

# Consumer Assessment of Healthcare Providers and Systems Hospital Survey – Child Version

## Section 1. Basic Measure Information

### 1.A. Measure Name

Consumer Assessment of Healthcare Providers and Systems Hospital Survey – Child Version (Child HCAHPS)

### 1.B. Measure Number

0140

### 1.C. Measure Description

**Please provide a non-technical description of the measure that conveys what it measures to a broad audience.**

Survey of parents' or guardians' (henceforth referred to as parent) assessments of the parents' and child's experience with inpatient hospital care.

### 1.D. Measure Owner

Center of Excellence for Pediatric Quality Measurement

### 1.E. National Quality Forum (NQF) ID (if applicable)

Not applicable.

### 1.F. Measure Hierarchy

**Please note here if the measure is part of a measure hierarchy or is part of a measure group or composite measure. The following definitions are used by AHRQ:**

- 1. Please identify the name of the collection of measures to which the measure belongs (if applicable). A collection is the highest possible level of the measure hierarchy. A collection may contain one or more sets, subsets, composites, and/or individual measures.**

Consumer Assessment of Healthcare Providers and Systems (CAHPS) Surveys.

- 2. Please identify the name of the measure set to which the measure belongs (if applicable). A set is the second level of the hierarchy. A set may include one or more subsets, composites, and/or individual measures.**

CAHPS Hospital Survey (Adult and Child versions).

- 3. Please identify the name of the subset to which the measure belongs (if applicable). A subset is the third level of the hierarchy. A subset may include one or more composites, and/or individual measures.**

CAHPS Hospital Survey – Child Version (Child HCAHPS).

- 4. Please identify the name of the composite measure to which the measure belongs (if applicable). A composite is a measure with a score that is an aggregate of scores from other measures. A composite may include one or more other composites and/or individual measures. Composites may comprise component measures that can or cannot be used on their own.**

Not applicable.

### **1.G. Numerator Statement**

The numerator is all individuals who return a completed survey.

### **1.H. Numerator Exclusions**

None.

### **1.I. Denominator Statement**

The denominator for the survey is all patients who meet the following criteria:

1. Parents of children < 18 years of age.
2. Admission includes at least one overnight stay in the hospital.
3. Non-psychiatric MS-DRG/principal diagnosis at discharge.
4. Alive at time of discharge.

### **1.J. Denominator Exclusions**

We have excluded certain patients from the measure based on clinical and non-clinical criteria. We provide the rationale for each exclusion in the Detailed Measure Specifications. The following patients are excluded from the measure:

1. "No-publicity" patients.
2. Court/law enforcement patients.
3. Patients with a foreign home address.
4. Patients discharged to hospice care (hospice-home or hospice-medical facility).
5. Patients discharged to skilled nursing facilities.
6. Patients who are excluded because of State regulations.
7. Patients who are wards of the State.
8. Patients who are emancipated minors.
9. Healthy newborns.
10. Psychiatric patients.

11. Patients admitted for obstetric care.
12. Patients  $\geq$  18 years of age.
13. Deceased patients.

## **1.K. Data Sources**

**Check all the data sources for which the measure is specified and tested.**

Survey – Parent/caregiver report.

**If other, please list all other data sources in the field below.**

Not applicable.

## **Section 2: Detailed Measure Specifications**

**Provide sufficient detail to describe how a measure would be calculated from the recommended data sources, uploading a separate document (+ Upload attachment) or a link to a URL. Examples of detailed measure specifications can be found in the CHIPRA Initial Core Set Technical Specifications Manual 201specifications.1 published by the Centers for Medicare & Medicaid Services. Although submission of formal programming code or algorithms that demonstrate how a measure would be calculated from a query of an appropriate electronic data source are not requested at this time, the availability of these resources may be a factor in determining whether a measure can be recommended for use.**

See Supporting Documents for detailed measure specifications.

## **Section 3. Importance of the Measure**

**In the following sections, provide brief descriptions of how the measure meets one or more of the following criteria for measure importance (general importance, importance to Medicaid and/or CHIP, complements or enhances an existing measure). Include references related to specific points made in your narrative (not a free-form listing of citations).**

### **3.A. Evidence for General Importance of the Measure**

**Provide evidence for all applicable aspects of general importance:**

- **Addresses a known or suspected quality gap and/or disparity in quality (e.g., addresses a socioeconomic disparity, a racial/ethnic disparity, a disparity for Children with Special Health Care Needs (CSHCN), a disparity for limited English proficient (LEP) populations).**
- **Potential for quality improvement (i.e., there are effective approaches to reducing the quality gap or disparity in quality).**
- **Prevalence of condition among children under age 21 and/or among pregnant women.**

- **Severity of condition and burden of condition on children, family, and society (unrelated to cost).**
- **Fiscal burden of measure focus (e.g., clinical condition) on patients, families, public and private payers, or society more generally, currently and over the life span of the child.**
- **Association of measure topic with children’s future health – for example, a measure addressing childhood obesity may have implications for the subsequent development of cardiovascular diseases.**
- **The extent to which the measure is applicable to changes across developmental stages (e.g., infancy, early childhood, middle childhood, adolescence, young adulthood).**

### **Importance of Measuring Patient- and Family-Centered Care**

The health care system has shifted dramatically toward the delivery of patient-centered care. Patient-centeredness refers to the principle that care should be designed around patients’ needs, preferences, circumstances, and well-being. It has been identified as a core aspect of health care quality that should be addressed as part of overall quality improvement strategies (Browne, Roseman, Shaller, et al., 2010). In pediatrics, the goal is family-centeredness, meaning care that is designed around the needs of the child and family. Hospitals provide family-centered care by involving the patient and family as active participants in care.

Research shows that patient-centered care is important in improving the quality of care and achieving desirable outcomes (Boulding, Glickman, Manary, et al., 2011; Clark, Gong, Schork, et al., 1998; Clark, Gong, Schork, et al., 2000; Denboda, McPherson, Kenney, et al., 2006; Glickman, Boulding, Manary, et al., 2010; Palfrey, Sofis, Davidson, et al., 2004; Veroff, Marr, Wennberg, 2013). Studies of adults have found that care that is more patient-centered, as measured by patient experience surveys, is associated with lower readmission and mortality rates, as well as greater adherence to treatment plans (Stewart, 1995; Stewart, Brown, Donner, et al., 2000; Street Jr, Makoul, Arora, et al., 2009; Street Jr, Slee, Kalauokalani, et al., 2010). Furthermore, studies in adults have demonstrated that patient-centered care may help reduce racial and ethnic disparities in the quality of care (Saha, Beach, Cooper, 2008; Van Ryn, 2002).

Studies in the pediatric setting have similarly demonstrated that patient- and family-centered care is associated with better parent-reported experiences and improved health outcomes (Clark, et al., 1998; Clark, et al., 2000; Denboda, et al., 2006; Farmer, Clark, Sherman, et al., 2005; Homer, Klatka, Romm, et al., 2008; Jessop, Stein, 1994; Ngui, Flores, 2006; Palfrey, et al., 2004; Scal, Ireland, 2006; Smaldone, Honig, Byrne, 2005). For example, parents’ perceptions of their child’s care quality decline when parents are less involved in decision-making and receive fewer explanations about their child’s care (Homer, Marino, Cleary, et al., 1999; Mack, Hilden, Watterson, et al., 2005). Moreover, poor family-centeredness is associated with increased family stress and higher rates of delayed or forgone care (Smaldone, et al., 2005). Using a patient- and family-centered approach helps children and their families cope with the stress of hospitalization by easing anxiety, establishing trust and support, and promoting shared decision-making (Epstein, Fiscella, Lesser, et al., 2010).

## **Importance of Patient Experience as a Measure of Patient- and Family-Centered Care**

One key approach to measuring patient- and family-centeredness is through assessment of patient experience. Patient experience surveys capture the patient's or family's perception of the care received, making these surveys valuable tools for measuring patient-centered care. Patients are often best able to judge how well their providers are meeting their health care needs, and this understanding correlates with health outcomes and satisfaction. In fact, studies have shown that the association between patient-centeredness and health outcomes is stronger when patient-centeredness is measured by patient report than when it is measured by provider or researcher assessment (Health Affairs Blog, 2012; Kane, Gotto, Mangione, et al., 2007; Stewart, et al., 2000).

The Consumer Assessment of Healthcare Providers and Systems Hospital Survey – Child Version (Child HCAHPS) evaluates family-centeredness by measuring parents' perspectives on their child's inpatient experiences of care. The Child HCAHPS survey reports on aspects of family-centered care, such as how much providers involve families in a child's care, the hospital environment, and the age-appropriateness of care delivery.

