Quality ID #416: Emergency Medicine: Emergency Department Utilization of CT for Minor Blunt Head Trauma for Patients Aged 2 Through 17 Years
– National Quality Strategy Domain: Efficiency and Cost Reduction
– Meaningful Measure Area: Appropriate Use of Healthcare

2022 COLLECTION TYPE:
MIPS CLINICAL QUALITY MEASURES (CQMS)

MEASURE TYPE:
Efficiency – High Priority

DESCRIPTION:
Percentage of emergency department visits for patients aged 2 through 17 years who presented with a minor blunt head trauma who had a head CT for trauma ordered by an emergency care provider who are classified as low risk according to the Pediatric Emergency Care Applied Research Network (PECARN) prediction rules for traumatic brain injury.

INSTRUCTIONS:
This measure is to be submitted for **each denominator eligible visit** for patients aged 2 through 17 years who present to the emergency department with a minor blunt head trauma during the performance period. It is anticipated that Merit-based Incentive Payment System (MIPS) eligible clinicians who provide care in the emergency department will submit this measure.

Measure Submission Type:
Measure data may be submitted by individual MIPS eligible clinicians, groups, or third party intermediaries. The listed denominator criteria are used to identify the intended patient population. The numerator options included in this specification are used to submit the quality actions as allowed by the measure. The quality data codes listed do not need to be submitted by MIPS eligible clinicians, groups, or third party intermediaries that utilize this modality for submissions; however, these codes may be submitted for those third party intermediaries that utilize Medicare Part B claims data. For more information regarding Application Programming Interface (API), please refer to the Quality Payment Program (QPP) website.

DENOMINATOR:
All emergency department visits for patients aged 2 through 17 years who presented with a minor blunt head trauma who had a head CT for trauma ordered by an emergency care provider*

Definitions:
Minor Blunt Head Trauma – Includes only non-penetrating injuries.

DENOMINATOR NOTE: **This measure looks to determine if an emergency care provider ordered head CT services typically provided under CPT code 70450.*

Denominator Criteria (Eligible Cases):
Patients aged 2 through 17 years on date of encounter
AND

Diagnosis for minor blunt head trauma (ICD-10-CM): S00.03XA, S00.33XA, S00.431A, S00.432A, S00.439A, S00.531A, S00.532A, S00.83XA, S00.93XA, S06.A0XA, S06.A1XA, S06.0X0A, S06.0X1A, S06.0X9A, S06.1X0A, S06.1X1A, S06.1X2A, S06.1X3A, S06.1X4A, S06.1X9A, S06.2X0A, S06.2X1A, S06.2X2A, S06.2X3A, S06.2X4A, S06.2X9A, S06.300A, S06.301A, S06.302A, S06.303A, S06.304A, S06.309A, S06.340A, S06.341A, S06.342A, S06.343A, S06.344A, S06.349A, S06.350A, S06.351A, S06.352A, S06.353A, S06.354A, S06.359A, S06.360A, S06.361A, S06.362A, S06.363A, S06.364A, S06.369A, S06.4X0A, S06.4X1A, S06.4X2A, S06.4X3A, S06.4X4A, S06.4X9A, S06.5X0A, S06.5X1A, S06.5X2A, S06.5X3A, S06.5X4A, S06.5X9A, S06.6X0A, S06.6X1A, S06.6X2A, S06.6X3A, S06.6X4A,

S06.6X9A, S06.810A, S06.811A, S06.812A, S06.813A, S06.814A, S06.819A, S06.820A, S06.821A, S06.822A, S06.823A, S06.824A, S06.829A, S06.890A, S06.891A, S06.892A, S06.893A, S06.894A, S06.899A, S06.9X0A, S06.9X1A, S06.9X2A, S06.9X3A, S06.9X4A, S06.9X9A, S09.11XA, S09.19XA, S09.8XXA

AND

Patient encounter during the performance period (CPT): 99281, 99282, 99283, 99284, 99285, 99291

WITHOUT

Telehealth Modifier: GQ, GT, 95, POS 02

AND

Patient presented with a minor blunt head trauma and had a head CT ordered for trauma by an emergency care provider: G9594

