NATIONAL QUALITY FORUM

Measure Submission and Evaluation Worksheet 5.0

This form contains the information submitted by measure developers/stewards, organized according to NQF's measure evaluation criteria and process. The evaluation criteria, evaluation guidance documents, and a blank online submission form are available on the submitting standards web page.

NQF #: 0504 NQF Project: Patient Safety Measures-Complications Project

(for Endorsement Maintenance Review)
Original Endorsement Date: Oct 24, 2008 Most Recent Endorsement Date: Oct 24, 2008 Last Updated Date: Apr 06, 2012

BRIEF MEASURE INFORMATION

De.1 Measure Title: Pediatric weight documented in kilograms

Co.1.1 Measure Steward: American Academy of Pediatrics

De.2 Brief Description of Measure: Percentage of emergency department visits by patients < 18 years of age with a current weight documented in kilograms in the ED electronic health record; measure to be reported each month.

2a1.1 Numerator Statement: Number of emergency department visits by patients < 18 years of age with a current weight documented in kilograms in the ED electronic health record

2a1.4 Denominator Statement: Number of emergency department visits by patients <18 years of age

2a1.8 Denominator Exclusions: No denominator exclusions

1.1 Measure Type: Process
2a1. 25-26 Data Source: Electronic Clinical Data : Electronic Health Record
2a1.33 Level of Analysis: Facility

1.2-1.4 Is this measure paired with another measure? No

De.3 If included in a composite, please identify the composite measure (*title and NQF number if endorsed*):

STAFF NOTES (*issues or questions regarding any criteria*)

Comments on Conditions for Consideration:

Is the measure untested? Yes☐ No☐ If untested, explain how it meets criteria for consideration for time-limited endorsement:

1a. Specific national health goal/priority identified by DHHS or NPP addressed by the measure (*check De.5*):
5. Similar/related endorsed or submitted measures (*check 5.1*):
Other Criteria:

Staff Reviewer Name(s):

1. IMPACT, OPPORTUITY, EVIDENCE - IMPORTANCE TO MEASURE AND REPORT

Importance to Measure and Report is a threshold criterion that must be met in order to recommend a measure for endorsement. All three subcriteria must be met to pass this criterion. See guidance on evidence.
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: H☐ M☐ L☐ I☐

(*The measure directly addresses a specific national health goal/priority identified by DHHS or NPP, or some other high impact aspect of healthcare.*)

De.4 Subject/Topic Areas *(Check all the areas that apply)*:
De.5 Cross Cutting Areas (*Check all the areas that apply)*: Infrastructure Supports : Health IT, Safety

1a.1 Demonstrated High Impact Aspect of Healthcare: Affects large numbers, A leading cause of morbidity/mortality

1a.2 If "Other," please describe:

1a.3 Summary of Evidence of High Impact *(Provide epidemiologic or resource use data)*:
According to the National Hospital Ambulatory Medical Care Survey, children comprise nearly one quarter of the 114 million ED visits occurring annually. This equates to approximately 78,000 visits each day by children to US emergency departments. An accurate weight is required in order to safely and effectively prescribe medications and intravenous fluids to children during these visits.

On April 11, 2008 the Joint Commission released a report on Pediatric Sentinel Events that focused on medication errors. Given that all pediatric medication dosages are based on weight in kilograms, accurate and safe administration of medications to children necessitates a current weight in kilograms documented in the ED record. (http://www.jointcommission.org/NewsRoom/NewsReleases/nr_04_11_08.htm) Furthermore, research has demonstrated that health care providers are very inaccurate in estimating weights of children.

Research shows that the potential for adverse drug events within the pediatric inpatient population is about three times as high as among hospitalized adults. (1) A new study identified an 11.1 percent rate of adverse drug events in pediatric patients. This is far more than described in previous studies. The study also showed that 22 percent of those adverse drug events were preventable, 17.8 percent could have been identified earlier, and 16.8 percent could have been mitigated more effectively. (2)

The Joint Commission offers the following suggested action as the first to prevent pediatric medication errors and their related adverse events in pediatric care settings: Since patient weight is used to calculate most dosing (either as weight-based dosing, body surface area calculation, or other age-appropriate dose determination), all pediatric patients should be weighed in kilograms at the time of admission (including outpatient and ambulatory clinics) or within four hours of admission in an emergency situation. Kilograms should be the standard nomenclature for weight on prescriptions, medical records and staff communications.

1a.4 Citations for Evidence of High Impact cited in 1a.3:
(http://www.jointcommission.org/NewsRoom/NewsReleases/nr_04_11_08.htm)

Kaushal R, et al: Medication errors and adverse drug events in pediatric inpatients. Journal of the American Medical Association, 2001, 285:2114-2120

Takata, GS, et al: Development, Testing, and Findings of a Pediatric-Focused Trigger Tool to Identify Medication-Related Harm in US Children's Hospitals. Pediatrics, 2008, 121:e927-3935. Available online: http://www.pediatrics.org/cgi/content/full/121/4/e927 (accessed 4/8/08)

Other References:
Committee on the Future of Emergency Healthcare in the United States; the Institute of Medicine; Emergency Care for Children: Growing Pains. Available for purchase online: http://www.nap.edu/catalog/11655.html (accessed 4/4/08)

Committee on Drugs and Committee on Hospital Care, American Academy of Pediatrics: Policy statement—Prevention of medication errors in the pediatric inpatient setting. Pediatrics, 2003, 112:431-436

Levine SL, Cohen MR: Preventing medication errors in pediatric and neonatal patients. Medication Errors, 2007, Washington DC, American Pharmacists Association

Potts MJ, Phelan KW: Deficiencies in calculation and applied mathematics skills in pediatrics among primary care interns. Archives of Pediatrics & Adolescent Medicine, 1996, 150:748-52

Hazinski MF: Reducing calculation errors in drug dosages: the pediatric critical information sheet. Pediatric Nursing, 1986, 12:138-40

Fortescue EB, et al: Prioritizing strategies for preventing medication errors and adverse drug events in pediatric inpatients. Pediatrics, 2003, 111:722-729

Dubois D, et al: Accuracy of Weight Estimation for Children. Pediatric Emergency Care, 2007, 23: 227-230.

Greig A, Ryan J, Glucksman E. How good are doctors at estimating children's weight? J Accid Emerg Med, 1997, 14(2):101-3

1b. Opportunity for Improvement: H☐ M☐ L☐ I ☐
(*There is a demonstrated performance gap - variability or overall less than optimal performance*)

1b.1 Briefly explain the benefits (improvements in quality) envisioned by use of this measure:
Consistent documentation of weight for all ED patients can reduce the number of medication dosing errors and adverse drug events. Standardizing the assessment and documentation of weight in kilograms will increase the reliability of accurate dosing for all medication ordering strategies, including computerized physician order entry (CPOE).

