 5,000/year		11,001 – 13,000/year
	5,001 – 6,000/year		13,001 – 15,000/year
	6,001 – 7,000/year		15,001+/year

3. What is the average volume of ALL patient (adult and pediatric) ED visits per year in your facility? *Check one answer only*

	0 – 4,000/year		40,001 – 50,000/year
	4,001 – 10,000/year		50,001 – 60,000/year
	10,001 – 20, 000/year		60,001 – 70,000/year
	20,001 – 30,000/year		70,001 – 80,000/year
	30,001 – 40,000/year		80,001+/year

4. Does your ED have a documented traumatic head injury policy/guideline/clinical pathway?
   - o Yes (if yes, answer Q.4a, b, c & d)
   - o No (skip to Q.5)

   4a. Does your ED's traumatic head injury policy/guideline/clinical pathway specifically address pediatrics?
   - o Yes
   - o No

   4b. Within your ED's traumatic head injury policy/guideline/clinical pathway, is there a process for screening for signs of child maltreatment/neglect?
   - o Yes
   - o No

   4c. Does your ED's traumatic head injury policy/guideline/clinical pathway identify any specific criteria to use in determining the need for CT neuroimaging? *Check all that apply*

Criteria to Determine Need for CT Neuroimaging	
a. Time of injury (e.g., within the last 24 hours)	0
b. Patient's age (e.g., < 2 years of age)	0
c. History of recent recurrent head injury	0
d. Severity of mechanism of injury	0
e. Abnormal vital signs	0
f. Abnormal pupillary reactivity	0
g. Moderate/severe pain (headache) (per hospital's pain assessment policy)	0
h. Glasgow coma score (e.g., < 14)	0
i. Suspicion of child maltreatment/neglect	0
j. Positive loss of consciousness	0
k. History of emesis	0
l. History of seizure	0
m. Changes in mental status/history of abnormal behavior	0
n. Physical/palpable signs of skull fracture	0
o. Physical/palpable signs of scalp abnormalit(ies)	0
p. Focal neurologic findings/deficits	0
q. Multi-system trauma	0
r. Need for neurosurgical consult	0
s. None	0
Other ____________________	0

   4d. How recently has your ED's traumatic head injury policy/guideline/clinical pathway been updated/reviewed?
   - o In the past 6 months
   - o In the past 12 months
   - o It has not been updated/reviewed in the past year

5. Does your ED have access to a CT scanner in-house?
   - o Yes (if yes, answer Q.5a, b, c & d)
   - o No (skip to Q.6)

5a. Is your CT scanner available at all times (24/7)?

- o Yes
- o No

5b. Does your ED have access to a CT Technician at all times (24/7)?

- o Yes
- o No

5c. Typically, who reads the pediatric head CT scans? *Check all that apply*

- o Radiologist in-house
- o Neurologist in-house
- o Neurosurgeon in-house
- o EM/ED Physician in-house
- o Radiology Resident in-house
- o Consult with a hospital staff Radiologist via telemedicine
- o Consult with a hospital staff Neurosurgeon via telemedicine
- o Consult with a hospital staff Neurologist via telemedicine
- o Consult with a non-hospital staff Radiologist via telemedicine (e.g., NightHawk Radiology Services™ type service)

5d. Does your ED have a process in place to address/resolve discrepancies between preliminary CT scan findings and final CT scan findings?

- o Yes
- o No

6. What neurosurgical services does your hospital provide? *Check all that apply*
   - o Pediatric Neurosurgeon – at all times (24/7)
   - o Pediatric Neurosurgeon – limited coverage
   - o Adult Neurosurgeon with pediatric neurosurgical privileges – at all times (24/7)
   - o Adult Neurosurgeon with pediatric neurosurgical privileges – limited coverage
   - o Adult Neurosurgeon (provides no/minimal pediatric consultation services) – at all times (24/7)
   - o Adult Neurosurgeon (provides no/minimal pediatric consultation services) – limited coverage
   - o None
   - o Other ______________

6a. Approximately, what percentage of pediatric neurosurgical cases has your ED transferred for neurosurgical consultation/services in the past 3 months?

- o None
- o Half or less
- o More than half
- o All

7. Does your ED provide pediatric-specific traumatic head injury discharge instructions/patient education to the patients/families?
   - o Yes (if yes, answer Q.7a)
   - o No (skip to Q.8)

7a. What elements are included in your Emergency Department's discharge instructions/patient education?
Check all that apply

Discharge Instruction/Patient Education Elements	
a. Signs/symptoms of Postconcussive Syndrome	0
b. Expected course of recovery	0
c. Signs/symptoms to prompt a return visit to the ED for immediate care	0
d. Emergency phone # to call	0
e. Referral to Primary Care Provider for follow up	0
f. Pain management measures	0
g. When to return to sports/gym/play	0
h. Safety information (e.g., proper helmet use, seatbelt use, etc.)	0
i. Information specifically regarding possible cognitive problems (e.g., changes in performance and/or behavior in the classroom, in organized activities, etc.)	0
j. Links to additional Traumatic Head Injury resources	0
Other ____________________	0

