NATIONAL QUALITY FORUM

National Voluntary Consensus Standards for Imaging Efficiency
Measure Summary

Measure Number: IEP-007-10

Measure Title: Appropriate head CT imaging in adults with mild traumatic brain injury

Description: Percent of adult patients who presented within 24 hours of a non-penetrating head injury with a Glasgow coma score (GCS) >13 and underwent head CT for trauma in the ED who have a documented indication consistent with guidelines (1) prior to imaging

Numerator Statement: Number of denominator patients who have a documented indication consistent with the American College of Emergency Physicians (ACEP) clinical policy for mild traumatic brain injury prior to imaging

Denominator statement: Number of adult patients undergoing head CT for trauma who presented within 24 hours of a nonpenetrating head injury with a Glasgow Coma Scale (GCS) 14

Level of Analysis: Clinicians: Group, Facility/Agency, Population: national, Population: states, Population: regional/network

Data Source: Paper medical record/flowsheet, Electronic administrative data/claims, Electronic clinical data

Measure developer: Partners Healthcare System, Inc.

Type of Endorsement (full or time-limited): Time-Limited Endorsement

Attachments: N/A

NATIONAL QUALITY FORUM

Measure Evaluation 4.1
January 2010

This form contains the measure information submitted by stewards. Blank fields indicate no information was provided. Attachments also may have been submitted and are provided to reviewers. The sub-criteria and most of the footnotes from the evaluation criteria are provided in Word comments and will appear if your cursor is over the highlighted area (or in the margin if your Word program is set to show revisions in balloons). Hyperlinks to the evaluation criteria and ratings are provided in each section.

TAP/Workgroup (if utilized)**:** Complete all yellow highlighted areas of the form. Evaluate the extent to which each sub-criterion is met. Based on your evaluation, summarize the strengths and weaknesses in each section.

Note: *If there is no TAP or workgroup, the SC also evaluates the* sub-criteria *(yellow highlighted areas)*.

Steering Committee: Complete all pink highlighted areas of the form. Review the workgroup/TAP assessment of the sub-criterion, noting any areas of disagreement; then evaluate the extent to which each major criterion is met; and finally, indicate your recommendation for the endorsement. Provide the rationale for your ratings.

Evaluation ratings of the extent to which the criteria are met
C = Completely (unquestionably demonstrated to meet the criterion)
P = Partially (demonstrated to partially meet the criterion)
M = Minimally (addressed BUT demonstrated to only minimally meet the criterion)
N = Not at all (NOT addressed; OR incorrectly addressed; OR demonstrated to NOT meet the criterion)
NA = Not applicable (only an option for a few sub-criteria as indicated)

(for NQF staff use) **NQF Review** #: IEP-007-09 **NQF Project:** Efficiency: Imaging Efficiency

MEASURE DESCRIPTIVE INFORMATION
De.1 **Measure Title:** Appropriate Head CT Imaging in Adults with Mild Traumatic Brain Injury
De.2 **Brief description of measure**: Percent of adult patients who presented within 24 hours of a non-penetrating head injury with a Glasgow coma score (GCS) >13 and underwent head CT for trauma in the ED who have a documented indication consistent with guidelines(1) prior to imaging. (1) Jagoda AS, Bazarian JJ, Bruns JJ Jr, Cantrill SV, Gean AD, Howard PK, Ghajar J, Riggio S, Wright DW, Wears RL, Bakshy A, Burgess P, Wald MM, Whitson RR; American College of Emergency Physicians; Centers for Disease Control and Prevention. Clinical policy: neuroimaging and decision-making in adult mild traumatic brain injury in the acute setting. Ann Emerg Med. 2008 Dec;52(6):714-48. PubMed PMID: 19027497.
1.1-2 **Type of Measure:** efficiency/cost De.3 **If included in a composite or paired with another measure, please identify composite or paired measure**
De.4 **National Priority Partners Priority Area:** Overuse De.5 **IOM Quality Domain**: efficiency, safety De.6 **Consumer Care Need:**

CONDITIONS FOR CONSIDERATION BY NQF	
Four conditions must be met before proposed measures may be considered and evaluated for suitability as voluntary consensus standards:	**NQF Staff**
A. The measure is in the public domain or an intellectual property (measure steward agreement) is signed. *Public domain only applies to governmental organizations. All non-government organizations must sign a measure steward agreement even if measures are made publicly and freely available.*	**A** **Y**☐ **N**☐

A.1 Do you attest that the measure steward holds intellectual property rights to the measure and the right to use aspects of the measure owned by another entity (e.g., risk model, code set)? Yes **A.2 Indicate if Proprietary Measure** (*as defined in measure steward agreement*)**:** **A.3 Measure Steward Agreement:** agreement signed and submitted **A.4 Measure Steward Agreement attached:**	
B. The measure owner/steward verifies there is an identified responsible entity and process to maintain and update the measure on a schedule that is commensurate with the rate of clinical innovation, but at least every 3 years. Yes, information provided in contact section	**B** **Y**☐ **N**☐
C. The intended use of the measure includes both public reporting and quality improvement. ►**Purpose:** public reporting, quality improvement 0,0,0,	**C** **Y**☐ **N**☐
D. The requested measure submission information is complete. Generally, measures should be fully developed and tested so that all the evaluation criteria have been addressed and information needed to evaluate the measure is provided. Measures that have not been tested are only potentially eligible for a time-limited endorsement and in that case, measure owners must verify that testing will be completed within 12 months of endorsement. **D.1Testing:** No, testing will be completed within 12 months **D.2 Have NQF-endorsed measures been reviewed to identify if there are similar or related measures?** Yes	**D** **Y**☐ **N**☐
(for NQF staff use**)** **Have all conditions for consideration been met?** **Staff Notes to Steward** (*if submission returned*)**:**	**Met** **Y**☐ **N**☐
Staff Notes to Reviewers (*issues or questions regarding any criteria*)**:**	
Staff Reviewer Name(s):	