1b.2 Summary of Data Demonstrating Performance Gap *(Variation or overall less than optimal performance across providers)*:
[*For Maintenance – Descriptive statistics for performance results for this measure - distribution of scores for measured entities by quartile/decile, mean, median, SD, min, max, etc.*]
A sample of emergency department visits was obtained from 13 hospitals participating in the American Academy of Pediatrics Committee on Quality Transformation Performance Measures task force. Data for one month, September 2010, were collected and aggregated. This sample represented a total of 59,261 visits by patients < 18 years of age. The range of visits by site was from 1,306 to 7,370 visits with a median number of visits of 4,624 and an average of 4,558. To reliably assess weight capture, sites indicated whether weight was "estimated" or "actual" for each visit.

Eligible visits for each site were compiled and data was compared across sites. Captured weight values were indicated as either "actual" (captured during the ED visit), "estimated" (not directly assessed at visit) or "blank" (no response indicated). All visits are included in the denominator while only visits with a noted actual weight assessed were included as valid for numerator eligibility.

Data were to be derived from only electronic sources, such as an electronic medical records system or similar clinical data capture system. No manual audit data was accepted for this sample. Each site indicated that their electronic record fields for weight call for data capture in kilograms only. Weight is captured using standard practice and equipment that is reliable and consistent across sites.

Five of the thirteen sites providing data were unable to indicate whether weights were estimated or actual. These values were excluded from numerator inclusion. This conservative estimate assumes that all of these weights were not captured. The rationale for this criteria is that in the absence of knowing whether a weight was actual or estimated, an assumption that the weight was estimated, will limit the opportunity for this measure to be over counted. This stringency also provides the most opportunity for improvement.

The rationale for excluding from the numerator data for those sites unable to capture actual or estimate information is that without this information, we cannot be sure that the listed weight value was actually from an assessed weight. While the stringency of the criteria is high, it ultimately provides the correct information needed to accurately capture pediatric weight.

An actual weight was documented for 33,563 (59.1%) of all eligible visits. An estimated value was present for 1,607 visits (2.8%) visits while blank values across the 5 sites unable to tally this information accounted for 21,638 (35.7%) of visits. The distribution of actual weight documentation by site is provided below.
Site % of visits with actual weight documented Notes
1 0.00% Site unable to distinguish estimated or actual weights
2 99.71%
3 74.01%
4 99.04%

5 0.00% Site unable to distinguish estimated or actual weights
6 0.00% Site unable to distinguish estimated or actual weights
7 0.00% Site unable to distinguish estimated or actual weights
8 90.01%
9 86.87%
10 94.35%
11 91.58%
12 100.00%
13 0.00% Site unable to distinguish estimated or actual weights

For the sites that were able to capture actual vs. estimated weight information, 89% of the time an actual weight was captured (with a range of 64% to 100%).

1b.3 Citations for Data on Performance Gap: [*For Maintenance – Description of the data or sample for measure results reported in 1b.2 including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included*]
Unpublished data

1b.4 Summary of Data on Disparities by Population Group: [*For Maintenance –Descriptive statistics for performance results for this measure by population group*]
None currently documented

1b.5 Citations for Data on Disparities Cited in 1b.4: [*For Maintenance – Description of the data or sample for measure results reported in 1b.4 including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included*]

1c. Evidence (*Measure focus is a health outcome OR meets the criteria for quantity, quality, consistency of the body of evidence.*)
Is the measure focus a health outcome? Yes☐ No☐ If not a health outcome, rate the body of evidence.

Quantity: H☐ M☐ L☐ I☐ Quality: H☐ M☐ L☐ I☐ Consistency: H☐ M☐ L☐ I☐

Quantity	Quality	Consistency	Does the measure pass subcriterion1c?
M-H	M-H	M-H	Yes☐
L	M-H	M	Yes☐ IF additional research unlikely to change conclusion that benefits to patients outweigh harms: otherwise No☐
M-H	L	M-H	Yes☐ IF potential benefits to patients clearly outweigh potential harms: otherwise No☐
L-M-H	L-M-H	L	No ☐

Health outcome – rationale supports relationship to at least one healthcare structure, process, intervention, or service	Does the measure pass subcriterion1c? Yes☐ IF rationale supports relationship

1c.1 Structure-Process-Outcome Relationship *(Briefly state the measure focus, e.g., health outcome, intermediate clinical outcome, process, structure; then identify the appropriate links, e.g., structure-process-health outcome; process- health outcome; intermediate clinical outcome-health outcome)*:
The proposed measure is a process measure. This process measure is linked to intermediate clinical outcomes such as rate of medication dosing errors and the rate of adverse drug events within the pediatric population. These intermediate outcomes are linked directly to health outcomes such as mortality and end-organ dysfunction in children.

1c.2-3 Type of Evidence *(Check all that apply)*:
Selected individual studies (rather than entire body of evidence)

1c.4 Directness of Evidence to the Specified Measure *(State the central topic, population, and outcomes addressed in the body of evidence and identify any differences from the measure focus and measure target population)*:

The evidence directly and indirectly relates to the specified measure. Two studies were found that relate to the outcome of weights and dosing error. One study was in the pediatric population and one in adults. The pediatric study of children 12 years old or younger that presented with pain, compared simple analgesic doses by the recommended age versus the dose when calculated by an actual weight in Kg.

1c.5 Quantity of Studies in the Body of Evidence *(Total number of studies, not articles*): The initial electronic search resulted in 59 citations. 40 citations were discarded, as they were not related to the clinical question of interest. The remaining 19 citations were reviewed in full text. Two articles were discarded as unrelated to the clinical question. Fifteen were discarded because studies only included weight comparisons of actual weight to estimated weights, but did not conduct an evaluation of an outcome. Two studies were included in a summary; however, one was conducted in an adult population.