## **Pediatric Inpatient Experience of Care: Lack of Standardized Quality Measurement**

Measuring patient experience has become a standard in assessing health care quality for adult patients. The National Quality Forum's (NQF) National Priorities Partnership and Measure Applications Partnership cite assessment of patient experience as a top priority (NQF, 2012, 2017). The Consumer Assessment of Healthcare Providers and Systems Hospital Survey - Adult Version (Adult HCAHPS) facilitates objective and meaningful comparisons across hospitals of patients' perspectives regarding aspects of care that are important to them (Centers for Medicare & Medicaid Services [CMS], 2013). CMS uses Adult HCAHPS results to inform consumer choice through public reporting on the Hospital Compare Web site and to calculate incentive payments for the CMS Hospital Value-Based Purchasing Program (CMS, 2013). Although Adult HCAHPS has become a national standard in quality measurement for adult patients, an analogous pediatric survey has not been previously developed. Child HCAHPS will fill the need for a tool to assess inpatient experiences of pediatric care and differences in experience across hospitals.

## **Disparities in Children's Experiences with Care**

In pediatrics, racial/ethnic disparities have been documented in outpatient settings (Raphael, Guadagnolo, Beal, et al, 2009; Weech-Maldonado, Morales, Spritzer, 2001). One study demonstrated that non-English speaking parents of Asian and Hispanic children reported worse patient experience in multiple domains (Weech-Maldonado, et al., 2001). However, little is known about racial/ethnic disparities in pediatric inpatient experience of care. Child HCAHPS collects data on the race and ethnicity of the surveyed child, which will allow for stratification to assess racial/ethnic differences in care.

## **Prevalence of Children Who Experience a Hospitalization**

In 2009, 6.4 million children between 0 and 17 years of age experienced a hospitalization, accounting for nearly 17 percent of all hospital stays (Yu, Wier, Elixhauser, 2011). Because Child HCAHPS enables collection of information on the experience of hospitalized children, it can be used to assess the quality of inpatient care for a substantial number of children who makeup an important fraction of the overall U.S. patient population.

## **Fiscal Burden of Hospitalizations**

Hospitalizations are costly to the health care system. In 2009, total costs for children's hospital stays were \$33.6 billion, roughly 9 percent of the total costs for all patients (Yu, et al., 2011). Hospitals are attempting to develop means of improving health care delivery in ways that reduce costs while maintaining quality. One way to achieve this goal is by increasing the patient-centeredness of care. Patient-centered care has been associated with decreased utilization of health care services, lower health care costs, and fewer hospitalizations. In fact, several studies in the outpatient setting have found that physicians who communicate better with patients and are more attuned to their needs less often prescribe expensive prescriptions, order unnecessary diagnostic tests, and refer patients to specialty care (Bertakis, Azari, 2011; Little, Everitt, Williamson, 2010); Prueksaritanond, Tubtimtes, Asavanich, et al., 2004). It is possible that hospitals could use surveys, such as Child HCAHPS, to identify areas for improvement in patient-centeredness that could lead to more judicious health care utilization and ultimately reduce costs.

## **Potential for Quality Improvement**

Patients, including children (Davies, Collins, Steele, 2005; Robertson, Pryde, Evans, 2014), are able to identify areas that they believe are important targets for quality improvement initiatives (Callanan, 1994; Davies, et al., 2005; Grogan, Coughlan, O'Mahony, et al., 2012; Roberts, 2013; Robertson, et al., 2014; Tsianakas, Maben Wiseman, et al., 2012; Ward, Kibble, Mehta, et al., 2013). For almost 2 decades, health care organizations have used CAHPS survey scores to assess patients' experience of care (Cleary, 1999; Cleary, Edgman-Levitan, 1997). When CMS began publicly reporting Adult HCAHPS scores in 2008, hospitals were able to implement changes that were associated with improvements in their patient experience scores after only 1 year (Elliott, Lehrman, Goldstein, et al., 2010). These small but meaningful increases in scores suggest potential for improvement. Patient experience survey results have also prompted quality improvement initiatives in ambulatory and inpatient settings (CMS, 2008; Roberts, 2013; Solberg, Asche, Fontaine, et al., 2011). For example, a guide was released in 2008 that described potential interventions that could be used to improve performance on specific Adult CAHPS domains and improve patient experience (CMS, 2008). In the inpatient setting, hospitals could use Child HCAHPS to identify gaps in performance in the domains measured by the survey (e.g., quality of discharge planning) and variation in performance associated with the patient (e.g., race/ethnicity, type of insurance) or hospital (e.g., service line, type of hospital) characteristics (Chatterjee, Joynt, Orav, et al., 2012; Elliott, et al., 2010; Gupta, Daigle, Mojica, et al., 2009; Wild, Kwon, Dutta, et al., 2011).

### **3.B. Evidence for Importance of the Measure to Medicaid and/or CHIP**

**Comment on any specific features of this measure important to Medicaid and/or CHIP that are in addition to the evidence of importance described above, including the following:**

- **The extent to which the measure is understood to be sensitive to changes in Medicaid or CHIP (e.g., policy changes, quality improvement strategies).**
- **Relevance to the Early and Periodic Screening, Diagnostic and Treatment benefit in Medicaid (EPSDT).**
- **Any other specific relevance to Medicaid/CHIP (please specify).**

Measuring patient experience in the Medicaid-insured population is important because of the potential influence of insurance status on care delivery and thus on patient or family experience. For adults, hospitals that care for a high percentage of Medicaid-insured patients tend to have lower performance on nearly all measures of patient experience, suggesting that Medicaid-insured patients may experience worse care than those who are privately insured (Chatterjee, et al., 2012). Results from the Child HCAHPS survey could be used to evaluate disparities in patient experience based on insurance status, including for Medicaid and CHIP beneficiaries.

### **3.C. Relationship to Other Measures (if any)**

**Describe, if known, how this measure complements or improves on an existing measure in this topic area for the child or adult population, or if it is intended to fill a specific gap in an existing measure category or topic. For example, the proposed measure may enhance an existing measure in the initial core set, it may lower the age range for an existing adult-focused measure, or it may fill a gap in measurement (e.g., for asthma care quality, inpatient care measures).**

Although some pediatric inpatient experience of care surveys have been developed for use by specific hospitals and groups, no national standard currently exists for assessing pediatric inpatient experience of care across hospitals. For example, the National Research Corporation Picker Pediatric Inpatient Survey (NRC Picker), an experience of care survey developed in the 1990s, is proprietary and not widely distributed across hospitals (Co, Sternberg, Homer, 2011; Drain, Clark, 2004).

Over the past 2 decades, the CAHPS family of surveys has become the standard for valid and reliable measurement of patients' experiences of care in many settings, with particularly high penetration in the inpatient setting. CMS publicly reports Adult HCAHPS results for approximately 70 percent of U.S. hospitals on its Hospital Compare Web site (CMS Website). However, previously CAHPS has only developed the Adult HCAHPS survey, leaving a significant gap in measuring the patient experience for children. In contrast, both adult and child versions are available for other CAHPS surveys, including the Health Plan Survey and the Clinician & Group Survey (CG-CAHPS). Child HCAHPS fulfills the need for a nationally developed, non-proprietary instrument with which to measure the inpatient experiences of children and their families. Child HCAHPS has been designed to complement the Adult HCAHPS survey and will allow for meaningful comparison of pediatric inpatient experience of care across hospitals nationwide.

## Section 4. Measure Categories

CHIPRA legislation requires that measures in the initial and improved core set, taken together, cover all settings, services, and topics of health care relevant to children. Moreover, the legislation requires the core set to address the needs of children across all ages, including services to promote healthy birth. Regardless of the eventual use of the measure, we are interested in knowing all settings, services, measure topics, and populations that this measure addresses. These categories are not exclusive of one another, so please indicate "Yes" to all that apply.

Does the measure address this category?

- a. Care Setting – ambulatory: No.
- b. Care Setting – inpatient: Yes.
- c. Care Setting – other – please specify: No.
- d. Service – preventive health, including services to promote healthy birth: No.
- e. Service – care for acute conditions: Yes.
- f. Service – care for children with acute conditions: Yes.
- g. Service – other (please specify): No.
- h. Measure Topic – duration of enrollment: No.
- i. Measure Topic – clinical quality: No.
- j. Measure Topic – patient safety: No.
- k. Measure Topic – family experience with care: Yes.
- l. Measure Topic – care in the most integrated setting: No.
- m. Measure Topic other (please specify): No.
- n. Population – pregnant women: No.
- o. Population – neonates (28 days after birth) (specify age range): Yes; 0-28 days.
- p. Population – infants (29 days to 1 year) (specify age range): Yes; 29-364 days.
- q. Population – pre-school age children (1 year through 5 years) (specify age range): Yes; 1-5 years.
- r. Population – school-aged children (6 years through 10 years) (specify age range): Yes; 6-10 years.
- s. Population – adolescents (11 years through 20 years) (specify age range): Yes; 11-17 years.
- t. Population – other (specify age range): No.
- u. Other category (please specify): Not applicable.