8. Does your ED have a process in place to ensure the patient/caregiver understands the discharge instructions/patient education provided to them?
   - Yes (if yes, go to Q.8a)
   - No (skip to Q.9)

8a. What is your process to ensure the patient/caregiver understands the discharge instructions/patient education provided to them? *Check all that apply*
   - Patient/caregiver signs a copy of the form to be included in the medical record to demonstrate understanding
   - Clinical ED staff member (MD/RN) documents the discussion in the medical record
   - Clinical ED staff member (MD/RN) conducts a follow up phone call to patient/caregiver within a specified length of time (e.g., within 24 hours of discharge)
   - Non-medical/clerical ED staff member conducts a follow up phone call to patient/caregiver within a specified length of time (e.g., within 24 hours of discharge)
   - As part of a routine QI review process for patients who return within a 72-hour time frame
   - Other

9. Does your hospital conduct chart reviews of patients with ***SEVERE*** traumatic head injuries (e.g., GCS $\leq$ 13) for QI purposes?
   - Yes (if yes, answer Q.9a & b)
   - No (skip to Q.10)

9a. What QI indicators are included in the ***SEVERE*** traumatic head injury chart reviews?
Check all that apply

QI Indicators	
a. Mechanism of injury	0
b. Appropriate use of safety equipment (when applicable)	0
c. Vital signs	0
d. Screening for child maltreatment/neglect	0
e. Pain level	0
f. GCS upon initial assessment	0
g. Pupillary assessment	0
h. History of abnormal behavior	0
i. History of emesis	0
j. History of positive loss of consciousness	0
k. Focal neurologic findings/deficits assessment	0
l. Skull fracture assessment	0
m. Scalp abnormality assessment	0
n. Other body system involvement/multi-trauma assessment	0
o. Neurologic reassessment	0
p. CT scan consent	0
q. Follow up with patient re: discrepancies between preliminary and final CT scan findings	0
r. Neurosurgical consult ordered	0
s. Patient disposition	0
t. Reason for transfer (when applicable)	0
u. Patient/caregiver discharge instructions/education	0
Other ____________________	0

9b. Is this information reviewed at some type of formal QI committee/process within your organization?

- o Yes
- o No

10. Does your hospital conduct chart reviews of patients with ***MILD*** traumatic head injuries (e.g.., GCS ≥ 14) for QI purposes?
    - o Yes (if yes, answer Q.10a & b)
    - o No (skip to Q.11)

10a. What QI indicators are included in the ***MILD*** traumatic head injury chart reviews? *Check all that apply*

QI Indicators	
a. Mechanism of injury	0
b. Appropriate use of safety equipment (when applicable)	0
c. Vital signs	0
d. Screening for child maltreatment/neglect	0
e. Pain level	0
f. GCS upon initial assessment	0
g. Pupillary assessment	0
h. History of abnormal behavior	0
i. History of emesis	0
j. History of positive loss of consciousness	0
k. Focal neurologic findings/deficits assessment	0
l. Skull fracture assessment	0
m. Scalp abnormality assessment	0
n. Other body system involvement/multi-trauma assessment	0
o. Neurologic reassessment	0
p. CT scan consent	0
q. Follow up with patient re: discrepancies between preliminary and final CT scan findings	0
r. Neurosurgical consult ordered	0
s. Patient disposition	0
t. Reason for transfer (when applicable)	0
u. Patient/caregiver discharge instructions/education	0
Other ____________________	0

10b. Is this information reviewed at some type of formal QI committee/process within your organization?

- Yes
- No

11. Did your facility take any actions as a result of participation in the EMSC head injury module?

- Yes (if yes, answer Q.11a)
- No (end survey)

11a. If yes, which of the following actions were taken? *(Check all that apply)*

	Provided ED nursing staff education	Provided ED physician staff education	Revised documentation (e.g., new field in paper or electronic chart)	Reviewed and improved or updated processes or policies	Incorporated EMSC-developed resources	No Quality Improvement was needed in this area	Other***
Assessment (History* & Physical)	☐	☐	☐	☐	☐	☐	☐
Management/Treatment	☐	☐	☐	☐	☐	☐	☐
Neurologic Reassessment	☐	☐	☐	☐	☐	☐	☐
Child Maltreatment Screening	☐	☐	☐	☐	☐	☐	☐
CT Scanning Practices**	☐	☐	☐	☐	☐	☐	☐
Patient Discharge Instructions/Education	☐	☐	☐	☐	☐	☐	☐

* History includes asking about the appropriate use of safety equipment

**For CT Scanning Practices, “staff education” could include reviewing risk/benefits, and “revised documentation” could include more frequent charting of risk/benefits discussion with parents.

Other*** Explain what additional/different QI efforts you enacted in any of the general categories (this is a free text field)

____
____
____

THANK YOU FOR COMPLETING THE SURVEY!