1c.6 Quality of Body of Evidence (*Summarize the certainty or confidence in the estimates of benefits and harms to patients across studies in the body of evidence resulting from study factors. Please address: a) study design/flaws; b) directness/indirectness of the evidence to this measure (e.g., interventions, comparisons, outcomes assessed, population included in the evidence); and c) imprecision/wide confidence intervals due to few patients or events*): Issues that should be considered when reviewing the evidence:
(1) Only two studies were included, and only one was specific to the pediatric population. The pediatric study was a cohort study. The adult study was observational and descriptive and reviewed information for 28 patients.
(2) No review articles, case studies, and case reports were included in this summary.
(3) One adult study was included in this evidence summary. Generalizability of adult studies to the pediatric population should be considered clinically, as methodology can not address this applicability issue.
(4) The Table of Evidence Levels may be found at:
http://www.cincinnatichildrens.org/service/j/anderson-center/evidence-based-care/legend/This table illustrates how the quality levels are related to each other by domain and by study design.
Interventions were dosing based on actual weight.

1c.7 Consistency of Results across Studies *(Summarize the consistency of the magnitude and direction of the effect):* There was consistency across both studies. According to the two included studies, recording an actual weight in kilograms may decrease medication dosing errors. These studies compared actual weight to estimated weight, both in kg. No studies evaluated actual weight (kg) versus weight in pounds or no weight recorded. Additionally there is local consensus on the safety implications of this recommendation.

1c.8 Net Benefit *(Provide estimates of effect for benefit/outcome; identify harms addressed and estimates of effect; and net benefit - benefit over harms)*:
Pediatric study measuring dosing for ibuprofen or paracetamol with actual weight compared to dosing recommended by age:
Results
- The weight-estimation formula underestimated weight by 16% for all ages. Weight was significantly underestimated in all age categories compared as well [<1, 1-5, 6-12].
- The average dose for the paracetamol group was 67% of the optimal dose that was based on weight (P <0.001).
- The average dose for the ibuprofen group was 51% of optimal dose (P < 0.001) (Donald, 2007 [3a]).

Risks/Benefits
- Prescribing analgesia by age risks unnecessarily under- or over-dosing in the pediatric population.
- Predicting a child's weight using the calculation may also result in under-dosing.
- Although a common formula to estimate weight may be useful in resuscitation, it can be inaccurate, most significantly in children ages 6 to 12 years.
- Prescribing analgesia by actual weight allows the maximum recommended dose to be given, which may maximize pain relief and minimize dosing errors (Donald, 2007 [3a]).

1c.9 Grading of Strength/Quality of the Body of Evidence. Has the body of evidence been graded? Yes

1c.10 If body of evidence graded, identify the entity that graded the evidence including balance of representation and any disclosures regarding bias: The evidence was appraised and graded by the Evidence-Based Decision Making Team at Cincinnati Children's Hospital Medical Center. This team consists of trained evidence methodologists unrelated to the clinical team.

The results were then reviewed by Emergency Department physicians. Disclosures of bias or conflict of interest are on file with the James M Anderson Center for Health Systems Excellence; none were found

1c.11 System Used for Grading the Body of Evidence: Other

1c.12 If other, identify and describe the grading scale with definitions: The LEGEND system was developed at Cincinnati Children's Hospital Medical Center. Robust appraisal forms have been developed for the study designs for each clinical question domain. The appraisal derived from each study is then summarized and the resulting accumulation is weighed via a high, medium, low or could not be assigned category for the body of evidence. The categories are described at: http://www.cincinnatichildrens.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=92304&libID=91998

1c.13 Grade Assigned to the Body of Evidence: The body of evidence was graded as low. The pediatric study was a well done prospective cohort (3a) and the adult study although well designed was retrospective, a very small sample, and not of the patient population of interest (4b).

1c.14 Summary of Controversy/Contradictory Evidence: The evidence for this topic although sparse is consistent. Additionally local consensus supports the use of actual weight for each patient.
It is recommended that actual body weight in Kg be obtained for each patient presenting to the Emergency Department. Exceptions to this may exist such as in an emergency situation (e.g., trauma, resuscitation).

1c.15 Citations for Evidence other than Guidelines*(Guidelines addressed below)*:
1.Donald, C., R. Duncan, et al. (2007). "Paediatric analgesia in the emergency department, are we getting it right?" Eur J Emerg Med 14(3): 157-159. (3a)
2.dos Reis Macedo, L. G., L. de Oliveira, et al. (2011). "Error in body weight estimation leads to inadequate parenteral anticoagulation." Am J Emerg Med 29(6): 613-617. (4b)

1c.16 Quote verbatim, the specific guideline recommendation *(Including guideline # and/or page #)*:
N/A - no guideline for this topic

1c.17 Clinical Practice Guideline Citation: N/A - no guideline for this topic

1c.18 National Guideline Clearinghouse or other URL: Searched and none found

1c.19 Grading of Strength of Guideline Recommendation. Has the recommendation been graded? No

1c.20 If guideline recommendation graded, identify the entity that graded the evidence including balance of representation and any disclosures regarding bias:

1c.21 System Used for Grading the Strength of Guideline Recommendation: Other

1c.22 If other, identify and describe the grading scale with definitions: The LEGEND system was developed at Cincinnati Children's Hospital Medical Center. Robust appraisal forms have been developed for the study designs for each clinical question domain. The appraisal derived from each study is then summarized and the resulting accumulation is weighed via a high, medium, low or could not be assigned category for the body of evidence. The categories are described at: http://www.cincinnatichildrens.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=92304&libID=91998

1c.23 Grade Assigned to the Recommendation: A low grade is assigned to this body of evidence due to lack of studies and the inclusion of an adult study .

1c.24 Rationale for Using this Guideline Over Others: N/A - no guideline for this topic

Based on the NQF descriptions for rating the evidence, what was the developer's assessment of the quantity, quality, and consistency of the body of evidence?
1c.25 Quantity: Low 1c.26 Quality: Moderate1c.27 Consistency: High
1c.28 Attach evidence submission form:

1c.29 Attach appendix for supplemental materials:

Was the threshold criterion, *Importance to Measure and Report*, met?
(*1a & 1b must be rated moderate or high and 1c yes*) Yes☐ No☐
Provide rationale based on specific subcriteria:

For a new measure if the Committee votes NO, then STOP.
For a measure undergoing endorsement maintenance, if the Committee votes NO because of 1b. (no opportunity for improvement), it may be considered for continued endorsement and all criteria need to be evaluated.

2. RELIABILITY & VALIDITY - 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)
Measure testing must demonstrate adequate reliability and validity in order to be recommended for endorsement. Testing may be conducted for data elements and/or the computed measure score. Testing information and results should be entered in the appropriate field. Supplemental materials may be referenced or attached in item 2.1. See guidance on measure testing.