TAP/Workgroup Reviewer Name:	
Steering Committee Reviewer Name:	
1. IMPORTANCE TO MEASURE AND REPORT	
Extent to which the specific measure focus is important to making significant gains in health care quality (safety, timeliness, effectiveness, efficiency, equity, patient-centeredness) and improving health outcomes for a specific high impact aspect of healthcare where there is variation in or overall poor performance. *Measures must be judged to be important to measure and report in order to be evaluated against the remaining criteria.* (evaluation criteria) **1a. High Impact**	Eval Rating
(for NQF staff use) **Specific NPP goal**:	
1a.1 Demonstrated High Impact Aspect of Healthcare: affects large numbers, patient/societal consequences of poor quality, frequently performed procedure, high resource use **1a.2** **1a.3 Summary of Evidence of High Impact:** Head injury is a common presenting complaint in American emergency departments, comprising more than 1.8 million cases annually (1). While the potential for serious morbidity and mortality exists, most head injuries are minor, with low risk for serious intracranial injury. As access to CT technology has improved, CT has been increasingly utilized in the evaluation of minor head injury incurring significant cost to the healthcare system. However, because many injuries are indeed low risk, the yield for CT scans for detecting intracranial injury is low (2), and significant variation in CT utilization has been identified (3), clinical decision rules have been developed to reduce unnecessary CT scanning and better standardize care for patients with minor head injury (2, 4). These rules are highly sensitive and have the potential to significantly reduce the number of CT scans ordered for patients with mild traumatic brain injury without missing serious intracranial pathology. As such, the Clinical Policies Committee of the American College of Emergency Physicians has developed a clinical policy that provides evidence-based recommendations in the evaluation of patients with mild traumatic brain injury (5).	**1a** **C**☐ **P**☐ **M**☐ **N**☐

Comment [KP1]: 1a. The measure focus addresses:
•a specific national health goal/priority identified by NQF's National Priorities Partners; OR
•a demonstrated high impact aspect of healthcare (e.g., affects large numbers, leading cause of morbidity/mortality, high resource use (current and/or future), severity of illness, and patient/societal consequences of poor quality).

1a.4 Citations for Evidence of High Impact: (1) McCaig LF, Nawar EW. National hospital ambulatory medical care survey: 2004 Emergency Department Summary; 2004 Emergency Department Summary. Advance Data 2006; 372: 1-32.

(2) Stiell IG, Wells GA, Vandemheen K et al. The Canadian CT Head Rule for patients with minor head injury. Lancet 2001; 357: 1391-96.

(3) Stiell IG, Wells GA, Vandemheen K et al. Variation in ED use of computed tomography for patients with minor head injury. Ann Emerg Med 1997; 30: 14-22.

(4) Haydel JH, Preston CA, Mills TJ et al. Indications for computed tomography in patients with minor head injury. NEJM 2000; 343: 100-5.

(5) Jagoda AS, Bazarian JJ, Bruns JJ Jr, Cantrill SV, Gean AD, Howard PK, Ghajar J, Riggio S, Wright DW, Wears RL, Bakshy A, Burgess P, Wald MM, Whitson RR; American College of Emergency Physicians; Centers for Disease Control and Prevention. Clinical policy: neuroimaging and decision-making in adult mild traumatic brain injury in the acute setting. Ann Emerg Med. 2008; 52(6): 714-48.

1b. Opportunity for Improvement

1b.1 Benefits (improvements in quality) envisioned by use of this measure: This measure aims to improve quality by improving appropriateness of head CT imaging for emergency department patients with minor traumatic brain injury by increasing adherence to validated clinical decision rules and accepted evidence-based guidelines. Recent studies have shown that a decrease in CT scanning of up to 37% without missing serious intracranial injury can be achieved through the utilization of clinical decision rules (1, 2). Through reductions in unnecessary CT scanning, several benefits are anticipated including decreasing costs to the health care system and decreasing radiation exposure.

(1) Stiell IG, Clement CM, Rowe BH et al. Comparison of the Canadian CT Head Rule and the New Orleans Criteria in patients with minor head injury. JAMA 2005; 294: 1511-1518.

(2) Smits M, Dippel DWJ, de Haan GG et al. External validation of the Canadian CT Head Rule and the New Orleans Criteria for CT Scanning in patients with minor head injury. JAMA 2005; 294: 1519-1525.

1b.2 Summary of data demonstrating performance gap (variation or overall poor performance) across providers:
Several studies have shown that there is significant variability in the rates of CT utilization for patients with minor head injury (1) and that the yield of CT in minor head injury is low (2). Furthermore, the awareness and use of validated clinical decision rules directing head CT for patients with minor head injury is low, especially in the United States (3), and likely results in widespread inappropriate use of CT for patients with minor head injury.

1b.3 Citations for data on performance gap:
(1) Stiell IG, Wells GA, Vandemheen K et al. Variation in ED use of computed tomography for patients with minor head injury. Ann Emerg Med 1997; 30: 14-22.

(2) Stiell IG, Wells GA, Vandemheen K et al. The Canadian CT Head Rule for patients with minor head injury. Lancet 2001; 357: 1391-96.

(3) Eagles D, Stiell IG, Clement CM. International survey of emergency physicians' awareness and use of the Canadian Cervical Spine Rule and the Canadian Computed Tomography Head Rule. Acad Emerg Med 2008; 15:1256-1261.

1b.4 Summary of Data on disparities by population group:
We know of no data to suggest that disparities exist in use of head CT for patients with minor head injury

1b
C ☐
P ☐
M ☐
N ☐

Comment [KP2]: 1b. Demonstration of quality problems and opportunity for improvement, i.e., data demonstrating considerable variation, or overall poor performance, in the quality of care across providers and/or population groups (disparities in care).

Comment [k3]: 1 Examples of data on opportunity for improvement include, but are not limited to: prior studies, epidemiologic data, measure data from pilot testing or implementation. If data are not available, the measure focus is systematically assessed (e.g., expert panel rating) and judged to be a quality problem.

vary by population group.

1b.5 Citations for data on Disparities:
Not applicable.

1c. Outcome or Evidence to Support Measure Focus

1c.1 Relationship to Outcomes (*For non-outcome measures, briefly describe the relationship to desired outcome. For outcomes, describe why it is relevant to the target population*)**:** The proposed measure is not an outcome measure, and will not report diagnostic outcomes or patient specific outcomes. The desired outcome will be improved adherence to evidence-based clinical guidelines for CT scanning for patients with mild traumatic brain injury, which is anticipated to decreased unnecessary CT scanning, reduce costs and radiation exposure.

1c.2-3. Type of Evidence: cohort study, evidence based guideline, expert opinion

1c.4 Summary of Evidence (*as described in the criteria; for outcomes, summarize any evidence that healthcare services/care processes influence the outcome*)**:**
There are several prospective cohort studies evaluating the New Orlean's Criteria and the Canadian CT Head Rule, the clinical decision rules on which the ACEP Clinical Policy on Mild Traumatic Brain Injury is based.

Haydel JH, Preston CA, Mills TJ et al. Indications for computed tomography in patients with minor head injury. NEJM 2000; 343: 100-5.

In this prospective study involving over 1400 patients in 2 study phases, the authors derive a clinical decision rule to identify which patients with minor head injury require head CT. Through a recursive partitioning model predictors of intracranial injury were identified, and the derived New Orleans Criteria (NOC) rule states that any one of the following 7 clinical findings necessitated head CT including: headache, vomiting, age > 60 years, drug or alcohol intoxication, deficits in short-term memory, physical evidence of trauma above the clavicles, and seizure. The rule was 100% sensitive and had a specificity of 25%.