AND NOT

DENOMINATOR EXCLUSION:

Patient has documentation of ventricular shunt, brain tumor, or coagulopathy: G9595

NUMERATOR:

Emergency department visits for patients who are classified as low risk according to the PECARN prediction rules for traumatic brain injury

Definition:

Low Risk for Traumatic Brain Injury according to PECARN prediction rules –

Patients can be classified as low risk if ALL of the following are met:

- No signs of altered mental status (e.g., agitation, somnolence, repetitive questioning, slow response to verbal communication) OR no GCS < 15
- No signs of basilar skull fracture (signs include haemotympanum, "raccoon" eyes, cerebrospinal fluid leakage from the ear or nose, Battle's sign)
- No loss of consciousness
- No vomiting
- No severe mechanism of injury (i.e., motor vehicle crash with patient ejection, death of another passenger, or rollover; pedestrian or bicyclist without helmet struck by a motorized vehicle; falls of more than 5 feet; or head struck by a high-impact object)
- No severe headache

Numerator Instructions:

INVERSE MEASURE - A lower calculated performance rate for this measure indicates better clinical care or control. The "Performance Not Met" numerator option for this measure is the representation of the better clinical quality or control. Submitting that numerator option will produce a performance rate that trends closer to 0%, as quality increases. For inverse measures, a rate of 100% means all of the denominator eligible patients did not receive the appropriate care or were not in proper control.

Numerator Options:

Performance Met:	Pediatric patient with minor blunt head trauma classified as low risk according to the PECARN prediction rules **(G9593)**
OR	
Performance Met:	Pediatric patient with minor blunt head trauma and PECARN prediction criteria are not assessed **(G0047)**
OR	
Performance Not Met:	Pediatric patient with minor blunt head trauma not classified as low risk according to the PECARN prediction rules **(G9597)**

RATIONALE:

Though it is difficult to directly attribute the effects of smaller dosages of radiation, there is evidence to suggest that the low dose radiation emitted through the use of some CT scans is associated with a small, but cumulative risk of radiation-induced cancer, particularly in children (Frush et al., 2003). As over 1.3 million individuals are treated and released from the ED for mild traumatic brain injury annually, it is critical that CT scans only be utilized when clinically appropriate (Melnick et al., 2012). Through measurement of the share of CT scans that are performed inappropriately, a focus can be brought to quality improvement and increased application of clinical decision tools around this topic.

This measure is an overuse measure - its intention is to capture those instances in which a pediatric patient is characterized as low risk yet still receives a CT. As such, the measure is scored such that a lower score indicates better quality. The measure is constructed in this manner due to the available evidence; the PECARN clinical policy defines the low-risk population, but does not clearly define the medium and high risk populations. The measure then uses the definable population as its numerator, necessitating an "overuse" construction.

CLINICAL RECOMMENDATION STATEMENTS:

The following evidence statements are quoted verbatim from the referenced clinical guidelines and other references:

[ADAPTED] Suggested CT algorithm for children aged 2 years and older with GCS scores of 14-15 after head trauma (PECARN, 2009):
If GCS=14 or other signs of altered mental status or signs of basilar skull fracture, then CT recommended.

If no GCS=14 nor other signs of altered mental status nor signs of basilar skull fracture and no history of LOC, nor history of vomiting, nor severe mechanism of injury nor severe headache, then CT not recommended.

If no GCS=14 nor other signs of altered mental status nor signs of basilar skull fracture AND If History of LOC, or history of vomiting, or severe mechanism of injury or severe headache, then observation versus CT on the basis of other clinical factors including:

- Physician experience
- Multiple versus isolated findings
- Worsening symptoms or signs after ED observation
- Parental preference

For a visual decision rule aid that describes the prediction rule, visit https://www.aliem.com/2017/06/pecarn-pediatric-head-trauma-official-visual-decision-aid/.