S.1 Measure Web Page *(In the future, NQF will require measure stewards to provide a URL link to a web page where current detailed specifications can be obtained*). Do you have a web page where current detailed specifications for this measure can be obtained? Yes

S.2 If yes, provide web page URL: http://www.childrensnational.org/files/PDF/EMSC/PubRes/Hospital-based_Performance_Measures/Initial_Care_for_Every_Emergency_Department_Patient.pdf

2a. RELIABILITY. Precise Specifications and Reliability Testing: H☐ M☐ L☐ I ☐

2a1. Precise Measure Specifications. (*The measure specifications precise and unambiguous.*)

2a1.1 Numerator Statement *(Brief, narrative description of the measure focus or what is being measured about the target population, e.g., cases from the target population with the target process, condition, event, or outcome)*:
Number of emergency department visits by patients < 18 years of age with a current weight documented in kilograms in the ED electronic health record

2a1.2 Numerator Time Window *(The time period in which the target process, condition, event, or outcome is eligible for inclusion)*:
Monthly

2a1.3 Numerator Details *(All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, codes with descriptors, and/or specific data collection items/responses*:
weight documented in kg. Documentation of weight occurs during the ED visit, between arrival and departure from the ED.

2a1.4 Denominator Statement *(Brief, narrative description of the target population being measured)*:
Number of emergency department visits by patients <18 years of age

2a1.5 Target Population Category *(Check all the populations for which the measure is specified and tested if any)*: Children's Health

2a1.6 Denominator Time Window *(The time period in which cases are eligible for inclusion)*:
All ED visits by patients <18 years are eligible for inclusion. Recommended time frame is monthly reporting

2a1.7 Denominator Details (*All information required to identify and calculate the target population/denominator such as definitions, codes with descriptors, and/or specific data collection items/responses)*:
All ED visits by patients <18 years are eligible for inclusion.

2a1.8 Denominator Exclusions *(Brief narrative description of exclusions from the target population)*:
No denominator exclusions

2a1.9 Denominator Exclusion Details *(All information required to identify and calculate exclusions from the denominator such as definitions, codes with descriptors, and/or specific data collection items/responses)*:

2a1.10 Stratification Details/Variables *(All information required to stratify the measure results including the stratification variables, codes with descriptors, definitions, and/or specific data collection items/responses)*:
No stratification variables recommended

2a1.11 Risk Adjustment Type *(Select type. Provide specifications for risk stratification in 2a1.10 and for statistical model in 2a1.13)*: No risk adjustment or risk stratification 2a1.12 If "Other," please describe:

2a1.13 Statistical Risk Model and Variables *(Name the statistical method - e.g., logistic regression and list all the risk factor variables. Note - risk model development should be addressed in 2b4.)*:

2a1.14-16 Detailed Risk Model Available at Web page URL (or attachment). Include coefficients, equations, codes with descriptors, definitions, and/or specific data collection items/responses. Attach documents only if they are not available on a webpage and keep attached file to 5 MB or less. NQF strongly prefers you make documents available at a Web page URL. Please supply login/password if needed:

2a1.17-18. Type of Score: Ratio

2a1.19 Interpretation of Score *(Classifies interpretation of score according to whether better quality is associated with a higher score, a lower score, a score falling within a defined interval, or a passing score)*: Better quality = Higher score

2a1.20 Calculation Algorithm/Measure Logic*(Describe the calculation of the measure score as an ordered sequence of steps including identifying the target population; exclusions; cases meeting the target process, condition, event, or outcome; aggregating data; risk adjustment; etc.)*:
Denominator calculation
1. Identify all ED visits within a given month
2. Limit by patients <18yrs of age
Numerator calculation
1. For denominator visits, identify all with a weight in record
2. Include records where weight documented during ED visit
3. Include records where weight documented in kg
4. Include records where weight is actually assessed (if known)
5. Sum all eligible visits
Calculation:
Eligible visits with weight documented in kg / all visits by patients <18yrs in a month

2a1.21-23 Calculation Algorithm/Measure Logic Diagram URL or attachment:
Attachment
weight in kg algorithm (11.13.11).docx

2a1.24 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):
No sampling, include all visits by patients <18yrs of age.

2a1.25 Data Source *(Check all the sources for which the measure is specified and tested*). If other, please describe:
Electronic Clinical Data : Electronic Health Record

2a1.26 Data Source/Data Collection Instrument (*Identify the specific data source/data collection instrument, e.g. name of database, clinical registry, collection instrument, etc.*): Data source includes any ED electronic clinical data system or enterprise health record aggregating emergency department data.

2a1.27-29 Data Source/data Collection Instrument Reference Web Page URL or Attachment: URL http://www.childrensnational.org/files/PDF/EMSC/PubRes/Hospital-based_Performance_Measures/Initial_Care_for_Every_Emergency_Department_Patient.pdf

2a1.30-32 Data Dictionary/Code Table Web Page URL or Attachment:

2a1.33 Level of Analysis (*Check the levels of analysis for which the measure is specified and tested)*: Facility

2a1.34-35 Care Setting *(Check all the settings for which the measure is specified and tested)*: Ambulatory Care : Urgent Care, Hospital/Acute Care Facility

2a2. Reliability Testing. (*Reliability testing was conducted with appropriate method, scope, and adequate demonstration of reliability*.)

2a2.1 Data/Sample *(Description of the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included)*:
Each of the 13 sites who submitted a data sample was asked to audit 25 charts from the data sample that was initially provided. Weight data queried from each institutions EMR was validated directly against the values found in the chart itself.

Measure testing has included systems such as: Epic, Emstat, and Wellsoft.

2a2.2 Analytic Method *(Describe method of reliability testing & rationale)*:
A random sample of charts was selected for manual abstraction. The sample size was selected using the approach outlined by Cantor (1996) to determine sample sizes required for the calculating a reliable kappa statistic. The sample size was based on a 95% likelihood of agreement, a 0.05 level of confidence, and assumptions of the expected performance for each of the measures ranging between 50% and 95%. Given the high likelihood of finding agreement the power analyses indicated that only 25 chart abstractions in total were required. However it was decided to take a more conservative approach and conduct at least 25 abstractions per site. Chart abstraction was performed using a standardized data collection tool and abstractors with a deep knowledge of the individual sites' EHR. Data analysis included percent agreement.

Cantor AB: Sample-size calculations for Cohen´s kappa. Psychological Methods 1996, 1:150-153.

2a2.3 Testing Results *(Reliability statistics, assessment of adequacy in the context of norms for the test conducted)*:
Seven sites were able to audit charts. A total of 185 charts were audited across these sites with two sites submitting 30 audits and the rest submitting the requested 25. Six of the seven sites indicated queried weight values matched those found in the chart for all the audited charts. At one site, 4 of the 25 charts were found to not match. Across all sites 181 of the 185 audited charts had values that matched between the query and chart. Overall, this represents 98% sensitivity (95% CI 0.96 – 1.0).