Stiell IG, Wells GA, Vandemheen K et al. The Canadian CT Head Rule for patients with minor head injury. Lancet 2001; 357: 1391-96.

Through a prospective cohort study involving over 3000 patients, the authors derive a clinical decision rule known as the Canadian CT Head Rule (CCHR) to identify which patients with minor head injury require head CT. Using a recursive partitioning model, 5 high risk factors (GCS<15 within 2 hours of injury, suspected open skull fracture, sign of basal skull fracture, vomiting = 2 episodes, age = 65 years) and 2 medium risk factors (preimpact amnesia >30minutes, dangerous mechanism of injury (pedestrian struck by motor vehicle, occupant ejected from motor vehicle, fall from height > 3 feet or five stairs). The rule was 100% sensitive for intracranial injury and 68% specific for injuries requiring neurosurgical intervention.

Stiell IG, Clement CM, Rowe BH et al. Comparison of the Canadian CT Head Rule and the New Orleans Criteria in patients with minor head injury. JAMA 2005; 294: 1511-1518.

The authors of the Canadian CT Head Rule (CCHR) validate the CCHR and compare it against the competing New Orleans Criteria in a prospective cohort study involving 1800 patients. The rules each had 100% sensitivity, but the CCHR was more specific (76.3% vs 12.1%) for injuries requiring neurosurgical intervention. For clinically important brain injuries, both rules were 100% sensitive and again the CCHR was more specific (50.6% vs 12.7%). The authors conclude that the CCHR would have significantly reduced the number of CT scans ordered without missing any important injuries.

Smits M, Dippel DWJ, de Haan GG et al. External validation of the Canadian CT Head Rule and the New Orleans Criteria for CT Scanning in patients with minor head injury. JAMA 2005; 294: 1519-1525.

The authors compare the CCHR and the NOC in a prospective multicenter study in the Netherlands involving 3100 patients and found that both rules were 100% sensitive for patients with injuries requiring neurosurgical intervention, but that the CCHR was less sensitive than the NOC for identifying neurocranial traumatic CT findings (83.4% vs 99.4%) and clinically important CT findings (84.5% vs 97.7%). The CCHR was

1c
C ☐
P ☐
M ☐
N ☐

Comment [k4]: 1c. The measure focus is:
•an outcome (e.g., morbidity, mortality, function, health-related quality of life) that is relevant to, or associated with, a national health goal/priority, the condition, population, and/or care being addressed;
OR
•if an intermediate outcome, process, structure, etc., there is **evidence** that supports the specific measure focus as follows:
oIntermediate outcome – evidence that the measured intermediate outcome (e.g., blood pressure, Hba1c) leads to improved health/avoidance of harm or cost/benefit.
oProcess – evidence that the measured clinical or administrative process leads to improved health/avoidance of harm and
if the measure focus is on one step in a multi-step care process, it measures the step that has the greatest effect on improving the specified desired outcome(s).
oStructure – evidence that the measured structure supports the consistent delivery of effective processes or access that lead to improved health/avoidance of harm or cost/benefit.
oPatient experience – evidence that an association exists between the measure of patient experience of health care and the outcomes, values and preferences of individuals/ the public.
oAccess – evidence that an association exists between access to a health service and the outcomes of, or experience with, care.
oEfficiency – demonstration of an association between the measured resource use and level of performance with respect to one or more of the other five IOM aims of quality.

Comment [k5]: 4 Clinical care processes typically include multiple steps: assess → identify problem/potential problem → choose/plan intervention (with patient input) → provide intervention → evaluate impact on health status. If the measure focus is one step in such a multi-step process, the step with the greatest effect on the desired outcome should be selected as the focus of measurement. For example, although assessment of immunization status and recommending immunization are necessary steps, they are not sufficient to achieve the desired impact on health status – patients must be vaccinated to achieve immunity. This does not preclude consideration of measures of preventive screening interventions where there is a strong link with desired outcomes (e.g., mammography) or measures for multiple care processes that affect a single outcome.

more specific than the NOC for each of neurocranial traumatic CT findings (39.4% vs 5.6%) and clinically important CT findings (38.9% vs 5.5%). The authors concluded that the CCHR would have reduced the number of CT scans ordered more than the NOC (37.1 vs 5.3%).

1c.5 Rating of strength/quality of evidence (*also provide narrative description of the rating and by whom***):**
The evidence from which the ACEP 2008 Clinical Policy on Neuroimaging and Decisionmaking in Adult Mild Traumatic Brain Injury in the Acute Setting was rated by a multidisciplinary panel including members of the American College of Emergency Physicians and the Centers for Disease Control and Prevention. Relevant medical literature was identified through searches of MEDLINE and the Cochrane Database from January 2000 though 2007. Rating of strength and quality of evidence was achieved through rating the quality of the study design on a 3-point scale, and then each paper was graded on an individual basis on 6 dimensions relevant to clinical guideline development, and the evidence was given a final grade of class I, II or III.

1c.6 Method for rating evidence: All articles used in the formation of the ACEP clinical policy were graded by at least 2 subcommittee members into three different classes of evidence based on study design, with "1" representing the strongest evidence and "3" representing the weakest evidence. Articles were then further rated on 6 dimensions thought to be relevant to development of a clinical guideline, including: blinded vs unblinded outcome assessment, blinded or randomized allocation, direct or indirect outcome measures, biases, external validity, and sample size. They then received a final grade of Class I, II or III according to a predetermined formula.

Strength of recommendations was then classified into 3 categories: Level A – High degree of clinical certainty based on Class I or Class II evidence; Level B – Moderate clinical certainty based on Class II or Class II evidence; Level C - Consensus recommendations based on incomplete, conflicting or preliminary evidence.

For more details on the rating system, please refer directly to the ACEP Clinical Policy:

Jagoda AS, Bazarian JJ, Bruns JJ Jr, Cantrill SV, Gean AD, Howard PK, Ghajar J, Riggio S, Wright DW, Wears RL, Bakshy A, Burgess P, Wald MM, Whitson RR; American College of Emergency Physicians; Centers for Disease Control and Prevention. Clinical policy: neuroimaging and decision-making in adult mild traumatic brain injury in the acute setting. Ann Emerg Med. 2008; 52(6): 714-48.

1c.7 Summary of Controversy/Contradictory Evidence: There are currently no significant controversies or contradictions in the evidence.

1c.8 Citations for Evidence (*other than guidelines***):** Haydel JH, Preston CA, Mills TJ et al. Indications for computed tomography in patients with minor head injury. NEJM 2000; 343: 100-5.

Stiell IG, Wells GA, Vandemheen K et al. The Canadian CT Head Rule for patients with minor head injury. Lancet 2001; 357: 1391-96.