1.4.9 For children who have sustained a head injury and have any of the following risk factors, perform a CT head scan within 1 hour of the risk factor being identified:

- Suspicion of non-accidental injury.
- Post-traumatic seizure but no history of epilepsy.
- On initial emergency department assessment, GCS less than 14.
- At 2 hours after the injury, GCS less than 15.
- Suspected open or depressed skull fracture or tense fontanelle.
- Any sign of basal skull fracture (haemotympanum, 'panda' eyes, cerebrospinal fluid leakage from the ear or nose, Battle's sign).
- Focal neurological deficit. (NICE, 2014)

1.4.10 For children who have sustained a head injury and have more than 1 of the following risk factors (and none of those in recommendation 1.4.9), perform a CT head scan within 1 hour of the risk factors being identified:

- Loss of consciousness lasting more than 5 minutes (witnessed).
- Abnormal drowsiness.
- Three or more discrete episodes of vomiting.
- Dangerous mechanism of injury (high-speed road traffic accident either as pedestrian, cyclist or vehicle occupant, fall from a height of greater than 3 meters, high-speed injury from a projectile or other object).

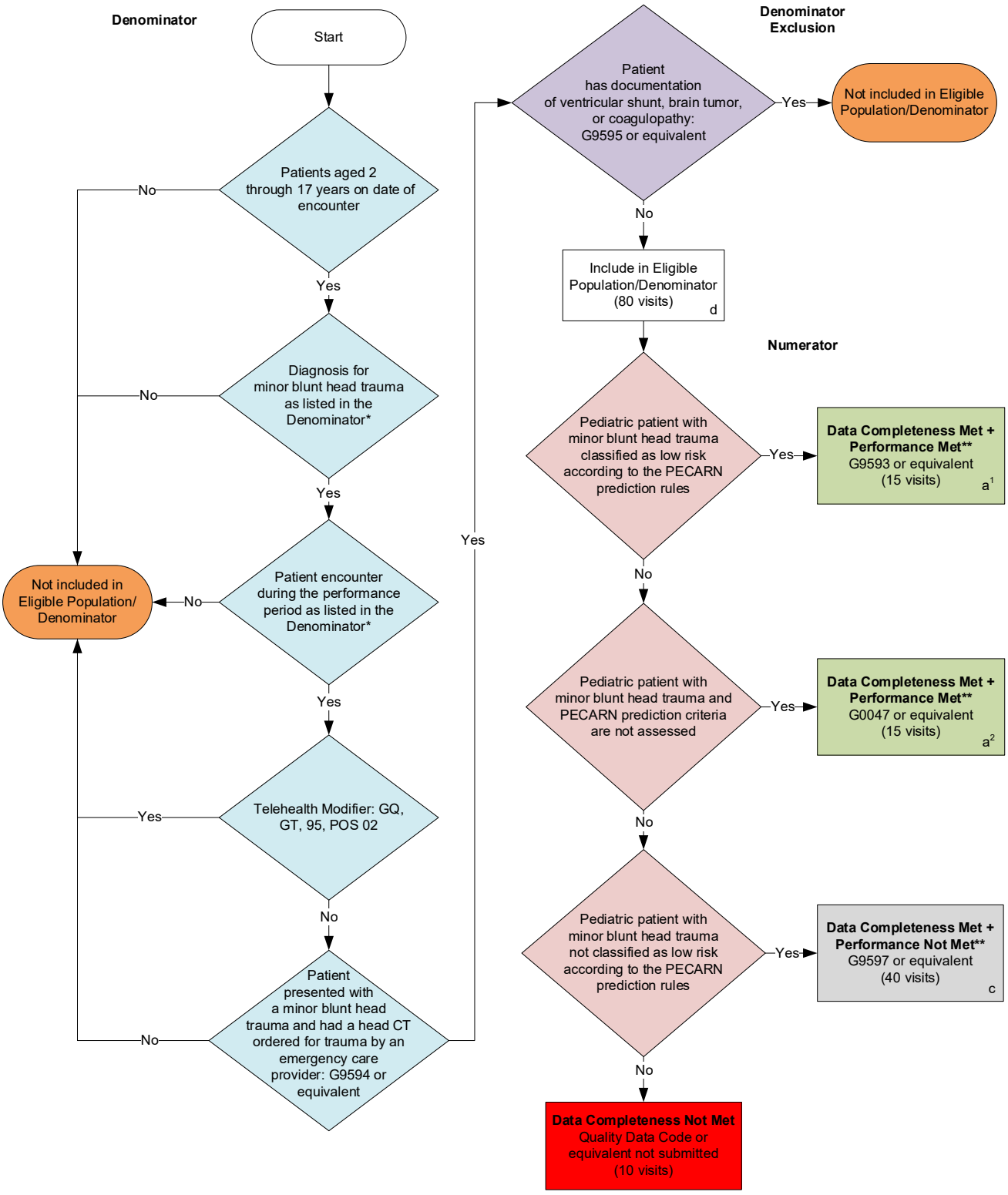
- Amnesia (antegrade or retrograde) lasting more than 5 minutes. (NICE, 2014)