## Section 5. Evidence or Other Justification for the Focus of the Measure

The evidence base for the focus of the measures will be made explicit and transparent as part of the public release of CHIPRA deliberations; thus, it is critical for submitters to specify the scientific evidence or other basis for the focus of the measure in the following sections.



## **5.A. Research Evidence**

**Research evidence should include a brief description of the evidence base for valid relationship(s) among the structure, process, and/or outcome of health care that is the focus of the measure. For example, evidence exists for the relationship between immunizing a child or adolescent (process of care) and improved outcomes for the child and the public. If sufficient evidence existed for the use of immunization registries in practice or at the State level and the provision of immunizations to children and adolescents, such evidence would support the focus of a measure on immunization registries (a structural measure).**

**Describe the nature of the evidence, including study design, and provide relevant citations for statements made. Evidence may include rigorous systematic reviews of research literature and high-quality research studies.**

We conducted a comprehensive literature search to identify articles and surveys that focus on patient experience of care. Our aims were to identify essential domains for incorporation into the Child HCAHPS survey and to examine evidence on the evaluation of patient experience as a measure of health care quality. Table 1 (see Supporting Documents) summarizes the key studies related to patient experience, including those that assess experience of care in the pediatric setting. While the majority of the existing literature focuses on the development of patient experience survey instruments and identification of domains to consider when evaluating patient experience, some literature examines the association of patient experience and health outcomes. Overall, the articles highlight the importance of patient-centered care as measured by patient experience as an essential aspect of quality and an area for potential improvement.

### **Identification of Key Patient Experience of Care Domains**

Specific domains have been identified by parents and patients in focus groups and interviews as important facets of patient- and family-centered care. These include clear communication, care coordination, being listened to, being treated respectfully, being kept informed, and being involved in decision-making (Hsiao, Evan, Zeltzer, 2007; Kavanaugh, Roscigno, Swanson, et al., 2013; Uhl, Fisher, Docherty, et al., 2013; Van Staa, Jedeloo, van der Stege, 2011). These domains, which encompass aspects of care about which patients are able to reliably report their experiences (Kalisch, McLaughlin, Dabney, 2012), are critical to the validity of patient experience measures. Many of these domains, such as communication with nurses, pain management, and patient safety, are significantly associated with overall hospital ratings, suggesting that they are components of care quality that are highly valued by patients and parents (Glickman, et al, 2010; Gupta, et al., 2009; Miceli, Clark, 2005; Rathert, May, Williams, 2011; Wolosin, Ayala, Fulton, 2010).

### **Development of Specific Patient Experience Survey Instruments**

The development of the Adult HCAHPS survey has been well-documented (Elliott, et al., 2010; Elliott, Zaslavsky, Goldstein, et al., 2009; Giordano, Elliott, Goldstein, et al., 2010; Goldstein, Elliott, Guccione, 2000), providing useful insights to guide the development of the Child HCAHPS survey. In addition, although no publicly available national standard has been established for assessing patient experience in the inpatient pediatric population, we found literature on the development of 18 inpatient patient experience surveys, of which three were designed for pediatric settings (Brown, Nederend, Hays, et al., 1999; Carey, Seibert, 1993;

Cleary Keroy, Karapanos, et al., 1989; Dozier, Kitzman, Ingersoll, et al., 2001; Elliott, et al., 2009; Giordano, et al., 2010; Goldstein, Farquhar, Crofton, et al., 20205; Gustafson, Arora, Nelson, et al., 2001; Guzman, Sliepevich, Lacey, et al., 1988; Hays, Larson, Nelson, et al., 1991; Hays, Nelson, Larson, et al., 1994; Jenkinson, Coulter, Bruster, 2002; Ketefian, Redman, Nash, et al., 1997; Kneebone, Hull, McGurk, et al., 2012; McDaniel, Nash, 1990; Miceli, Clark, 2005; Schnaier, Sweeny, Williams, 1999; Sower, Duffy, Kilbourne, et al., 2001; Stamps, Lapriore, 1987; Uhl, et al., 2013; Wall, Engelberg, Downey, et al., 2007; Weaver, Ow, Walker, et al., 1993; Zifko-Baliga, Krampf, 1997). Many of the surveys were developed and tested for single institutions and thus required appraisal of their generalizability for measuring quality across hospitals. We also identified additional articles that describe the development of surveys to assess patient experience in the ambulatory and primary care settings, as well as in patient-centered medical homes (Gallagher, ding, Ham, et al., 2009; McAllister, Cooley, Van Cleave, et al., 2013; Scholle, Vuong, Ding, et al., 2012).

## **Relationship Between Patient Experience and Other Quality Measures and Outcomes**

In addition to assessing aspects of care that are important to patients, the various domains of the Child HCAHPS survey have clinical relevance. As described previously, patient experience surveys are a key approach for measuring patient- and family-centeredness. Although not all studies are supportive (Chesney, Lindeke, Johnson, et al., 2005; Elliott, Haviland, Cleary, et al., 2013; Fenton, Jerant, Bertakis, et al., 2011; Girotra, Cram, Popescu, 2012; Hoff, Rosenheck, Meterko, et al., 1999), there is growing evidence that patient-centeredness, as reflected by patient experience, is associated with other aspects of quality. Several studies, primarily in adults, have shown that patient experience correlates directly with a variety of quality metrics, including patient adherence to recommended treatment plans, performance on clinical processes of care, and health outcomes (Berry, Ziniel, Freeman, et al., 2013; Boulding, et al., 2011; Doyle, Lennox, Bell, 2013; Glickman, et al., 2010; Homer, et al., 1999; Isaac, Zaslavsky, Cleary, et al., 2010; Jaipaul, Rosenthal, 2003; Mack, et al., 2005; Meterko, Wright, Lin, et al., 2010). For example, evidence shows that hospitals whose patients report higher patient experience scores perform better on technical processes of care (Isaac, et al., 2010). Better patient experience—as indicated by scores for individual aspects of care, patients’ willingness to recommend the hospital, and overall hospital ratings—is associated with lower mortality rates and 30-day readmission rates (Berry, et al., 2013; Boulding, et al., 2011; Glickman, et al., 2010; Jaipaul, Rosenthal, 2003; Meterko, et al., 2010). Although less is known about patient experience in pediatrics, it has been shown that parents’ reports of quality of care decline when they are less involved in decisions and receive fewer explanations about their child’s care (Homer, et al., 1999; Mack, et al., 2005).

## **Use of Patient Experience Surveys for Quality Improvement**

As discussed previously, patient- and family-centeredness is a core domain of health care quality and a major focus for quality improvement. Hospitals have been able to demonstrate that tracking patient experience leads to improvement in patient-centered care (Elliott, et al., 2010; Institute of Medicine, 2010, 2001). For example, hospitals that publicly reported Adult HCAHPS scores in March 2008 experienced modest, but significant, improvements in scores during the subsequent March 2009 reporting period (Elliott, et al., 2010). Evaluating patient experience can draw attention to patient-centered care and motivate beneficial changes in care delivery.

## **5.B. Clinical or Other Rationale Supporting the Focus of the Measure (optional)**

**Provide documentation of the clinical or other rationale for the focus of this measure, including citations as appropriate and available.**

See Section 5.A, above, for details regarding the association of patient experience and clinical outcomes.

## **Section 6. Scientific Soundness of the Measure**

**Explain the methods used to determine the scientific soundness of the measure itself. Include results of all tests of validity and reliability, including description(s) of the study sample(s) and methods used to arrive at the results. Note how characteristics of other data systems, data sources, or eligible populations may affect reliability and validity.**

### **6.A. Reliability**

**Reliability of the measure is the extent to which the measure results are reproducible when conditions remain the same. The method for establishing the reliability of a measure will depend on the type of measure, data source, and other factors.**

**Explain your rationale for selecting the methods you have chosen, show how you used the methods chosen, and provide information on the results (e.g., the Kappa statistic). Provide appropriate citations to justify methods.**

Quality measures must be reliable in order to ensure that they accurately measure the performance of each evaluated entity. We assessed (a) hospital-level reliability, which reflects whether, at recommended sample sizes, a measure adequately distinguishes the performance of different hospitals and (b) internal consistency reliability, which reflects whether items within a proposed composite reliably measure the intended construct. Because there are factors beyond a hospital's control that affect patient responses to the survey, it is necessary for valid comparisons to adjust for patient case-mix (see Section 6.B Validity, below). Since the final scores are adjusted for case-mix, it is the hospital-level reliability of those adjusted scores that is most relevant. Therefore, in the analyses that follow, we assess the reliability not of the unadjusted scores, but of the adjusted scores.