Stiell IG, Clement CM, Rowe BH et al. Comparison of the Canadian CT Head Rule and the New Orleans Criteria in patients with minor head injury. JAMA 2005; 294: 1511-1518.

Smits M, Dippel DWJ, de Haan GG et al. External validation of the Canadian CT Head Rule and the New Orleans Criteria for CT Scanning in patients with minor head injury. JAMA 2005; 294: 1519-1525.

1c.9 Quote the Specific guideline recommendation (*including guideline number and/or page number***):**
In the ACEP Clinical Policy, Critical Question #1 on page 718 provides the recommendation:

"Critical Question #1. Which patients with mild traumatic brain injury should have a non-contrast head CT scan in the ED?

Recommendations:
Level A recommendations: A noncontrast head CT is indicated in head trauma patients with loss of

Comment [k6]: 3 The strength of the body of evidence for the specific measure focus should be systematically assessed and rated (e.g., USPSTF grading system http://www.ahrq.gov/clinic/uspstf07/methods/benefit.htm). If the USPSTF grading system was not used, the grading system is explained including how it relates to the USPSTF grades or why it does not. However, evidence is not limited to quantitative studies and the best type of evidence depends upon the question being studied (e.g., randomized controlled trials appropriate for studying drug efficacy are not well suited for complex system changes). When qualitative studies are used, appropriate qualitative research criteria are used to judge the strength of the evidence.

consciousness or post-traumatic amnesia only if one or more of the following is present: headache, vomiting, age greater than 60 years, drug or alcohol intoxication, deficits in short-term memory, physical evidence of trauma above the clavicle, posttraumatic seizure, GCS score less than 15, focal neurologic deficit, or coagulopathy."

Level B recommendations: A noncontrast head CT should be considered in head trauma patients with no loss of consciousness or posttraumatic amnesia if there is a focal neurologic deficit, vomiting, severe headache, age 65years or greater, physical signs of a basilar skull fracture, GCS score less than 15, coagulopathy, or a dangerous mechanism of injury.*)
*Dangerous mechanism of injury includes ejection from a motor vehicle, a pedestrian struck, and a fall from a height of more than 3 feet or 5 stairs.

Level C recommendations: None specified"

1c.10 **Clinical Practice Guideline Citation:** Jagoda AS, Bazarian JJ, Bruns JJ Jr, Cantrill SV, Gean AD, Howard PK, Ghajar J, Riggio S, Wright DW, Wears RL, Bakshy A, Burgess P, Wald MM, Whitson RR; American College of Emergency Physicians; Centers for Disease Control and Prevention. Clinical policy: neuroimaging and decision-making in adult mild traumatic brain injury in the acute setting. Ann Emerg Med. 2008; 52(6): 714-48.

1c.11 **National Guideline Clearinghouse or other URL:** National Guideline Clearinghouse: http://www.guideline.gov/summary/summary.aspx?doc_id=13116&nbr=006720&string=traumatic+AND+brain+AND+injury

1c.12 **Rating of strength of recommendation (***also provide narrative description of the rating and by whom***):**

1c.13 **Method for rating strength of recommendation** (*If different from* USPSTF system*, also describe rating and how it relates to USPSTF*)**:**
Level A recommendations. Generally accepted principles for patient management that reflect a high degree of clinical certainty (i.e., based on strength of evidence Class I or overwhelming evidence from strength of evidence Class II studies that directly address all of the issues).

Level B recommendations. Recommendations for patient management that may identify a particular strategy or range of management strategies that reflect moderate clinical certainty (i.e., based on strength of evidence Class II studies that directly address the issue, decision analysis that directly addresses the issue, or strong consensus of strength of evidence Class III studies).

Level C recommendations. Other strategies for patient management that are based on preliminary, inconclusive, or conflicting evidence, or, in the absence of any published literature, based on panel consensus.

There are certain circumstances in which the recommendations stemming from a body of evidence should not be rated as highly as the individual studies on which they are based. Factors such as heterogeneity of results, uncertainty about effect magnitude and consequences, strength of prior beliefs, and publication bias, among others, might lead to such a downgrading of recommendations.

1c.14 **Rationale for using this guideline over others:**
This guideline is published by the American College of Emergency Physicians, the largest professional association that represents emergency physicians in the United States, is evidence-based, and is the most recent evidence-based guideline addressing acute mild brain injury and is therefore the most appropriate guideline currently available.

TAP/Workgroup: What are the strengths and weaknesses in relation to the sub-criteria **for** *Importance to Measure and Report?*	**1**
Steering Committee: Was the threshold criterion, *Importance to Measure and Report***, met?**	**1**

Comment [k7]: USPSTF grading system **http://www.ahrq.gov/clinic/uspstf/grades.htm**: **A -** The USPSTF recommends the service. There is high certainty that the net benefit is substantial. **B -** The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial. **C -** The USPSTF recommends against routinely providing the service. There may be considerations that support providing the service in an individual patient. There is at least moderate certainty that the net benefit is small. Offer or provide this service only if other considerations support the offering or providing the service in an individual patient. **D -** The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits. **I -** The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.

Rationale:	**Y☐ N☐**
2. SCIENTIFIC ACCEPTABILITY OF MEASURE PROPERTIES	
Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented. (evaluation criteria)	Eval Rating
2a. MEASURE SPECIFICATIONS	
S.1 Do you have a web page where current detailed measure specifications can be obtained? **S.2 If yes, provide web page URL:** **2a. Precisely Specified**	
2a.1 Numerator Statement (*Brief, text description of the numerator - what is being measured about the target population, e.g. target condition, event, or outcome***):** Number of denominator patients who have a documented indication consistent with the ACEP clinical policy for mild traumatic brain injury prior to imaging. **2a.2 Numerator Time Window (***The time period in which cases are eligible for inclusion in the numerator***):** Numerator and denominator data will be collected concurrently at the index visit only, and will not be measured over subsequent time intervals. **2a.3 Numerator Details (***All information required to collect/calculate the numerator, including all codes, logic, and definitions***):** Indications for Head CT in patients presenting to the ED for mild traumatic brain injury: Patients with loss of consciousness or posttraumatic amnesia AND • Headache OR • Vomiting OR • Age>60 OR • Drug/alcohol intoxication OR • Short-term memory deficits OR • Evidence of trauma above the clavicles OR • Posttraumatic seizure OR • GCS<15 OR • Focal neurological deficit OR • Coagulopathy* Patients without loss of consciousness or posttraumatic amnesia AND • Severe headache OR • Vomiting OR • Age>65 OR • GCS<15 OR • Physical signs of a basilar skull fracture OR • Focal neurological deficit OR • Coagulopathy* OR • Dangerous Mechanism** *Patient taking anticoagulation (warfarin, fractionated or unfractionated heparin) or has a documented coagulation disorder **Dangerous mechanism of injury includes: ejection from a motor vehicle, a pedestrian struck, and a fall from a height of more than 3 feet or 5 stairs. Jagoda AS, Bazarian JJ, Bruns JJ Jr, Cantrill SV, Gean AD, Howard PK, Ghajar J, Riggio S, Wright DW, Wears RL, Bakshy A, Burgess P, Wald MM, Whitson RR; American College of Emergency Physicians; Centers for Disease Control and Prevention. Clinical policy: neuroimaging and decision-making in adult mild traumatic	**2a-specs** **C☐** **P☐** **M☐** **N☐**