1.4.11 Children who have sustained a head injury and have only 1 of the risk factors in recommendation 1.4.10 (and none of those in recommendation 1.4.9) should be observed for a minimum of 4 hours after the head injury. If during observation any of the risk factors below are identified, perform a CT head scan within 1 hour:

- GCS less than 15.
- Further vomiting.
- A further episode of abnormal drowsiness. (NICE, 2014)

2022 Clinical Quality Measure Flow for Quality ID #416: Emergency Medicine: Emergency Department Utilization of CT for Minor Blunt Head Trauma for Patients Aged 2 Through 17 Years

Disclaimer: *Refer to the measure specification for specific coding and instructions to submit this measure.*



SAMPLE CALCULATIONS

Data Completeness=

Performance Met (a^1+a^2=30 visits) + Performance Not Met (c=40 visits) = 70 visits = **87.50%**

Eligible Population / Denominator (d=80 visits) = 80 visits

Performance Rate=**

Performance Met (a^1+a^2=30 visits) = 30 visits = **42.86%**

Data Completeness Numerator (70 visits) = 70 visits

*See the posted measure specification for specific coding and instructions to submit this measure.
**A lower calculated performance rate for this measure indicates better clinical care or control.
NOTE: Submission Frequency: Visit

2022 Clinical Quality Measure Flow Narrative for Quality ID #416: Emergency Medicine: Emergency Department Utilization of CT for Minor Blunt Head Trauma for Patients Aged 2 Through 17 Years

***Disclaimer**: Refer to the measure specification for specific coding and instructions to submit this measure.*

1. Start with Denominator
2. Check *Patients aged 2 through 17 years on date of encounter*:
    a. If *Patients aged 2 through 17 years on date of encounter* equals No, do not include in Eligible Population/Denominator. Stop processing.
    b. If *Patients aged 2 through 17 years on date of encounter* equals Yes, proceed to check *Diagnosis for minor blunt head trauma as listed in the Denominator**.
3. Check *Diagnosis for minor blunt head trauma as listed in the Denominator**:
    a. If *Diagnosis for minor blunt head trauma as listed in the Denominator** equals No, do not include in Eligible Population/Denominator. Stop processing.
    b. If *Diagnosis for minor blunt head trauma as listed in the Denominator** equals Yes, proceed to check *Patient encounter during the performance period as listed in the Denominator**.
4. Check *Diagnosis for minor blunt head trauma as listed in the Denominator**:
    a. If *Diagnosis for minor blunt head trauma as listed in the Denominator** equals No, do not include in Eligible Population/Denominator. Stop processing.
    b. If *Diagnosis for minor blunt head trauma as listed in the Denominator** equals Yes, proceed to check *Patient encounter during the performance period as listed in the Denominator**.
5. Check *Patient encounter during the performance period as listed in the Denominator**:
    a. If *Patient encounter during the performance period as listed in the Denominator** equals No, do not include in Eligible Population/Denominator. Stop processing.
    b. If *Patient encounter during the performance period as listed in the Denominator** equals Yes, proceed to check *Telehealth Modifier*.
6. Check *Telehealth Modifier*:
    a. If *Telehealth Modifier* equals Yes, do not include in Eligible Population/Denominator. Stop processing.
    b. If *Telehealth Modifier* equals No, proceed to check *Patient presented with a minor blunt head trauma and had a head CT ordered for trauma by an emergency care provider*.
7. Check *Patient presented with a minor blunt head trauma and had a head CT ordered for trauma by an emergency care provider*:
    a. If *Patient presented with a minor blunt head trauma and had a head CT ordered for trauma by an emergency care provider* equals No, do not include in Eligible Population/Denominator. Stop processing.
    b. If *Patient presented with a minor blunt head trauma and had a head CT ordered for trauma by an emergency care provider* equals Yes, proceed to check *Patient has documentation of ventricular shunt, brain tumor, or coagulopathy*.