2b. VALIDITY. Validity, Testing, including all Threats to Validity: H☐ M☐ L☐ I ☐

2b1.1 Describe how the measure specifications *(measure focus, target population, and exclusions)* are consistent with the evidence cited in support of the measure focus (*criterion 1c)* and identify any differences from the evidence:
Measure is consistent with recommendations that weight be captured in kg for all visits. No other types of values are accepted for this calculation.
The measure was tested for validity and credibility across multiple venues (for organization purposes, these have been numbered).
1. The measure was nominated, defined, rated and prioritized by an expert panel for both clinical and face validity. Members of the expert panel included pediatric and adult emergency medicine physicians, nurses and parent advocates. The charge of this panel was to create a balanced report card for emergency departments caring for children. http://www.childrensnational

.org/files/PDF/EMSC/PubRes/Hospital-based_Performance_Measures/Initial_Care_for_Every_Emergency_Department_Patient.pdf (put the link to the report card here).

2. This measure was also evaluated by a survey of emergency medical services stakeholders who were asked to assess the measure on 4 domains: scientific acceptability, importance to emergency medical services for children, usability and feasibility. This measure was consistently rated in the top decile across all stakeholder groups and was thus prioritized by the expert panel for reporting and improvement.

3. In addition to the work of the expert panel, measure validity was assessed using the weight values collected by each of the 13 sites for this work. The distribution of weight for age percentiles by site and across sites was analyzed.

2b2. Validity Testing. (*Validity testing was conducted with appropriate method, scope, and adequate demonstration of validity.)*

2b2.1 Data/Sample *(Description of the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included)*:
1. The expert panel consisted of 25 members. Twenty one members were physicians, from both pediatric and adult emergency medical services, 2 were nurses, 1 a patient advocate and 1a statistician.

2. The survey sent to emergency medical services stakeholders included the following groups:
American Academy of Pediatrics
Executive Committee of the Section on Emergency Medicine
Committee on Pediatric Emergency Medicine (COPEM)
American College of Emergency Physicians
Pediatric Emergency Medicine Subcommittee
Quality and Performance Committee
Quality Improvement and Patient Safety Section
Society of Academic Emergency Medicine – Clinical Guidelines Committee
Emergency Nurses Association – Quality and Patient Safety Work Team
Society of Trauma Nurses
American College of Surgeons - Committee on Trauma
Emergency Medical Services for Children Stakeholder Group
Family Advisory Network of EMSC State Partnership Grants
EMCare Emergency Physicians Group (community physician group)
Agency for Healthcare Research and Quality (AHRQ)
PECARN Steering Committee

3. For the analysis of weights by weight for age percentiles, the data set described in 1b.2 was used.

2b2.2 Analytic Method *(Describe method of validity testing and rationale; if face validity, describe systematic assessment)*:
1. Consensus methods for measure development, specifically the use of Nominal Group Technique and the Delphi Process were used to develop and prioritize the measure. Nominal group technique was used initially to develop a list of relevant measures for pediatric emergency care. After initial nomination, this measure list was pared down through the use of modified Delphi Processes. Measures were rated on 4 domains by expert panel members: scientific acceptability, importance to emergency medical services for children, usability and feasibility. A 6 point Likert Scale was used for each of these domains. Two rounds of ratings, with aggregate panel ratings displayed on the second round, were used to drive consensus for individual measures as a first pass at paring nominated measures. Two more rounds of consensus ratings were used to further prioritize measures.

2. Measure development: Relevant emergency medical services for children stakeholders were sent a web survey and asked to rate measures nominated by the expert panel. The same 6 point Likert scale and domains were used for stakeholder surveys. Survey participants were stratified into 4 groups, academic emergency department physicians, community based physicians, nurses and parents. Mean scores for each measure were tabulated for each sub group and across all surveyed participants. Measures were ordered by overall mean importance score and ordered into one of six groups.

3. Measure testing in a 13 hospital sample: The distribution of queried weight values were compared to the established 5th and 95th weight for age percentiles across 3 selected age groups, 2yrs, 5yrs and 10yrs of age. For each age category, the proportion of

documented weights below the 5th percentile, between the 5th and 95th percentile, and above the 95th percentile were tabulated for each site and across all sites.

Cutoffs for each of the age categories is as follows: 2yrs of age, 5th percentile >=11kg, 95th percentile <17kg; 5yrs of age, 5th percentile >=15kg, 95th percentile <27kg; 10yrs of age, 5th percentile >=25kg, 95th percentile <52kg.

2b2.3 Testing Results *(Statistical results, assessment of adequacy in the context of norms for the test conducted; if face validity, describe results of systematic assessment)*:
1. Measure development: The measure was one of the first nominated by the expert panel and was selected as a priority measure. Expert panel members rated the weight measure as the top overall measure (of 228 rated measures). Mean importance, scientific acceptability, usability and feasibility scores were 5.7, 5.6, 5.6 and 5.6 respectively (using a 6 point Likert scale). The measure was selected through two additional rounds of cuts and was selected as one of 15 prioritized measures by the expert panel.

2. Measure development: Of the 217 surveys sent to stakeholders, 121 were completed (a 56% response rate). The mean importance, scientific acceptability, usability and feasibility scores were 5.0, 5.3, 5.2 and 5.4 respectively. This measure was the top rated measure in all domains except importance (ranked 9th). Based on stakeholder ratings, this measure appears to have a high degree of face validity

3. Measure testing in 13 hospital sample: For patients 2yrs of age, 7.8% of documented weights fell below the 5th percentile, 85.1% fell within the 5th and 95th percentile and 7.1% above the 95th percentile. The median proportion of weights falling within the 5th and 95th percentile was 86% with a range of 74% to 90%.

For patients 5yrs of age, 3% of weights fell below the 5th percentile, 87% between the 5th and 95th percentile and 10% above the 95th percentile. The median proportion of weights between the 5th and 95th percentile was 87% with a range of 81% to 90%.

For patients 10yrs of age, 4% of weights fell below the 5th percentile, 77% between the 5th and 95th percentile and 19% above the 95th percentile. Median proportion of weights between the 5th and 95th percentiles was 79% with a range of 66% to 86%.

More than a majority of documented weights across each group fell within the expected 5th and 95th weight for age percentiles.