Comment [KP8]: 2a. The measure is well defined and precisely specified so that it can be implemented consistently within and across organizations and allow for comparability. The required data elements are of high quality as defined by NQF's Health Information Technology Expert Panel (HITEP) .

brain injury in the acute setting. Ann Emerg Med. 2008; 52(6): 714-48.

2a.4 Denominator Statement (*Brief, text description of the denominator - target population being measured***):**
Number of adult patients undergoing head CT for trauma who presented within 24 hours of a non-penetrating head injury with a Glasgow Coma Scale (GCS) ?14

2a.5 Target population gender: Female, Male
2a.6 Target population age range: The target population includes all ED patients 16 years of age and older.

2a.7 Denominator Time Window (*The time period in which cases are eligible for inclusion in the denominator***):**
Numerator and denominator data will be collected concurrently at the index visit only, and will not be measured over subsequent time intervals.

2a.8 Denominator Details (*All information required to collect/calculate the denominator - the target population being measured - including all codes, logic, and definitions***):**
? Head CT performed in emergency department (with or without contrast)
? Age =16 years
? Non-penetrating head trauma
? Emergency department presentation within 24 hours of injury
? Glasgow Coma Scale (GCS) 14 or 15 on initial emergency department evaluation

2a.9 Denominator Exclusions (*Brief text description of exclusions from the target population***):** - Age <16 years
- GCS <14 on initial ED evaluation
- Obvious penetrating skull injury or obvious depressed skull fracture
- Patients with multisystem trauma
- Returned for reassessment of the same injury
- Pregnant

2a.10 Denominator Exclusion Details (*All information required to collect exclusions to the denominator, including all codes, logic, and definitions***):**

2a.11 Stratification Details/Variables (*All information required to stratify the measure including the stratification variables, all codes, logic, and definitions***):**

2a.12-13 Risk Adjustment Type: no risk adjustment necessary

2a.14 Risk Adjustment Methodology/Variables (*List risk adjustment variables and describe conceptual models, statistical models, or other aspects of model or method***):**

2a.15-17 Detailed risk model available Web page URL or attachment:

2a.18-19 Type of Score: rate/proportion
2a.20 Interpretation of Score: better quality = higher score
2a.21 Calculation Algorithm (*Describe the calculation of the measure as a flowchart or series of steps***):**

2a.22 Describe the method for discriminating performance *(e.g., significance testing)***:**
This measure does not require any significance testing. Rather rates of imaging use will be reported with the opportunity for classification by quintiles or other similar mechanisms based on initial reporting.

2a.23 Sampling (Survey) Methodology *If measure is based on a sample (or survey), provide instructions for obtaining the sample, conducting the survey and guidance on minimum sample size (response rate)*:

Comment [k9]: 11 Risk factors that influence outcomes should not be specified as exclusions.
12 Patient preference is not a clinical exception to eligibility and can be influenced by provider interventions.

2a.24 Data Source (*Check the source(s) for which the measure is specified and tested)*
paper medical record/flowsheet, Electronic adminstrative data/claims, Electronic clinical data

2a.25 Data source/data collection instrument (*Identify the specific data source/data collection instrument, e.g. name of database, clinical registry, collection instrument, etc.***):**
Data will be collected from the medical record, specifically from the provider's order for a brain CT. No specific data collection instrument need be used since the determination of guideline adherence will be made solely on the criteria mentioned in the guideline. These can be easily recorded either electronically or on paper using institution-specific instruments.

2a.26-28 Data source/data collection instrument reference web page URL or attachment: URL
http://www.brighamandwomens.org/emergencymedicine/Quality_Improvement.aspx?sub=0

2a.29-31 Data dictionary/code table web page URL or attachment:

2a.32-35 Level of Measurement/Analysis (*Check the level(s) for which the measure is specified and tested)*
Clinicians: Group, Facility/Agency, Population: national, Population: states, Population: regional/network

2a.36-37 Care Settings (*Check the setting(s) for which the measure is specified and tested)*
Ambulatory Care: Emergency Dept, Other (specify) This measure was developed for use in the ED, but the guideline upon which it is based is not specific for the ED. It would be reasonable to consider the measure for the following additional care settings: Office, Clinic, and Hospital Outpatient

2a.38-41 Clinical Services (*Healthcare services being measured, check all that apply*)
Clinicians: PA/NP/Advanced Practice Nurse, Clinicians: Physicians (MD/DO)

TESTING/ANALYSIS

2b. Reliability testing

2b.1 Data/sample *(description of data/sample and size)***:** The guidelines used as the basis for the measure are drawn from large prospective cohort studies conducted in the United States, Canada and Europe deriving and validating clinical decision rules. The evidence for these rules is strong and non-conflicting. In addition to the evidence base of these guidelines, we are current engaging in internal quality improvement initiatives intended to measure efficiency in CT head use for ED patients presenting with mild traumatic brain injury.

2b.2 Analytic Method *(type of reliability & rationale, method for testing)***:**

2b.3 Testing Results *(reliability statistics, assessment of adequacy in the context of norms for the test conducted)***:**

2b C☐ P☐ M☐ N☐

2c. Validity testing

2c.1 Data/sample *(description of data/sample and size)***:**

2c.2 Analytic Method *(type of validity & rationale, method for testing)***:**

2c.3 Testing Results *(statistical results, assessment of adequacy in the context of norms for the test conducted)***:**

2c C☐ P☐ M☐ N☐

2d. Exclusions Justified **2d**

Comment [KP10]: 2b. Reliability testing demonstrates the measure results are repeatable, producing the same results a high proportion of the time when assessed in the same population in the same time period.

Comment [k11]: 8 Examples of reliability testing include, but are not limited to: inter-rater/abstractor or intra-rater/abstractor studies; internal consistency for multi-item scales; test-retest for survey items. Reliability testing may address the data items or final measure score.

Comment [KP12]: 2c. Validity testing demonstrates that the measure reflects the quality of care provided, adequately distinguishing good and poor quality. If face validity is the only validity addressed, it is systematically assessed.