8. Check *Patient has documentation of ventricular shunt, brain tumor, or coagulopathy*:

    a. If *Patient has documentation of ventricular shunt, brain tumor, or coagulopathy* equals Yes, do not include in Eligible Population/Denominator. Stop processing.

    b. If *Patient has documentation of ventricular shunt, brain tumor, or coagulopathy* equals No, include in Eligible Population/Denominator.

9. Denominator Population:

    a. Denominator Population is all Eligible Visits in the Denominator. Denominator is represented as Denominator in the Sample Calculation listed at the end of this document. Letter d equals 80 visits in the Sample Calculation.

10. Start Numerator

11. Check *Pediatric patient with minor blunt head trauma classified as low risk according to the PECARN prediction rules*:

    a. If *Pediatric patient with minor blunt head trauma classified as low risk according to the PECARN prediction rules* equals Yes, include in *Data Completeness Met and Performance Met*.

        - *Data Completeness Met and Performance Met* letter is represented in the Data Completeness and Performance Rate in the Sample Calculation listed at the end of this document. Letter a^1 equals 15 visits in the Sample Calculation.

    b. If *Pediatric patient with minor blunt head trauma classified as low risk according to the PECARN prediction rules* equals No, proceed to check *Pediatric patient with minor blunt head trauma and PECARN prediction criteria are not assessed*.

12. Check *Pediatric patient with minor blunt head trauma and PECARN prediction criteria are not assessed*:

    a. If *Pediatric patient with minor blunt head trauma and PECARN prediction criteria are not assessed* equals Yes, include in *Data Completeness Met and Performance Met*.

        - *Data Completeness Met and Performance Met* letter is represented in the Data Completeness and Performance Rate in the Sample Calculation listed at the end of this document. Letter a^2 equals 15 visits in the Sample Calculation.

    b. If *Pediatric patient with minor blunt head trauma and PECARN prediction criteria are not assessed* equals No, proceed to check *Pediatric patient with minor blunt head trauma not classified as low risk according to the PECARN prediction rules*.

13. Check *Pediatric patient with minor blunt head trauma not classified as low risk according to the PECARN prediction rules*:

    a. If *Pediatric patient with minor blunt head trauma not classified as low risk according to the PECARN prediction rules* equals Yes, include in *Data Completeness Met and Performance Not Met*.

        - *Data Completeness Met and Performance Not Met* letter is represented in the Data Completeness in the Sample Calculation listed at the end of this document. Letter c equals 40 visits in the Sample Calculation.

    b. If *Pediatric patient with minor blunt head trauma not classified as low risk according to the PECARN prediction rules* equals No, proceed to check *Data Completeness Not Met*.

14. Check *Data Completeness Not Met*:

    a. If *Data Completeness Not Met*, the Quality Data Code or equivalent was not submitted. 10 visits have been subtracted from the Data Completeness Numerator in the Sample Calculation.

Sample Calculations

Data Completeness equals Performance Met (a^1 plus a^2 equals 30 visits) plus Performance Not Met (c equals 40 visits) divided by Eligible Population/Denominator (d equals 80 visits). All equals 70 visits divided by 80 visits. All equals 87.50 percent.

Performance Rate equals Performance Met (a equals 30 visits) divided by Data Completeness Numerator (70 visits). All equals 30 visits divided by 70 visits. All equals 42.86 percent.

*See the posted measure specification for specific coding and instructions to submit this measure.

** A lower calculated performance rate for this measure indicated better clinical care or control.

NOTE: Submission Frequency: Visit

The measure diagrams were developed by CMS as a supplemental resource to be used in conjunction with the measure specifications. They should not be used alone or as a substitution for the measure specification.