Aggregate data 2yr olds 5yr olds 10yr olds
Below 5th percentile 7.8% 3% 4%
Between 5th-95th percentile 85.1% 87% 77%
Above 95th percentile 7.1% 10% 19%

POTENTIAL THREATS TO VALIDITY. (*All potential threats to validity were appropriately tested with adequate results.*)

2b3. Measure Exclusions. (*Exclusions were supported by the clinical evidence in 1c or appropriately tested with results demonstrating the need to specify them.*)

2b3.1 Data/Sample for analysis of exclusions *(Description of the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included)*:

2b3.2 Analytic Method (*Describe type of analysis and rationale for examining exclusions, including exclusion related to patient preference)*:
For each visit, sites were asked to provide data on whether the value was collected in kg, and whether the weight was assessed or estimated.

2b3.3 Results *(Provide statistical results for analysis of exclusions, e.g., frequency, variability, sensitivity analyses):*

2b4. Risk Adjustment Strategy. (*For outcome measures, adjustment for differences in case mix (severity) across measured entities was appropriately tested with adequate results.*)

2b4.1 Data/Sample *(Description of the data or sample including number of measured entities; number of patients; dates of data; if*

a sample, characteristics of the entities included):
No risk adjustment strategy needed. Measure applies to all visits.

2b4.2 Analytic Method (*Describe methods and rationale for development and testing of risk model or risk stratification including selection of factors/variables)*:
N/A - no risk adjustment strategy needed

2b4.3 Testing Results *(Statistical risk model: Provide quantitative assessment of relative contribution of model risk factors; risk model performance metrics including cross-validation discrimination and calibration statistics, calibration curve and risk decile plot, and assessment of adequacy in the context of norms for risk models. Risk stratification: Provide quantitative assessment of relationship of risk factors to the outcome and differences in outcomes among the strata)*:
N/A - no risk adjustment strategy needed

2b4.4 If outcome or resource use measure is not risk adjusted, provide rationale and analyses to justify lack of adjustment: Measure applies to all visits. The only significant criteria is age eligibility (<18 yrs of age).

2b5. Identification of Meaningful Differences in Performance. (*The performance measure scores were appropriately analyzed and discriminated meaningful differences in quality.*)

2b5.1 Data/Sample *(Describe the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included)*:
The data sample submitted by 13 sites was used to identify performance gaps. This is the same data sample as described in section 1b.2

2b5.2 Analytic Method *(Describe methods and rationale to identify statistically significant and practically/meaningfully differences in performance)*:
To identify meaningful differences in this measure across sites, we calculated an achievable benchmark of care (ABC). The ABC system is a tool used to identify objective differences in care for a given measure and to identify targets for sites to benchmark against and achieve. More information about the ABC methodology can be found at: http://main.uab.edu/show.asp?durki=14369

We chose a cutoff of the top 10% of patients achieving care as defining best performance and calculated the ABC across the 13 sites who contributed data.

Additional reference:
Kiefe CI, Weissman NW, Allison JJ, Farmer R, Weaver M, Williams OD. Identifying achievable benchmarks of care: concepts and methodology. Int J Qual Health Care. Oct 1998;10(5):443-447.

2b5.3 Results *(Provide measure performance results/scores, e.g., distribution by quartile, mean, median, SD, etc.; identification of statistically significant and meaningfully differences in performance)*:
The mean proportion of visits where an actual weight was captured was 89% with a standard deviation of 11% (only includes 8 sites able to differentiate between estimated and actual weight).

The ABC was calculated first using only actual weights across the 8 sites that were able to differentiate between estimated and actual weight. The benchmark was found to be 98%. The ABC was also calculated using all weights (regardless of estimated or actual) and was found to be even higher, 100%. This calculation buffers the rationale that an achievable benchmark be set at 98%.

Only one site, of the 8 differentiating between estimated and actual, currently is at 98% for this measure. Across the other 7 sites, variability in capturing this measure is between 64% and 97%, indicating improvement opportunity for this measure.

The ABC was calculated two additional ways to determine if there was concordance for this target irrespective of the measure criteria. Using all visits, including for sites that were unable to distinguish actual versus estimated weights, the calculated ABC remained 98%. Using all collected weights, regardless of whether they were estimated or actual returned an ABC value of 100%. Based on these additional tests, the reported ABC of 98% for the measure remains an appropriate target.

2b6. Comparability of Multiple Data Sources/Methods. (*If specified for more than one data source, the various approaches*

result in comparable scores.)

2b6.1 Data/Sample *(Describe the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included)*:

2b6.2 Analytic Method *(Describe methods and rationale for testing comparability of scores produced by the different data sources specified in the measure)*:
Each site was provided with a template (in Microsoft Excel format) and instructions for collecting the data sample. This template captured: visit number, weight value, weight unit (kg/lbs), if weight was estimated or actual, the age of the patient at the visit, triage category and whether the visit was in the resuscitation bay.
Data was collected independently by each site and submitted to one point of contact. Data were aggregated into one master file using Microsoft Excel. Data aggregation, management and analyses were also performed using Microsoft Excel.

2b6.3 Testing Results *(Provide statistical results, e.g., correlation statistics, comparison of rankings; assessment of adequacy in the context of norms for the test conducted)*:
Using the template, data was collected across all sites. No sites reported issues in collecting or aggregating the data.

The only observed variance was in how sites collected age. Eight sites reported age in years, 1 site did so in months, 1 in days and 3 as a combination of days/months/years. After aggregating all data, the age data was recoded into discrete year categories (2,3,4,etc). Additionally, new columns were created on the aggregate file to denote whether captured was actual or estimated and whether a weight value was missing or present for each respective visit. These additional columns were created to facilitate sorting and processing of the data.

2c. Disparities in Care: H☐ M☐ L☐ I☐ NA☐ (*If applicable, the measure specifications allow identification of disparities.*)

2c.1 If measure is stratified for disparities, provide stratified results *(Scores by stratified categories/cohorts)*: Measure may be stratified for disparities in future work, and no disparities have been identified to date.