Comment [k13]: 9 Examples of validity testing include, but are not limited to: determining if measure scores adequately distinguish between providers known to have good or poor quality assessed by another valid method; correlation of measure scores with another valid indicator of quality for the specific topic; ability of measure scores to predict scores on some other related valid measure; content validity for multi-item scales/tests. Face validity is a subjective assessment by experts of whether the measure reflects the quality of care (e.g., whether the proportion of patients with BP < 140/90 is a marker of quality). If face validity is the only validity addressed, it is systematically assessed (e.g., ratings by relevant stakeholders) and the measure is judged to represent quality care for the specific topic and that the measure focus is the most important aspect of quality for the specific topic.

Comment [KP14]: 2d. Clinically necessary measure exclusions are identified and must be:
•supported by evidence of sufficient frequency of occurrence so that results are distorted without the exclusion;
AND
•a clinically appropriate exception (e.g., contraindication) to eligibility for the measure focus;
AND
•precisely defined and specified:
–if there is substantial variability in exclusions across providers, the measure is specified so that exclusions are computable and the effect on the measure is transparent (i.e., impact clearly delineated, such as number of cases excluded, exclusion rates by type of exclusion);
if patient preference (e.g., informed decision-making) is a basis for exclusion, there must be evidence that it strongly impacts performance on the measure and the measure must be specified so that the information about patient preference and the effect on the measure is transparent (e.g., numerator category computed separately, denominator exclusion category computed separately).

2d.1 Summary of Evidence supporting exclusion(s):
These exclusions are based largely on the exclusions cited in the original research on which the current ACEP Clinical Policy is based, namely, the New Orleans' Criteria and the Canadian CT Head Rule. All of the above groups except "pregnant" are excluded because they are perceived to be subgroups at higher risk for serious injury, and as such were excluded from the original derivation studies of the clinical decision rules. Pregnant patients are excluded because of concerns over radiation exposure to the fetus, and are less likely to be imaged, and more likely to be admitted and observed, to reduce the risk of injury to the fetus.

C☐ P☐ M☐ N☐ NA☐

2d.2 Citations for Evidence:
Haydel JH, Preston CA, Mills TJ et al. Indications for computed tomography in patients with minor head injury. NEJM 2000; 343: 100-5.

Stiell IG, Wells GA, Vandemheen K et al. The Canadian CT Head Rule for patients with minor head injury. Lancet 2001; 357: 1391-96.

2d.3 Data/sample *(description of data/sample and size)***:**

2d.4 Analytic Method *(type analysis & rationale)***:**

2d.5 Testing Results *(e.g., frequency, variability, sensitivity analyses)***:**

2e. Risk Adjustment for Outcomes/ Resource Use Measures

2e.1 Data/sample *(description of data/sample and size)***:**

2e.2 Analytic Method *(type of risk adjustment, analysis, & rationale)***:**

2e.3 Testing Results *(risk model performance metrics)***:**

2e.4 If outcome or resource use measure is not risk adjusted, provide rationale:

2e C☐ P☐ M☐ N☐ NA☐

2f. Identification of Meaningful Differences in Performance

2f.1 Data/sample from Testing or Current Use *(description of data/sample and size)***:**

2f.2 Methods to identify statistically significant and practically/meaningfully differences in performance *(type of analysis & rationale)***:**

2f.3 Provide Measure Scores from Testing or Current Use *(description of scores, e.g., distribution by quartile, mean, median, SD, etc.; identification of statistically significant and meaningfully differences in performance)***:**

2f C☐ P☐ M☐ N☐

2g. Comparability of Multiple Data Sources/Methods

2g.1 Data/sample *(description of data/sample and size)***:**

2g.2 Analytic Method *(type of analysis & rationale)***:**

2g.3 Testing Results *(e.g., correlation statistics, comparison of rankings)***:**

2g C☐ P☐ M☐ N☐ NA☐

Comment [k15]: 10 Examples of evidence that an exclusion distorts measure results include, but are not limited to: frequency of occurrence, sensitivity analyses with and without the exclusion, and variability of exclusions across providers.

Comment [KP16]: 2e. For outcome measures and other measures (e.g., resource use) when indicated:
•an evidence-based risk-adjustment strategy (e.g., risk models, risk stratification) is specified and is based on patient clinical factors that influence the measured outcome (but not disparities in care) and are present at start of care;[Error! Bookmark not defined.] OR rationale/data support no risk adjustment.

Comment [k17]: 13 Risk models should not obscure disparities in care for populations by including factors that are associated with differences/inequalities in care such as race, socioeconomic status, gender (e.g., poorer treatment outcomes of African American men with prostate cancer, inequalities in treatment for CVD risk factors between men and women). It is preferable to stratify measures by race and socioeconomic status rather than adjusting out differences.

Comment [KP18]: 2f. Data analysis demonstrates that methods for scoring and analysis of the specified measure allow for identification of statistically significant and practically/clinically meaningful differences in performance.

Comment [k19]: 14 With large enough sample sizes, small differences that are statistically significant may or may not be practically or clinically meaningful. The substantive question may be, for example, whether a statistically significant difference of one percentage point in the percentage of patients who received smoking cessation counseling (e.g., 74% v. 75%) is clinically meaningful; or whether a statistically significant difference of $25 in cost for an episode of care (e.g., $5,000 v. $5,025) is practically meaningful. Measures with overall poor performance may not demonstrate much variability across providers.

Comment [KP20]: 2g. If multiple data sources/methods are allowed, there is demonstration they produce comparable results.

2h. Disparities in Care

2h.**1 If measure is stratified, provide stratified results** *(scores by stratified categories/cohorts)***:**

2h.2 **If disparities have been reported/identified, but measure is not specified to detect disparities, provide follow-up plans:**

2h
C☐
P☐
M☐
N☐
NA☐

Comment [KP21]: 2h. If disparities in care have been identified, measure specifications, scoring, and analysis allow for identification of disparities through stratification of results (e.g., by race, ethnicity, socioeconomic status, gender);OR rationale/data justifies why stratification is not necessary or not feasible.

TAP/Workgroup: What are the strengths and weaknesses in relation to the sub-criteria **for** *Scientific Acceptability of Measure Properties?*

2

Steering Committee: Overall, to what extent was the criterion, *Scientific Acceptability of Measure Properties***, met?**
Rationale:

2
C☐
P☐
M☐
N☐

3. USABILITY

Extent to which intended audiences (e.g., consumers, purchasers, providers, policy makers) can understand the results of the measure and are likely to find them useful for decision making. (evaluation criteria)

Eval Rating

3a. Meaningful, Understandable, and Useful Information

3a.1 **Current Use:** testing not yet completed

3a.2 **Use in a public reporting initiative (disclosure of performance results to the public at large)** (*If used in a public reporting initiative, provide name of initiative(s), locations, Web page URL(s). If not publicly reported, state the plans to achieve public reporting within 3 years*)**:**
We intend this measure to be suitable for public reporting in the future. We plan to continue our internal Quality Improvement study to demonstrate the efficiencies in imaging, which can be result from use of the measure.