#### **Hospital-Level Unit Reliability**

Hospital-level unit reliability reflects item or composite variation between or among hospitals relative to random variation in the mean response within hospitals. For example, if no true differences existed among hospitals, all of the variation in a measure would reflect random variation in the responses of patients who happened to answer the survey, and the hospital-level unit reliability would be 0. Conversely, if all of the variation in scores were due to differences among hospitals (i.e., hospitals received different scores, but all of the patients within a given hospital gave the same score), the hospital-level unit reliability would be 1.0.

To calculate hospital-level unit reliability, we used Equation 1 (see Supporting Documents). As illustrated by the equation, reliability can be improved by increasing the number of responses

from the hospital. We calculated the reliability for 300 responses per hospital, taking into account the rate at which each item was completed, and set a goal of most composite and single item measures having a reliability of .7 or greater, which is a standard target for reliability. In addition, 300 responses per hospital is the minimum number that CMS requires for publicly reporting and comparing Adult HCAHPS results, based on the hospital-level unit reliabilities of the Adult HCAHPS composites.

Hospital-level composite and single item reliabilities are presented in Table 2 (see Supporting Documents). One composite or single item had a hospital-level reliability of  $< .7$ . Six had a reliability of  $.7$  to  $< .8$ . Six had a reliability of  $.8$  to  $< .9$ . Five had a reliability of  $.9$  or greater.

### **Internal Consistency Reliability**

Internal consistency reliability, commonly assessed with Cronbach's coefficient, alpha, is a measure of how well a scale calculated from a set of items reflects an underlying construct. Although our composites are not all designed to measure a single underlying construct and so are not considered scales, alpha is a useful tool to help with the development of those composites that do reflect an underlying construct. To calculate alpha, we used Equation 2 (see Supporting Documents).

In general, internal consistency reliability of  $.7$  or greater is desirable. Hospital-level composite internal consistency reliabilities are presented in Table 3 (see Supporting Documents). One composite had an internal consistency reliability  $< .7$ . Three composites had an internal consistency reliability of  $.7$  to  $< .8$ . Three composites had an internal consistency reliability of  $.8$  to  $< .9$ . Three composites had an internal consistency reliability of  $.9$  or greater.

Composites are formed largely to permit reporting of results in a form that is more parsimonious and intelligible to consumers. For that reason, the composites combine items that are connected conceptually. Although psychometric testing is used to inform the groupings of items, it is not the sole basis for developing composite groupings. It should also be noted that a high alpha, especially for a two- or three-item composite, could be consistent with redundant items (multiple items that capture the same information). As survey length is critical, it might be preferable in some instances to decrease survey length rather than improve alpha by adding items. Thus, internal consistency reliability was not used as a primary criterion for item grouping for composites that measure aspects of care that patients do not experience as a single construct. An example of high internal consistency reliability would be the items within the composite "Nurse-parent communication," in which the internal consistency reliability is  $.80$ . The two items in the "Mistakes and concerns" composite—preventing mistakes by checking a patient's wristband before giving medications and informing parents how to report potential mistakes in care—fit together conceptually, but they are not strongly correlated ( $.25$ ), leading to a relatively low coefficient alpha. Nevertheless, we support reporting the two items as a composite measure because they are related conceptually and were seen as related in end-user cognitive testing.

## **6.B. Validity**

**Validity of the measure is the extent to which the measure meaningfully represents the concept being evaluated. The method for establishing the validity of a measure will depend on the type of measure, data source, and other factors.**

**Explain your rationale for selecting the methods you have chosen, show how you used the methods chosen, and provide information on the results (e.g., R2 for concurrent validity).**

In contrast with some types of quality measures, a “gold standard” does not exist for validating survey measures. In order for survey measures to provide valid comparisons across hospitals, it is important to use standardized surveys, data collection methods, and scoring methods (Goldstein, et al., 2005). To ensure the validity of the survey results, Child HCAHPS has followed the standard rigorous CAHPS development processes and adhered to all CAHPS design principles. Qualitative methods include both focus groups and cognitive interviews (Goldstein, et al., 2005). Quantitative methods include exploratory factor analysis, internal consistency reliability, item-to-composite correlations, composite-to-composite correlations, and correlations of items and composites with overall ratings. All analyses were considered when developing the Child HCAHPS items and composites.

Child HCAHPS scores, as well as their relationships to each other, are a function of both respondents’ individual characteristics (such as demographics) and hospitals’ quality of care. Therefore, comparing scores among hospitals, as well as determining how to construct composites that are relevant for comparing hospitals, requires methods that distinguish variation arising from individual characteristics—that is, the patient case-mix in a hospital—from variation arising directly from the hospital’s care. Our analyses have shown that much of the variation among respondents’ Child HCAHPS scores is due to individual respondent variation, reflecting characteristics and particular experiences of individual respondents, rather than systematic differences among hospitals. We therefore focus on the psychometric performance of the items and composites at the hospital level.

### **Focus Groups**

Conducting focus groups occurs early in the survey development process to ensure that survey content covers topics that are important to patients. Focus groups help to confirm that the broad topic domains encompass concepts that matter to patients. A summary of our focus group findings appears in Section 10, Understandability.

### **Cognitive Interviews**

Most survey development experts agree that cognitive interviews on the initial draft survey are an important means of determining whether respondents understand questions in the way that the developers intend (Levine, Fowler Jr, Brown, 2005). Cognitive interviews use a standardized protocol that provides scripted probes to gain insight into the respondent’s cognitive process as he or she answers survey items, elicit feedback, and help assess the comprehensiveness of the survey. A “think-aloud” approach is used in which respondents verbally express how they are approaching their answer to the survey item. By conducting cognitive interviews, developers can identify items for revision that might otherwise significantly compromise the validity and reliability of the survey. See Section 10, Understandability, for a summary of our cognitive interview findings.

## **Factor Analysis and Correlation Matrices**

We investigated the structure underlying the between-hospital covariance matrices to identify groups of items that were empirically related at the hospital level. For this analysis, we used a Bayesian hierarchical model that estimated a hospital-level correlation structure net of sampling variation due to individual variability in responses. Hospital-level Exploratory Factor Analysis (EFA) of the core composites is presented in Table 4 (see Supporting Documents), which shows an eight-factor solution with a Varimax rotation. We also explored analyses with different numbers of factors and with both Varimax and Promax rotations, but these did not lead to substantially different conclusions about item groupings. These analyses generally confirmed that the items we would group together on conceptual grounds were also empirically related. We found that doctor and nurse communication items were substantially related to other items about provision of information, but on conceptual grounds, we organized these items into several composites for reporting purposes.

## **Internal Consistency Reliability**

Internal consistency reliability, Cronbach's coefficient, alpha, is often thought of as a measure of construct validity, as it measures how well a scale calculated from a set of items reflects an underlying construct. See Section 6.A, Reliability, for a summary of our internal consistency reliability findings.

## **Item-to-Composite Correlations**

Item-to-composite correlations examine how each item within a composite correlates with the overall composite. We estimated item-to-composite correlations using Pearson correlations; we corrected for overlapping correlations of items with their composites by correlating the item with a version of the composite with that item omitted (see Table 5 in the Supporting Documents). If an item has been grouped with other items that are conceptually related, it is generally expected to correlate more strongly with the composite in which it was placed than with other composites. The item-to-composite correlations ranged from .25 (item: "How often did providers or other hospital staff check your child's wristband or confirm his or her identity in some other way?" – composite: "Mistakes and concerns") to .90 (item: "How often did your child's doctors listen carefully to your child?" – composite: "Doctor-child communication"). The low item-to-composite correlations for the "Mistakes and concerns" composite can be explained by the fact that although the two items are conceptually related, the processes of care are fairly distinct.

## **Composite-to-Composite Correlations**

Composite-to-composite correlations analyze the correlations of each composite with the other composites and are used to determine whether composites are measuring distinct aspects of patient experience (see Table 6 in the Supporting Documents). Thus, composite-to-composite correlations ideally should be low. We estimated composite-to-composite correlations using Pearson correlations. The composite-to-composite Pearson correlations ranged from .43 ("Mistakes and concerns"; "Preparing to leave the hospital") to .85 ("Informed about child's care"; "Nurse-parent communication"). Although some of the composites are fairly strongly correlated, we kept them separate for conceptual reasons and because of the findings from end-user cognitive interviews. However, we grouped composites and items into five categories for reporting purposes based on these conceptual relationships and findings from end-user cognitive

interviews. See Section 10, Understandability, for a summary of our end-user cognitive interview findings.