2c.2 If disparities have been reported/identified (e.g., in 1b), but measure is not specified to detect disparities, please explain:

2.1-2.3 Supplemental Testing Methodology Information:

Steering Committee: Overall, was the criterion, *Scientific Acceptability of Measure Properties*, met?
(*Reliability and Validity must be rated moderate or high*) Yes☐ No☐
Provide rationale based on specific subcriteria:

If the Committee votes No, STOP

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)

C.1 Intended Actual/Planned Use *(Check all the planned uses for which the measure is intended)*: Public Reporting, Quality Improvement (Internal to the specific organization), Quality Improvement with Benchmarking (external benchmarking to multiple organizations)

3.1 Current Use *(Check all that apply; for any that are checked, provide the specific program information in the following questions)*: Quality Improvement with Benchmarking (external benchmarking to multiple organizations), Quality Improvement (Internal to the specific organization)

3a. Usefulness for Public Reporting: H☐ M☐ L☐ I ☐
(*The measure is meaningful, understandable and useful for public reporting.*)

3a.1. Use in Public Reporting - disclosure of performance results to the public at large *(If used in a public reporting program, provide name of program(s), locations, Web page URL(s)).* If not publicly reported in a national or community program, state the reason AND plans to achieve public reporting, potential reporting programs or commitments, and timeline, e.g., within 3 years of endorsement: [*For Maintenance – If not publicly reported, describe progress made toward achieving disclosure of performance results to the public at large and expected date for public reporting; provide rationale why continued endorsement should be considered.*]
This measure is not currently used for public reporting. Now that the measure has been tested, we will plan to share our operational definition and measure algorithm with organizations within the AAP, including the Section of Emergency Medicine, to disseminate the measure. Other target organizations include the American College of Emergency Physicians, the Emergency Nurses Association, The Joint Commission and CMS.

3a.2.Provide a rationale for why the measure performance results are meaningful, understandable, and useful for public reporting. If usefulness was demonstrated (e.g., focus group, cognitive testing), describe the data, method, and results: This measure is meaningful because it is relevant to the millions of ED visits that occur each year by children. It is relevant to all sites of emergency care, including urgent care centers. The measure is a simple ratio and the goal is for 100% of patients to be weighed in kg during all ED visits, thus the measure is understandable. Due to the close linkage with medication errors and the concomitant morbidity and mortality, publicly reporting the proportion of times EDs record a weight in kg for their pediatric patients is meaningful for public reporting.

This measure was rated on usability by emergency medical services stakeholders via an electronic survey. The 121 stakeholders who responded rated this measure the highest (of 60 measures) in the usability domain with a mean score of 5.2 (on a 6 point scale). The next highest rated measure had a usability rating of 5.0. The high score (and overall score for the measure across each of the 4 ratings domains) would indicate that measure has a high degree of face validity and credibility.

3.2 Use for other Accountability Functions (payment, certification, accreditation). If used in a public accountability program, provide name of program(s), locations, Web page URL(s): Not used for accountability at this time

3b. Usefulness for Quality Improvement: H☐ M☐ L☐ I ☐
(*The measure is meaningful, understandable and useful for quality improvement.*)

3b.1. Use in QI. If used in quality improvement program, provide name of program(s), locations, Web page URL(s):
[*For Maintenance – If not used for QI, indicate the reasons and describe progress toward using performance results for improvement*].
Improving this process measure is amenable to quality improvement including structure elements (presence of scales, including those that only report weight in Kg, ability to differentiate between estimated and actual weight) and work flow processes to incorporate weight measurement into triage or other aspects of ED nursing care, including having electronic health records that record weight only in kilograms and alert clinicians when an entered weight falls out of a normal range. Children's hospital EDs are using this in QI including: Cincinnati Children's Medical Center, Children's Hospital of Philadelphia, Duke University Hospital, Primary Children's Hospital, Children's Hospital of Atlanta, Children's Hospital of Michigan, Texas Children's Hospital, Le Bonheur Children's Hospital and The Hospital for Sick Children (Toronto, ON).

3b.2. Provide rationale for why the measure performance results are meaningful, understandable, and useful for quality improvement. If usefulness was demonstrated *(e.g., QI initiative),* describe the data, method and results:
Improving this process measure is amenable to quality improvement including structure elements (presence of scales, including those that only report weight in Kg) and work flow processes to incorporate weight measurement into triage or other aspects of ED nursing care. This measure is an important component of medication error related outcome measures. Successful and reliable collection of this data represents one process that impacts medication dosing and other adverse drug related errors. The measure is clear, understandable to all clinical care providers and is easily captured by electronic medical record systems, facilitating ongoing and automatic data capture. Reliable capture of this measure enables the improvement work related to safety and medication errors by accounting for one source of these errors.

Overall, to what extent was the criterion, *Usability*, met? H☐ M☐ L☐ I ☐
Provide rationale based on specific subcriteria:

4. FEASIBILITY

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

4a. Data Generated as a Byproduct of Care Processes: H☐ M☐ L☐ I ☐

4a.1-2 How are the data elements needed to compute measure scores generated? *(Check all that apply).*
Data used in the measure are:
generated by and used by healthcare personnel during the provision of care, e.g., blood pressure, lab value, medical condition

4b. Electronic Sources: H☐ M☐ L☐ I ☐

4b.1 Are the data elements needed for the measure as specified available electronically *(Elements that are needed to compute measure scores are in defined, computer-readable fields)*: ALL data elements in electronic health records (EHRs)

4b.2 If ALL data elements are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources:

4c. Susceptibility to Inaccuracies, Errors, or Unintended Consequences: H☐ M☐ L☐ I ☐

4c.1 Identify susceptibility to inaccuracies, errors, or unintended consequences of the measurement identified during testing and/or operational use and strategies to prevent, minimize, or detect. If audited, provide results:
There are 2 important potential inaccuracies for this measure. First, the measure could be electronically entered in pounds even though the unit of measurement is meant to be in kilograms. Of the 9 institutions contributing data to this measure testing, none of them specify pounds versus kilograms. Second, weights could be entered into the electronic record, but be estimated or provided by parent recall and not by an actual measurement on a scale. Of our contributing sites, 5 are able to document whether the weight in the medical record was actual or estimated. Only actual weights are included in the measure numerator.

4d. Data Collection Strategy/Implementation: H☐ M☐ L☐ I ☐

A.2 Please check if either of the following apply (*regarding proprietary measures*):
4d.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 and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, other feasibility/implementation issues *(e.g., fees for use of proprietary measures)*:
As a result of testing we have learned the following:
1. Data is readily available in electronic systems and can be captured and reported readily across many sites. Reports were generated by ED or hospital analysts within 2 weeks of data request.
2. Although data is readily available, we did learn that only 60% of sites were able to accurately categorize the weight as actual and measured during the ED visit. Nearly 40% of sites had missing data in this area and thus this information informed our numerator statement.
3. This weight is able to be reported without needing any PHI, so patient confidentiality is preserved.
4. We also learned at the time of data entry, all hospital EDs surveyed had electronic records with data fields for weight tracked in kilograms and not in weight.