3a.3 **If used in other programs/initiatives (***If used in quality improvement or other programs/initiatives, name of initiative(s), locations, Web page URL(s). If not used for QI, state the plans to achieve use for QI within 3 years***):**

Comment [KP22]: 3a. Demonstration that information produced by the measure is meaningful, understandable, and useful to the intended audience(s) for both public reporting (e.g., focus group, cognitive testing) and informing quality improvement (e.g., quality improvement initiatives). An important outcome that may not have an identified improvement strategy still can be useful for informing quality improvement by identifying the need for and stimulating new approaches to improvement.

Testing of Interpretability (*Testing that demonstrates the results are understood by the potential users for public reporting and quality improvement*)
3a.4 **Data/sample** *(description of data/sample and size)***:**

3a.5 **Methods** *(e.g., focus group, survey, QI project)***:**

3a.6 **Results** *(qualitative and/or quantitative results and conclusions)***:**

3a
C☐
P☐
M☐
N☐

3b/3c. Relation to other NQF-endorsed measures

3b.1 **NQF # and Title of similar or related measures:**

(for NQF staff use) **Notes on similar/related** endorsed **or submitted measures:**

3b. Harmonization
If this measure is related to measure(s) already endorsed by NQF (e.g., same topic, but different target population/setting/data source or different topic but same target population):
3b.2 **Are the measure specifications harmonized? If not, why?**

3b
C☐
P☐
M☐
N☐
NA☐

Comment [KP23]: 3b. The measure specifications are harmonized with other measures, and are applicable to multiple levels and settings.

Comment [k24]: 16 Measure harmonization refers to the standardization of specifications for similar measures on the same topic (e.g., *influenza immunization* of patients in hospitals or nursing homes), or related measures for the same target population (e.g., eye exam and HbA1c for *patients with diabetes*), or definitions applicable to many measures (e.g., age designation for children) so that they are uniform or compatible, unless differences are dictated by the evidence. The dimensions of harmonization can include numerator, denominator, exclusions, and data source and collection instructions. The extent of harmonization depends on the relationship of the measures, the evidence for the specific measure focus, and differences in data sources.

3c. Distinctive or Additive Value

3c.1 Describe the distinctive, improved, or additive value this measure provides to existing NQF-endorsed measures:

5.1 Competing Measures If this measure is similar to measure(s) already endorsed by NQF (i.e., on the same topic and the same target population), describe why it is a more valid or efficient way to measure quality:

3c
C☐
P☐
M☐
N☐

Comment [KP25]: 3c. Review of existing endorsed measures and measure sets demonstrates that the measure provides a distinctive or additive value to existing NQF-endorsed measures (e.g., provides a more complete picture of quality for a particular condition or aspect of healthcare).

Comment [k26]: 5. Demonstration that the measure is superior to competing measures – new submissions and/or endorsed measures (e.g., is a more valid or efficient way to measure).

TAP/Workgroup: What are the strengths and weaknesses in relation to the sub-criteria **for** *Usability*?

3

Steering Committee: Overall, to what extent was the criterion, *Usability*, **met?**
Rationale:

3
C☐
P☐
M☐
N☐

4. FEASIBILITY

Extent to which the required data are readily available, retrievable without undue burden, and can be implemented for performance measurement. (evaluation criteria)

Eval Rating

4a. Data Generated as a Byproduct of Care Processes

4a.1-2 How are the data elements that are needed to compute measure scores generated?
data generated as byproduct of care processes during delivery,

4a
C☐
P☐
M☐
N☐

Comment [KP27]: 4a. For clinical measures, required data elements are routinely generated concurrent with and as a byproduct of care processes during care delivery. (e.g., BP recorded in the electronic record, not abstracted from the record later by other personnel; patient self-assessment tools, e.g., depression scale; lab values, meds, etc.)

4b. Electronic Sources

4b.1 Are all the data elements available electronically? (*elements that are needed to compute measure scores are in defined, computer-readable fields, e.g., electronic health record, electronic claims*)
No

4b.2 If not, specify the near-term path to achieve electronic capture by most providers.
All data elements are not likely to be available electronically to most providers currently. Although many electronic health records include computerized physician order entry (CPOE) for radiologic tests, most are not currently programmed to have guideline-based decision support. At Brigham and Women's Hospital, the Center for Evidence Based Imaging has developed a CPOE interface that can collect specific clinical information at the time of ordering and offer interactive decision support. This measure is one of several for which there is ongoing quality improvement work utilizing this interface. Although most electronic health records do not currently have the exact specifications for this measure in their CPOE, it is technically feasible for them to be reprogrammed to include such data. The measure specifications provided include all information needed for any EHR to be reprogrammed to collect the needed data elements.

Providers who do not have CPOE could implement a templated paper order entry form that included all data fields. Alternatively they could conduct chart review to identify if the data fields were present at the time of test ordering, but this would likely have a low yield as most clinical charts do not have time to data entry and many are completed at the end of the patient visit. If approved by the NQF, we would produce a model templated paper order entry form for this measure. Ultimately, this and other measures will be significantly aided by the transition to electronic health records.

4b
C☐
P☐
M☐
N☐

Comment [KP28]: 4b. The required data elements are available in electronic sources. If the required data are not in existing electronic sources, a credible, near-term path to electronic collection by most providers is specified and clinical data elements are specified for transition to the electronic health record.

4c. Exclusions

4c.1 Do the specified exclusions require additional data sources beyond what is required for the numerator and denominator specifications?
Yes

4c
C☐
P☐
M☐
N☐
NA☐

Comment [KP29]: 4c. Exclusions should not require additional data sources beyond what is required for scoring the measure (e.g., numerator and denominator) unless justified as supporting measure validity.