### **Composite and Single-Item Correlations with Overall Rating**

Criterion validity represents the extent to which a measure relates to other measures in a way that theoretically would be expected. We evaluated the criterion validity of the composites by examining whether composite or single-item scores correlated with overall hospital scores (see Table 7 in the Supporting Documents). A positive correlation would suggest that the domain addressed by a composite or single item is an important factor in quality for consumer choice. All of our correlations were positive and ranged from .26 (“Quietness”) to .89 (“Recommend hospital”). The overall rating is strongly related to other aspects of care, such as “Nurse-parent communication” (.72) and “Child comfort” (.71), which is consistent with parents’ priorities during end-user cognitive interviews. The relatively low correlation between “Quietness” and the overall rating is consistent with findings for many patient experience surveys, including Adult HCAHPS, as well as with end-user interviews for Child HCAHPS. No one measure stood out as the single best predictor of overall rating.

## **Section 7. Identification of Disparities**

**CHIPRA requires that quality measures be able to identify disparities by race, ethnicity, socioeconomic status, and special health care needs. Thus, we strongly encourage nominators to have tested measures in diverse populations. Such testing provides evidence for assessing measure’s performance for disparities identification. In the sections below, describe the results of efforts to demonstrate the capacity of this measure to produce results that can be stratified by the characteristics noted and retain the scientific soundness (reliability and validity) within and across the relevant subgroups.**

### **7.A. Race/Ethnicity**

We assessed differences in inpatient pediatric experience associated with race/ethnicity. Child race/ethnicity is determined from survey responses to two items that were devised based on recommendations from the Office of Minority Health: “Is your child of Hispanic, Latino, or Spanish origin?” and “How would you describe your child’s race?” (Office of Minority Health Web site). For our analyses, we categorized responses into the following groups: American Indian/Alaskan Native, Asian/Pacific Islander, black, Hispanic, white, and multiracial.

In unadjusted results for the majority of the measures, we found that compared with hospital top-box scores for white patients, those for black and Hispanic patients were higher, and those for Asian/Pacific Islanders were lower (see Table 8 in the Supporting Documents). In multivariate analyses controlling for child global health status, child age, respondent relation to child, respondent age, and hospital, the results were similar across racial/ethnic groups.

Our findings are similar to those from other patient surveys in the inpatient setting. Higher patient experience scores for black and Hispanic patients than for white patients have been reported in the adult literature, as have lower scores for Asian/Pacific Islander patients (Goldstein, Elliott, Lehrman, et al., 2010; Lurie, Zhan, Sangl, et al., 2003; Morales, Elliott,

Weech-Maldonado, et al., 2001; Zaslavsky, Zaborski, Ding, et al., 2001). However, our findings and those for adult inpatients differ from what has been observed in outpatient and community settings. Because inpatient samples by definition comprise those who have been hospitalized, they are a more homogeneous group with regard to access to care than a general community sample of children. In contrast, access to care in outpatient and community settings may vary among patients in different racial/ethnic groups, perhaps leading to corresponding racial/ethnic differences in patient experience. Furthermore, comparisons of reported patient experience by racial/ethnic group should be interpreted with caution. Parents' perceptions may be influenced by factors such as differences in culture and expectations rather than true differences in quality of care. In addition, it has been shown that responses to global rating items are particularly likely to be influenced by underlying response tendencies that vary across groups (Elliott, Haviland, Kanouse, et al., 2009; Weech-Maldonado, Elliott, Oluwole, et al., 2008).

In adults, racial/ethnic variation in patient experience has been found to be due more to between-hospital differences than within-hospital differences. In other words, hospitals that serve a larger proportion of non-white adult patients generally perform worse on patient experience measures for all racial/ethnic groups, not just for non-white patients, compared with hospitals that serve a smaller proportion of non-white patients. Thus, the main factor accounting for racial/ethnic variation in adult patient experience is that non-white patients tend to receive care at lower-performing hospitals, not that at a given hospital non-white patients tend to receive worse care than white patients.

The results from our multivariate analyses suggest that the situation is different for children. If the major explanation for racial/ethnic variation in inpatient pediatric experience comprised overall differences (for all racial/ethnic groups) in patient experience between hospitals serving high versus low proportions of non-white children, one would expect that controlling for hospital would decrease the racial/ethnic variation observed in unadjusted scores. We found, however, that controlling for hospital had only a small effect on racial/ethnic differences. The small effect on racial/ethnic differences of controlling for hospital suggests that in our sample, these differences primarily exist within hospitals rather than primarily being due to variation in the average quality of the hospitals that different groups use.

One possible reason for the contrast between our findings and those in adults is that many of the hospitals in our dataset are children's hospitals. Because children's hospitals provide unique services in a given geographic area, the relationship between the distribution of racial/ethnic groups across children's hospitals and the quality of care these hospitals provide might not be the same as for non-children's hospitals. Our sample does not capture all hospitals within a given area, which limits our ability to assess whether patient experience tends to vary between non-children's hospitals serving high versus low proportions of children of a particular racial/ethnic group.

## **7.B. Special Health Care Needs**

We assessed differences in inpatient pediatric patient experience associated with special health care needs. We identified children with special health care needs using the Agency for Healthcare Research and Quality (AHRQ) Chronic Condition Indicator tool. The tool, which was developed as part of the AHRQ Healthcare Cost and Utilization Project, assigns each



International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis code to 1 of 18 body systems (organ systems, disease categories, or other categories) and classifies each as chronic or not chronic. We categorized the patients based on ICD-9-CM chronic diagnosis codes into the following groups: No CCIs, 1 CCI, and 2+ CCIs. Hospitals provided up to three ICD-9-CM diagnosis codes per patient.

In unadjusted results, we found few significant differences when comparing top-box scores for children with differing numbers of CCIs (see Table 9 in the Supporting Documents). In multivariate analyses controlling for child race/ethnicity, respondent relation to child, respondent age, respondent education, language preference, and hospital, the results were similar. We did not find evidence of substantial within- or between-hospital differences in patient and family experiences of care based on special health care needs status.

Our findings are similar to those from comparable analyses in adults. Adult patients with end-stage renal disease and diabetes report similar or better patient experience compared to those without these chronic conditions (Paddison, Elliott, Haviland, et al., 2013). Similarly, in a study of adults with hypertension, patient ratings of quality of care did not vary by the presence of additional comorbid conditions (Petersen, Woodard, Henderson, et al., 2009). A possible interpretation of these findings is that these patients reported positive health care experiences because they had access to care that allowed for proper diagnosis and treatment. The same may hold true for the pediatric population: parents of children with special health care needs may report better inpatient experience because disease management programs are available to tailor services to their child's condition.

## **7.C. Socioeconomic Status**

We assessed differences in inpatient pediatric experience associated with socioeconomic status. We used parent education as a proxy for socioeconomic status, measured using the following item: "What is the highest level of school that you have completed?" For our analysis, we categorized responses into the following groups:  $\geq$  8th grade or some high school, high school graduate or GED, some college or 2-year degree, 4-year college graduate, and more than 4-year college graduate.

In unadjusted results, we found a pattern for a majority of the measures such that top-box scores were highest for those who had not completed high school and decreased for each higher level of educational attainment (see Table 10 in the Supporting Documents). In multivariate analyses controlling for child global health status, child age, respondent relation to child, respondent age, and hospital, results were similar. The small effect on education-related differences of controlling for hospital suggests that in our sample, these differences primarily exist within hospitals rather than primarily being due to variation in the average quality of hospitals that are used by different groups.

Our findings are similar to those from other patient surveys. Higher scores for less versus more educated individuals have been reported in both inpatient and outpatient settings in the adult patient experience literature (Carlson, Blustein, Fiorentino, et al., 2000; Cleary, Carlson, Shaul, et al., 2002; Elliott, et al., 2009; O'Malley, Zaslavsky, Elliott, et al., 2005; Roohan, Franko, Anarella, et al., 2003; Zhan, Sangl, Meyer, et al., 2002). The same trend has been observed when

parents provide ratings of their child's health plan. In an analysis of Child CAHPS Health Plan survey scores, less educated adults generally provided higher ratings of their child's commercial health plan and received care (Zhan, et al., 2002). These differences in scores may reflect differences in expectations of care or reporting styles associated with education level rather than actual differences in the quality of care received (Carlson, et al., 2000; Cleary, et al., 2002; Roohan, et al., 2003). Such explanations might also be relevant to Child HCAHPS.

As is true for racial/ethnic differences in inpatient pediatric experience, our findings regarding differences associated with parent education level are specifically applicable to the inpatient setting. As noted previously, hospitalized children are a more homogeneous group with regard to access to care than a general community sample of children. In outpatient and community settings, children with less versus more educated parents may experience greater differences in access to care, possibly leading to even greater differences in patient experience.