Overall, to what extent was the criterion, *Feasibility*, met? H☐ M☐ L☐ I ☐
Provide rationale based on specific subcriteria:

OVERALL SUITABILITY FOR ENDORSEMENT

Does the measure meet all the NQF criteria for endorsement? Yes☐ No☐
Rationale:

If the Committee votes No, STOP.
If the Committee votes Yes, the final recommendation is contingent on comparison to related and competing measures.

5. COMPARISON TO RELATED AND COMPETING MEASURES

If a measure meets the above criteria and there are endorsed or new related measures (either the same measure focus or the same target population) or competing measures (both the same measure focus and the same target population), the measures are compared to address harmonization and/or selection of the best measure before a final recommendation is made.

5.1 If there are related measures *(either same measure focus or target population)* or competing measures *(both the same measure focus and same target population*), list the NQF # and title of all related and/or competing measures:

5a. Harmonization

5a.1 If this measure has EITHER the same measure focus OR the same target population as NQF-endorsed measure(s): Are the measure specifications completely harmonized?

5a.2 If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and data collection burden:

5b. Competing Measure(s)

5b.1 If this measure has both the same measure focus and the same target population as NQF-endorsed measure(s): Describe why this measure is superior to competing measures *(e.g., a more valid or efficient way to measure quality);* OR provide a rationale for the additive value of endorsing an additional measure. *(Provide analyses when possible)*:

CONTACT INFORMATION

Co.1 Measure Steward (Intellectual Property Owner): American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007

Co.2 Point of Contact: Junelle, Speller, jspeller@aap.org, 847-690-1944-

Co.3 Measure Developer if different from Measure Steward: American Academy of Pediatrics, 141 Northwest Point Boulevard, Elk Grove Village, Illinois, 60007

Co.4 Point of Contact: Kathy, Shaw, MD, MSCE, shaw@email.chop.edu, 215-690-1544-

Co.5 Submitter: Kartik, Varadarajan, MPH, kartik.varadarajan@cchmc.org, 513-803-0794-, Cincinnati Children´s Hospital and Medical Center

Co.6 Additional organizations that sponsored/participated in measure development:

Co.7 Public Contact: Junelle, Speller, jspeller@aap.org, 847-434-7650-, American Academy of Pediatrics

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.

The following individuals were convened as an expert panel and developed this measure. The panel was composed of pediatric ED physicians, general ED physicians, nurses and parent advocates.

Evaline Alessandrini MD MSCE- Cincinnati Children's Hospital and Medical Center

Elizabeth Alpern MD MSCE- Children's Hospital of Philadelphia

Lalit Bajaj MD MPH- The Children's Hospital, Denver

Paul Boackle RN BSN MS- University of Missouri

David Brousseau MD MS- Medical College of Wisconsin

Kathleen Brown MD- Children's National Medical Center
Terri Byczkowski PhD- Cincinnati Children's Hospital and Medical Center
James Chamberlain MD- Children's National Medical Center
Dave Eitel MD- Wellspan Health System
Karen Frush MD- Duke University Medical Center
Marc Gorelick MD MSCE- Children's Hospital of Wisconsin
Claudia Jorgenson RN, MSN- Emergency Nurses Association
Steve Krug MD- Children's Memorial Hospital
Rich Lichenstein MD- University of Maryland
Jennifer Loftus- Children's Hospital of Philadelphia
Prashant Mahajan MD MPH MBA- Children's Hospital of Michigan
Charles Macias MD MPH- Baylor College of Medicine
James Marcin MD MPH- UC Davis Children's Hospital
Jesse Pines MD MBA MSCE- George Washington University
Richard Ruddy MD- Cincinnati Children's Hospital and Medical Center
Jay Schuur MD MHS- Brigham and Women's Hospital
Kathy Shaw MD MSCE- Children's Hospital of Philadelphia
Anne Stack MD FAAP- Children's Hospital Boston
Rachel Stanley MD- Children's Hospital of Michigan
Mike Tunik MD- Bellevue Hospital

The following institutions assisted in measure testing by providing data and analytical guidance.
Duke University Medical Center
Children's Hospital of Philadelphia
Primary Children's Hospital
Cincinnati Children´s Hospital Medical Center
Le Bonheur Children's Hospital
Children's Hospital of Atlanta
Children's Hospital of Michigan
Texas Children's Hospital
Hospital for Sick Children, Toronto ON
Children´s Hospital of Colorado
University of Maryland Medical Center
Medical College of Wisconsin
Children´s Hospital of Boston

Ad.2 If adapted, provide title of original measure, NQF # if endorsed, and measure steward. Briefly describe the reasons for adapting the original measure and any work with the original measure steward:

Measure Developer/Steward Updates and Ongoing Maintenance
Ad.3 Year the measure was first released: 2008
Ad.4 Month and Year of most recent revision: 10, 2008
Ad.5 What is your frequency for review/update of this measure? Bi-ennial
Ad.6 When is the next scheduled review/update for this measure? 11, 2013

Ad.7 Copyright statement:

Ad.8 Disclaimers:

Ad.9 Additional Information/Comments:

Date of Submission (*MM/DD/YY*): 04/06/2012

Measure Algorithm: Percentage of emergency department visits by patients < 18 years of age with a current weight documented in kilograms in the ED electronic health record; measure to be reported each month.

Denominator calculation steps

1. Identify all emergency department (ED) visits for a given month
2. Limit visits to those by patients <18yrs of age

Denominator = all ED visits by patients <18yrs of age

Numerator calculation steps

1. For all visits present in the denominator, identify all that had a weight documented in the medical record.
2. Exclude records where weight is not documented during the ED visit. Time of weight assessment must fall between ED arrival time and ED departure time.
3. Exclude any weights that are not documented in kg (in many electronic medical records systems, weights are not allowed to be input in pounds. In this case, all documented weights are eligible).
4. If the information is available, exclude weights that are documented as "estimated" (only weights directly assessed during visit should be counted if possible).
5. Sum all visits with an actual weight documented in kg during ED visit

Numerator= all ED visits where a weight was recorded meeting the inclusion criteria.

Measure Calculation:

$$\frac{\text{All ED visits where actual weight was documented during the ED visit}}{\text{All ED visits by patients <18yrs of age (each month)}}$$

Data Elements needed for calculation

Element	Type
ED visit date	Date/time
ED arrival time	Date/time
ED departure time	Date/time
Weight	Numeric
Weight type	Text (Used to identify lbs. vs. kg. May be process dependent by site)
Estimated/Actual weight	Text (this field may not be available and could be process dependent by site
Age	Numeric