4c.2 **If yes, provide justification.** The specified exclusions require additional data sources only if an electronic order entry system is not programmed to capture them. In this case, clinical records, either electronic or paper would be needed to indentify exclusions. An EHR can be programmed to collect all data on exclusions at the time of order entry.	
4d. Susceptibility to Inaccuracies, Errors, or Unintended Consequences 4d.1 **Identify susceptibility to inaccuracies, errors, or unintended consequences of the measure and describe how these potential problems could be audited. If audited, provide results.** As with any NQF measure based on guideline recommendations, the major source of inaccuracy or error will be incomplete medical records. This measure is based on a set of specific clinical criteria outlined by the guideline and will require physicians to document the presence or absence of these criteria in patients undergoing CT imaging. The main unintended consequence of this measure is that CT images ordered by emergency physicians at the request of consultants may be attributed to the emergency physicians themselves. However, by analyzing this measure at the Group or Facility level, organizations can develop measure-specific policies that will apply to all physicians, including emergency physicians and consultants.	**4d** C☐ P☐ M☐ N☐
4e. Data Collection Strategy/Implementation 4e.1 **Describe what you have learned/modified as a result of testing and/or operational use of the measure regarding data collection, availability of data/missing data, timing/frequency of data collection, patient confidentiality, time/cost of data collection, other feasibility/ implementation issues:** Successful data collection using an electronic order entry system is dependent on designing an explicit order form with a method of categorizing indications for CT imaging. If these indications are categorized correctly, the inclusion and exclusion criteria can effectively sort the CT images obtained into those to which the guideline should apply and those to which it should not. 4e.2 **Costs to implement the measure** (*costs of data collection, fees associated with proprietary measures*)**:** The cost to implement this measure will depend on the method used to collect data. An electronic order entry system, after it is programmed, will be able to determine guideline-appropriateness for little or no cost other than that associated with the programming. Personnel time will be needed if paper medical records are to be reviewed in order to determine the appropriateness of individual CTs. 4e.3 **Evidence for costs:** 4e.4 **Business case documentation:**	**4e** C☐ P☐ M☐ N☐
TAP/Workgroup: What are the strengths and weaknesses in relation to the sub-criteria **for** *Feasibility*?	**4**
Steering Committee: Overall, to what extent was the criterion, *Feasibility*, **met?** **Rationale:**	**4** C☐ P☐ M☐ N☐
RECOMMENDATION	
(for NQF staff use) **Check if measure is untested and only eligible for time-limited endorsement.**	**Time-limited** ☐
Steering Committee: Do you recommend for endorsement? **Comments:**	**Y**☐ **N**☐ **A**☐

Comment [KP30]: 4d. Susceptibility to inaccuracies, errors, or unintended consequences and the ability to audit the data items to detect such problems are identified.

Comment [KP31]: 4e. Demonstration that the data collection strategy (e.g., source, timing, frequency, sampling, patient confidentiality, etc.) can be implemented (e.g., already in operational use, or testing demonstrates that it is ready to put into operational use).

CONTACT INFORMATION
Co.1 **Measure Steward (Intellectual Property Owner)** Co.1 **Organization** Partners HealthCare System, Inc. | Prudential Tower, 800 Boylston Street, Suite 1150 | Boston | Massachusetts | 02199-8001 Co.2 **Point of Contact** Sheridan | Kassirer, Vice President, Quality Management and Clinical Programs | eesheppard@partners.org | 617-278-1036
Measure Developer If different from Measure Steward Co.3 **Organization** Partners HealthCare System, Inc. | Prudential Tower, 800 Boylston Street, Suite 1150 | Boston | Massachusetts | 02199-8001 Co.4 **Point of Contact** Jereimah | Schuur, MD, MHS | jschuur@partners.org | 617-525-8872
Co.5 **Submitter If different from Measure Steward POC** Jereimah | Schuur, MD, MHS | jschuur@partners.org | 617-525-8872- |Partners HealthCare System, Inc.
Co.6 **Additional organizations that sponsored/participated in measure development**
ADDITIONAL INFORMATION
Workgroup/Expert Panel involved in measure development Ad.1 **Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.** Measure development team: Jeremiah Schuur, M.D., MHS, Brigham and Women's Hospital; Ron Walls, M.D., Brigham and Women's Hospital; Richard Zane, M.D., Brigham and Women's Hospital; Ali Russia, M.D., MBA, Brigham and Women's Hospital; James Andruchow, MD, Brigham and Women's Hospital; Arjun Venkatesh, M.D., MBA, Brigham and Women's Hospital.
Ad.2 **If adapted, provide name of original measure:** Ad.3-5 **If adapted, provide original specifications URL or attachment**
Measure Developer/Steward Updates and Ongoing Maintenance Ad.6 **Year the measure was first released:** 2009 Ad.7 **Month and Year of most recent revision:** 2010-05 Ad.8 **What is your frequency for review/update of this measure?** Every 2 years. Ad.9 **When is the next scheduled review/update for this measure?** 2011-12
Ad.10 **Copyright statement/disclaimers:**
Ad.11 -13 **Additional Information web page URL or attachment:**
Date of Submission (*MM/DD/YY*)**:** 05/19/2010

Measure #/Title/Steward

#IEP-007-10 Appropriate Head CT Imaging in Adults with Mild Traumatic Brain Injury /BWH

Description

Percent of adult patients who presented within 24 hours of non-penetrating head injury with a Glasgow coma score (GCS) >13 and underwent head CT for trauma in the ED who have a documented indication consistent with guidelines prior to imaging.

Initial In-person Vote

Recommend for endorsement with conditions – 16
Not recommend for endorsement - 3

Steering Committee Questions/Conditions for Measure Developer:	Abbreviated Response from Measure Developer:
• Need to affirm a 12 month testing strategy using strictly the paper form of the data collection tool	• PHS is committed to conducting a paper testing strategy within the next 12 months but has not yet started it at this time. ▪ Examining "paper" testing at other Partners HealthCare site or ED and will inform the committee as soon as confirmed. ▪ *Note: Most Partners HealthCare sites have CPOE for radiology, although all do not have the active decision support system that is at BWH.*
• Consider changing the inclusion criteria to read a GCS ≥ to 13 or provide a rational for why the measure as currently written uses an inclusion criteria of > than 13	• Does not support ▪ GC>=13 considered during measure development; ▪ Decision, based on evidence, for GC >13 as the cut-off score for this measure. (See additional notes in response.)

Detailed Response from Measure Developer:

- While we have already begun a testing strategy it is based upon computerized physician order entry (CPOE). We cannot commit to conducting a paper testing strategy at this date, but are actively investigating this. We are looking into the possibility of doing this at another Partners HealthCare site or another ED and will be in touch with the committee as soon as we confirm. Most Partners HealthCare sites have CPOE for radiology, although all do not have the active decision support system that is at BWH.
- There have been a number of GCS criteria used in the various studies on which this measure is based. While the Canadian CT Head Rule uses an initial GCS of 13-15 (allowing two hours for normalization of the GCS to 15), the New Orleans Criteria and the majority of later studies have used either a GCS of 15 or a GCS of 14-15 as inclusion criteria. For this reason, the authors of the ACEP Clinical Policy based their recommendation on a GCS inclusion criterion of 14-15. We have created the performance measure to follow this most recent evidence based guideline.

Revised/Clarified MD response submitted to NQF on Thursday April 8, 2010:

- PHS is committed to conducting a paper testing strategy within the next 12 months but have not yet started it at this time