#### **7.D. Rurality/Urbanicity**

We assessed differences in inpatient pediatric experience associated with the rurality/urbanicity of patient residence. We assigned Rural-Urban Commuting Area (RUCA) codes based on patient zip codes obtained from hospital administrative records (University of Washington, Rural Health Research Center Web site). The RUCA classification system uses Bureau of Census Urbanized Area and Urban Cluster definitions together with information on work commuting patterns to characterize Census tracts. For our analysis, we used RUCA codes to assign the area of patient residence to the following groups: urban core, suburban, large town, small town, and isolated rural.

In unadjusted results for a majority of measures, we found that hospital top-box scores for children living in urban cores were lower than those for children living in more rural areas. Generally, scores were highest for children residing in large and small towns (see Table 11 in the Supporting Documents). In multivariate analyses controlling for child global health status, child age, respondent relation to child, respondent age, and hospital, the top-box scores remained generally lowest for children living in urban cores.

Our findings are consistent with those from the Adult HCAHPS literature, although adult studies have examined rurality/urbanicity of hospital location rather than patient residence. Higher hospital scores for adult patient experience have been reported for non-urban than urban hospitals (Jha, et al., 2008; Lehrman, Elliott, Goldstein, et al, 2010). Lack of access to health care services often contributes to disparities in quality of care for rural populations (Laditka JN, Laditka SB, Probst, 2009; Merin, Snyder, Katz, 30026; Probst, Laditka, Wang, et al., 2007; Thorpe, Van Houtven, Sleath, et al., 2010). However, it should be noted that the observed relationship between patient experience and rurality/urbanicity applies specifically to patients who have been admitted for inpatient care. As observed above, hospitalized children are a more homogeneous group with regard to access to care than a general community sample of children. In contrast, access to outpatient care may vary more widely for children living in urban versus rural locations, perhaps resulting in even more marked differences in patient experience. Moreover, our sample consists of many more patients from children's hospitals than from community hospitals located in small towns or rural areas. Our results therefore are not necessarily representative of children cared for at small town or rural hospitals.

## 7.E. Limited English Proficiency (LEP) Populations

We assessed differences in inpatient pediatric experience associated with parent English proficiency. English proficiency is determined from responses to the following survey item: “What is your preferred language?” Response options are English, Spanish, Chinese, Vietnamese, Korean, Russian, and other language. However, for our analyses, we included only respondents whose preferred language was either English or Spanish because these were the preferred languages for over 94 percent of our sample.

In unadjusted results for almost all measures, we found that top-box scores were higher for respondents whose preferred language was Spanish (see Table 12 in the Supporting Documents). Results were similar in multivariate analyses controlling for child global health status, child age, respondent relation to child, respondent age, and hospital. The small effect of controlling for hospitals on language-related differences suggests that in our sample, these differences primarily exist within hospitals rather than being primarily due to differences in the average quality of hospitals used by different groups.

Our findings contrast with those from other studies on the relationship between limited English proficiency and ratings of patient experience. Adult studies have found that, controlling for gender, age, education, and health status, respondents with limited English proficiency tend to report worse experiences of care than respondents who are proficient in English (Weech-Maldonado, et al., 2001; Weech-Maldonado, Morales, Elliott, et al., 2003).

Studies have shown that individuals who have limited English proficiency or report a language other than English as their primary household language tend to have less education than English-proficient individuals (Flores, Abreu, Tomany-Korman, 2005; Wilson, Chen, Grumbach, et al., 2005). Patients with less education have been found to report better patient experience than their more educated counterparts (Carlson, et al., 2000; Cleary, et al., 2002; O’Malley, et al., 2005; Roohan, et al., 2003; Elliott, et al., 2009; Zhan, et al., 2002). It is therefore possible that education-related differences in reported patient experience may in part explain our findings. We did not adjust for education in our analysis of limited English proficiency. As in the analyses of race/ethnicity and socioeconomic status, we chose to report total differences associated with membership in a potentially disadvantaged group rather than controlling away one component of that disadvantage. Education, other aspects of socioeconomic status, cultural and linguistic response differences, and provider skills in culturally competent communication may all influence reported experience for children whose parents have limited English proficiency. Further studies with more comprehensively representative populations may parse out the various contributions of these factors to language-related variation in reported patient experience.

## Section 8. Feasibility

**Feasibility is the extent to which the data required for the measure are readily available, retrievable without undue burden, and can be implemented for performance measurement. Using the following sections, explain the methods used to determine the feasibility of implementing the measure.**

## **8.A. Data Availability**

### **1. What is the availability of data in existing data systems? How readily are the data available?**

CAHPS surveys use administrative data to develop the sampling frame for survey administration. Administrative data are commonly used for quality measurement due to high levels of completeness and ready availability. For the Child HCAHPS survey, hospitals will use discharge data to identify patients by discharge date. Discharge data are the most reliable and complete source of information necessary for the sampling frame. Moreover, discharge data are easily accessible to hospitals given that they are derived from administrative and billing data.

### **2. If data are not available in existing data systems or would be better collected from future data systems, what is the potential for modifying current data systems or creating new data systems to enhance the feasibility of the measure and facilitate implementation?**

Inpatient pediatric patient experience is widely measured using a variety of survey instruments developed by a number of survey vendors and hospitals. Although reporting across hospitals is not done nationally, survey vendors uniformly compare hospital scores among the hospitals that contract with them. Most survey vendors are CAHPS-approved and currently field Adult HCAHPS. Survey vendors are capable of administering Child HCAHPS, as demonstrated by our national field test in which they administered the survey for 70 participating hospitals. CMS maintains the CAHPS database for Adult HCAHPS reporting, and AHRQ maintains the CAHPS database for voluntary reporting of the Health Plan and Clinician & Group surveys. Were Child HCAHPS to become a core measure, it would be possible for data to be collected in either of these databases. A national pediatric database would be valuable in permitting national comparisons with case-mix adjusted data.

## **8.B. Lessons from Use of the Measure**

### **1. Describe the extent to which the measure has been used or is in use, including the types of settings in which it has been used, and purposes for which it has been used.**

Our pilot and national field test demonstrated that hospitals were eager to participate in our testing and are extremely interested in having an inpatient pediatric patient experience instrument that can be used for national comparisons. Testing also showed that it is feasible to administer surveys via both mail and telephone using standard CAHPS data collection methods. The Child HCAHPS survey was used by 70 hospitals in 33 States across the United States during the pilot and national field tests. Hospitals included free-standing children's hospitals, children's hospitals within an adult hospital, and pediatric wards. CAHPS-approved survey vendors sent out the survey for participating hospitals to parents and caregivers of children (0 to less than 18 years of age) with a recent hospital stay. We fielded our survey in both English and Spanish and by either mail or telephone. We received a total of 2,092 surveys for the pilot test and 13,758 surveys for the national field test. Many of the participating hospitals are continuing to use Child HCAHPS beyond collection of the national field test.

**2. If the measure has been used or is in use, what methods, if any, have already been used to collect data for this measure?**

We partnered with CAHPS-approved vendors who were already administering patient experience surveys for the participating hospitals. The data collection methods used during the Child HCAHPS national field test are described in the technical measure specifications (see Supporting Documents).

**3. What lessons are available from the current or prior use of the measure?**

Our pilot and national field tests demonstrated that hospitals were eager to participate in our testing and are extremely interested in having an inpatient pediatric patient experience instrument that can be used for national comparisons. Testing also showed that it is feasible to administer surveys via both mail and telephone using standard CAHPS data collection methods.

## **Section 9. Levels of Aggregation**

**CHIPRA states that data used in quality measures must be collected and reported in a standard format that permits comparison (at minimum) at State, health plan, and provider levels. Use the following table to provide information about this measure's use for reporting at the levels of aggregation in the table.**

**For the purpose of this section, please refer to the definitions for provider, practice site, medical group, and network in the Glossary of Terms.**

**If there is no information about whether the measure could be meaningfully reported at a specific level of aggregation, please write "Not available" in the text field before progressing to the next section.**

*Level of aggregation (Unit) for reporting on the quality of care for children covered by Medicaid/ CHIP†:*

*State level\* Can compare States*

**Intended use: Is measure intended to support meaningful comparisons at this level? (Yes/No)**

Yes.

**Data Sources: Are data sources available to support reporting at this level?**

No.

**Sample Size: What is the typical sample size available for each unit at this level? What proportion of units at this level of aggregation can achieve an acceptable minimum sample size?**

To compare Child HCAHPS top-box scores among States (whether for children covered by Medicaid or with other insurance statuses) the scores should be standardized at a national level to account for potential differences in case-mix among hospitals in different States. Child HCAHPS data could be added to the CAHPS database at AHRQ or the HCAHPS database at CMS.

Inclusion of Child HCAHPS data into a national database is necessary to make comparisons across States. Based on the limited State-level analysis that we were able to do with our national field test data, we determined that a State that can provide 2,000 completed surveys annually should be able to report on all items with adequate reliability (reliability =.7).

***In Use: Have measure results been reported at this level previously?***

No.

***Reliability & Validity: Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?***

No.

***Unintended consequences: What are the potential unintended consequences of reporting at this level of aggregation?***

None.

***Other geographic level: Can compare other geographic regions (e.g., MSA, HRR)***

***Intended use: Is measure intended to support meaningful comparisons at this level? (Yes/No)***

No.

***Data Sources: Are data sources available to support reporting at this level?***

No.

***Sample Size: What is the typical sample size available for each unit at this level? What proportion of units at this level of aggregation can achieve an acceptable minimum sample size?***

Although not an intended use, comparison of geographic regions would be possible if the data were pooled to provide adequate case-mix adjustment. There is no obstacle to comparisons among geographic regions. The reliability of scores would depend on the type of geographic regions and the variance within and between the hospitals in those regions.

***In Use: Have measure results been reported at this level previously?***

No.

***Reliability & Validity: Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?***

No.

***Unintended consequences: What are the potential unintended consequences of reporting at this level of aggregation?***

None.

***Medicaid or CHIP Payment model: Can compare payment models (e.g., managed care, primary care case management, FFS, and other models)***

***Intended use: Is measure intended to support meaningful comparisons at this level? (Yes/No)***

No.

***Data Sources: Are data sources available to support reporting at this level?***

No.

***Sample Size: What is the typical sample size available for each unit at this level? What proportion of units at this level of aggregation can achieve an acceptable minimum sample size?***

Although not an intended use, comparison of Medicaid or CHIP payment models would be possible if the payment model data field was submitted for analysis and the data were pooled to provide adequate case-mix adjustment. There is no obstacle to comparisons among payment models, other than collecting the appropriate data. The reliability of scores would depend on the types of payment models compared, the distribution of payment models among the hospitals, and the variance within and between the hospitals among the different payment categories.

***In Use: Have measure results been reported at this level previously?***

No.

***Reliability & Validity: Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?***

No.

***Unintended consequences: What are the potential unintended consequences of reporting at this level of aggregation?***

None.

***Health plan\*: Can compare quality of care among health plans.***

***Intended use: Is measure intended to support meaningful comparisons at this level? (Yes/No)***

No.

***Data Sources: Are data sources available to support reporting at this level?***

No.

***Sample Size: What is the typical sample size available for each unit at this level? What proportion of units at this level of aggregation can achieve an acceptable minimum sample size?***

Although not an intended use, comparison of health plans would be possible if the health plan data field was submitted for analysis and the data were pooled to provide adequate case-mix adjustment. There is no obstacle to comparing health plans. The reliability of scores would depend on the types of health plans compared, the distribution of health plans among the hospitals, and the variance within and between the hospitals among the different health plans.

***In Use:*** Have measure results been reported at this level previously?

No.

***Reliability & Validity:*** Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?

No.

***Unintended consequences:*** What are the potential unintended consequences of reporting at this level of aggregation?

None.

***Provider Level***

***Individual practitioner:*** Can compare individual health care professionals

***Intended use:*** Is measure intended to support meaningful comparisons at this level?

(Yes/No)

No.

***Data Sources:*** Are data sources available to support reporting at this level?

No.

***Sample Size:*** What is the typical sample size available for each unit at this level? What proportion of units at this level of aggregation can achieve an acceptable minimum sample size?

Not applicable.

***In Use:*** Have measure results been reported at this level previously?

No.

***Reliability & Validity:*** Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?

No.

***Unintended consequences:*** What are the potential unintended consequences of reporting at this level of aggregation?

Not applicable.

***Provider Level***

***Hospital:*** Can compare hospitals

***Intended use:*** Is measure intended to support meaningful comparisons at this level?

(Yes/No)

Yes.

***Data Sources:*** Are data sources available to support reporting at this level?

Yes.



**Sample Size:** What is the typical sample size available for each unit at this level? What proportion of units at this level of aggregation can achieve an acceptable minimum sample size?

Comparison of Child HCAHPS measures among hospitals would be fully valid only if the scores were standardized at a national level to account for potential differences in case-mix among hospitals in different States. A national database would be ideal for this purpose but does not exist at this time. In the absence of a national database, comparisons across hospitals cannot be made. To achieve adequate reliability for all outcomes, the minimum sample size required for hospital comparison would be at least 300 completed surveys annually.

**In Use:** Have measure results been reported at this level previously?

Yes.

**Reliability & Validity:** Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?

No

**Unintended consequences:** What are the potential unintended consequences of reporting at this level of aggregation?

None.

**Provider Level**

**Practice, group, or facility:\*\* Can compare: (i) practice sites; (ii) medical or other professional groups; or (iii) integrated or other delivery networks**

**Intended use:** Is measure intended to support meaningful comparisons at this level?

(Yes/No)

No.

**Data Sources:** Are data sources available to support reporting at this level?

No.

**Sample Size:** What is the typical sample size available for each unit at this level? What proportion of units at this level of aggregation can achieve an acceptable minimum sample size?

Not applicable.

**In Use:** Have measure results been reported at this level previously?

No.

**Reliability & Validity:** Is there published evidence about the reliability and validity of the measure when reported at this level of aggregation?

No.

**Unintended consequences:** What are the potential unintended consequences of reporting at this level of aggregation?

Not applicable.

## Section 10. Understandability

**CHIPRA states that the core set should allow purchasers, families, and health care providers to understand the quality of care for children. Please describe the usefulness of this measure toward achieving this goal. Describe efforts to assess the understandability of this measure (e.g., focus group testing with stakeholders).**

A core principle of all CAHPS surveys is to assess aspects of care for which the patient is generally the only or best source of information. Information is obtained directly from the patient, or in the case of child surveys, from the patient's parents. Understandability of the surveys is thus especially critical. To ensure the relevance of the Child HCAHPS measure to pediatric patients and their families and evaluate its understandability, we conducted focus groups and cognitive interviews. In addition, we conducted end-user interviews with parents to test preliminary composite measure concepts and labels and further gauge understandability and validity.

### Focus Groups on Survey Topics

Conducting focus groups at the beginning of the survey development process enabled us to identify for inclusion in our survey topics related to health care experiences that are of greatest salience to families. Focus groups were held in Boston, Los Angeles, and St. Louis; two comprised adolescents who had been hospitalized within the last year, and six comprised parents of children who had been hospitalized within the last year. The parent focus groups included a diverse spectrum of parents with regard to their gender, race, ethnicity, insurance status, marital status, child's age, and child's reason for and length of hospitalization. Four of the parent focus groups targeted specific populations: Spanish speakers (two groups), Medicaid-insured patients, and parents of children with special health care needs.

During focus group sessions, the moderator addressed the following domains: the admission process, health care providers, teamwork and cultural competence, the general hospital stay, the hospital environment, and the discharge process. Below are examples of findings:

- Parents and adolescents expressed dissatisfaction with admissions via the emergency room, frequently citing excessive wait times and a lack of information and support throughout the process.
- Parents were frustrated when doctors did not communicate, listen, or involve them in discussions during their child's inpatient stay.
- Several parents conveyed the importance of doctors' respecting both parents and patients.
- Parents were concerned about clinicians making mistakes in their child's care.
- Parents and adolescents identified the age appropriateness of care as an aspect of patient experience that was often lacking.

### Cognitive Interviews on Draft Survey Questions

We synthesized focus group findings with insights from our literature reviews and environmental scan to develop a draft survey. We next conducted cognitive interviews to assess whether parents understood the draft survey questions as intended. We performed 109 cognitive interviews in

English and Spanish in Boston, Los Angeles, Miami, and St. Louis. Parents reported effectively on their own experiences of their children's inpatient stay. They also generally were capable of distinguishing between their own experiences and those of their children.

Parents of children of all ages with a broad range of reasons for admission were able to answer most survey questions appropriately and accurately. However, we were unable to develop adequate items for some domains because parents lacked information to report on the experience or did not have a uniform understanding of the concept. For instance, parents were not able to report consistently on care coordination, which in the inpatient setting often occurs out of view of the parent. Collecting data about experiences with shared decision-making was unsuccessful because parents often felt that the major decisions were made before the hospitalization (e.g., plan for tonsillectomy), so decisions made during the hospitalization seemed minor to them by comparison and not salient enough to remember how the decisions were made. Other times, when there was an acute emergent medical problem, parents felt like there were no "real" decisions to be made because the severity of the condition dictated the treatment course (e.g., surgery for appendicitis). The English and Spanish versions of the survey elicited similar responses. The answers to many survey questions showed variation, as expected based on the unique experiences of the participants.

### **Cognitive Interviews on Measure Concepts and Labels**

In addition to assessing the understandability of the survey itself, we also sought to ensure the understandability of the measures reported based on the survey results. After analyzing the national field test and proposing draft composite measures, we conducted 23 cognitive interviews with parents to evaluate the understandability and validity of measure concepts and labels.

Testing of the reporting measures occurred in two rounds in Atlanta and the Washington, D.C., area. In Round 1, parents were asked to sort items into subgroups by related topics that they defined. Item sorting helps to validate composite measure groupings. Parents were then shown the groups of items that emerged from psychometric analyses and were asked how well these items fit together. After providing this feedback, parents were shown candidate labels for the measures to test their understanding of each label's meaning and to determine how well the label characterized the items in the group. Probing questions were used to evaluate the understandability of specific words and phrases, and parents were also given the opportunity to suggest alternatives. Finally, given the large number of potential reporting measures, parents were asked to prioritize the measures by identifying those that were the most and least important to them. Round 2 used the results of Round 1 to refine the measure labels and further assess item groupings and labels for which Round 1 parents provided mixed responses.

Reporting measure labels were modified based on cognitive testing results to ensure their understandability. Key findings include:

- Based on psychometric testing, stakeholder input, and the desire to simplify the survey results, options for combining areas of communication were considered (e.g., combining nurse and doctor communication with children or combining child and parent communication with nurses). Cognitive testing revealed that parents instead prefer to see each of the aspects of communication reported as separate measures. They perceived that (1) communication

with doctors is different from communication with nurses and (2) communication with the parent is different from communication with the child.

- Organizing measures into categories for reporting helps ease the cognitive burden of comprehending a long list of measures. When shown measures with and without categorical labels, participants expressed overwhelming preference for the use of categories. They felt that the results were easier to understand because they could focus on the grouping that was most important to them.
- The following measures were prioritized as most important to a majority of parents: communication, patient safety, and pain.

To ensure that the survey will be useful and understandable to patients and their families, we have made iterative revisions based on feedback obtained throughout the survey development process.

## **Section 11. Health Information Technology**

**Please respond to the following questions in terms of any health information technology (health IT) that has been or could be incorporated into the measure calculation.**

### **11.A. Health IT Enhancement**

**Please describe how health IT may enhance the use of this measure.**

Our candidate measure relies on survey responses from parents of recently hospitalized children and, as such, does not require electronic health record (EHR) data. In the future, however, as EHRs are adopted by more health systems and include more advanced capabilities for quality measurement, the measure could be modified to incorporate EHR data. Such data potentially could be valuable for enhancing case-mix adjustment and refining evaluation of some disparities such as those associated with special health care needs.

### **11.B. Health IT Testing**

**Has the measure been tested as part of an electronic health record (EHR) or other health IT system?**

No.

**If so, in what health IT system was it tested and what were the results of testing?**

Not applicable.

### **11.C. Health IT Workflow**

**Please describe how the information needed to calculate the measure may be captured as part of routine clinical or administrative workflow.**

Not applicable.

## **11.D. Health IT Standards**

**Are the data elements in this measure supported explicitly by the Office of the National Coordinator for Health IT Standards and Certification criteria (see [healthit.hhs.gov/portal/server.pt/community/healthit\\_hhs\\_gov\\_\\_standards\\_ifr/1195](http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov__standards_ifr/1195))?**

No.

**If yes, please describe.**

Not applicable.

## **11.E. Health IT Calculation**

**Please assess the likelihood that missing or ambiguous information will lead to calculation errors.**

Not applicable.

## **11.F. Health IT Other Functions**

**If the measure is implemented in an EHR or other health IT system, how might implementation of other health IT functions (e.g., computerized decision support systems in an EHR) enhance performance characteristics on the measure?**

Not applicable.

## **Section 12. Limitations of the Measure**

**Describe any limitations of the measure related to the attributes included in this CPCF (i.e., availability of measure specifications, importance of the measure, evidence for the focus of the measure, scientific soundness of the measure, identification of disparities, feasibility, levels of aggregation, understandability, health information technology).**

CAHPS surveys are intended to measure aspects of care for which the patient is generally the only or best source of information. Survey results are intended to complement other information on quality, such as clinical measures, system process measures, and qualitative patient feedback. As a result, there are several limitations of the Child HCAHPS survey as a quality measure.

First, patients are not the best source of information for some aspects of care. There are many topics that stakeholders might be interested in including in patient surveys but that cannot be appropriately measured via this method. One example is technical quality. Patients cannot reliably assess aspects of quality such as whether providers are using evidence-based care. A second example is aspects of care that are not always perceptible to the patient or family, such as care coordination. Effective care coordination is often invisible to the patient; only when problems arise do patients tend to notice the quality of care coordination. As a result, only limited aspects of care coordination can be measured validly from the patients' perspective. CAHPS surveys are extensively tested to ensure that topics included are those for which patients

are generally the only or best source of information and on which patients can reliably and validly report.

A second limitation is that CAHPS surveys are sampled from the general patient population and thus cannot be used to evaluate experiences unique to small subgroups of patients. Although it is possible to oversample specific subgroups to supplement the primary sample, such as patients with asthma or patients on the surgical unit, CAHPS surveys are designed to assess aspects of care that many patients experience. Consequently, CAHPS surveys do not address aspects of care that rarely occur.

A third limitation of CAHPS surveys is that their administration depends on use of hospital discharge data to produce the sampling frame; as a result, sampling depends on the quality of the administrative data and can be affected by inaccurate or missing data. In addition, hospital discharge data are themselves constructed from billing and other administrative data, which may be of variable quality.

A limitation particular to CAHPS surveys that assess children's experiences is that for a subset of items, they rely on a parent's assessment of a child's experience of care. However, in pediatrics, parents' assessment of their child's care is commonly accepted for a variety of methodological and logistical reasons (Shaul, Fowler, Zaslavsky, et al., 1999).

Finally, response rates are decreasing for surveys in general. Some of this decline is secondary to the proliferation of surveys of all kinds (e.g., health, consumer, marketing). Some of this is also the result of poorer contact information. Response rates in patient experience surveys are often lower as a consequence of attempts to minimize survey administration costs. For example, mixed-mode administration (i.e., using mail with telephone follow-up) is typically more effective in reaching more respondents; however, organizations often choose to limit data collection to a single mode to reduce administration costs. To improve response rates for CAHPS surveys, relatively inexpensive strategies, such as postcard reminders following the initial survey mailing, can be used to improve the response rate with minimal added cost.

## Section 13. Summary Statement

**Provide a summary rationale for why the measure should be selected for use, taking into account a balance among desirable attributes and limitations of the measure. Highlight specific advantages that this measure has over alternative measures on the same topic that were considered by the measure developer or specific advantages that this measure has over existing measures. If there is any information about this measure that is important for the review process but has not been addressed above, include it here.**

Patient-centered care—care that is designed around patients' needs, preferences, circumstances, and well-being—has been identified as a key domain of health care quality. Patients and families are often best able to assess how well providers meet their health care needs, and patient experience reports correlate with health outcomes. Currently, inpatient pediatric patient experience is measured around the country using a variety of survey instruments developed by a number of survey vendors and hospitals. The National Priorities Partnership and the Measure

Applications Partnership, both convened by the National Quality Forum (NQF), cite assessment of patient experience as a top priority (National Quality Forum Web site).

The Centers for Medicare & Medicaid Services (CMS) publicly report results from the NQF-endorsed Hospital Consumer Assessment of Healthcare Providers and Systems Survey—Adult Version (Adult HCAHPS) on its Hospital Compare Web site to inform consumer choice and uses Adult HCAHPS scores to calculate incentive payments for the CMS Hospital Value-Based Purchasing Program (CAHPS Hospital Survey Web site). Although the Adult HCAHPS survey is used widely, there is no comparable survey for inpatient pediatric care. The Child HCAHPS survey therefore fills gaps in pediatric quality measurement. It meets the need for a standardized tool developed to measure inpatient experience of care for children and addresses the general lack of inpatient pediatric quality measures.

Development of Child HCAHPS was informed by focus groups in which parents and adolescent patients indicated which aspects of patient experience they find important. The survey thus encompasses aspects of patient- and family-centered care that are relevant to pediatric patients and their families, such as how much providers involve families in a child's care and the age-appropriateness of care delivery.

Our national field test, which included 70 hospitals in 33 States across the country, showed that the Child HCAHPS measures are reliable for hospitals that collect at least 300 completed surveys annually. We assessed the validity of Child HCAHPS measures to determine whether they meaningfully represent important patient experience domains. Results from cognitive interviews and end-user testing indicate that Child HCAHPS is easily understandable.

Many existing survey vendors are CAHPS-approved and currently field Adult HCAHPS. Our national field test demonstrated that survey vendors are capable of administering Child HCAHPS. Although national reporting across hospitals is not performed for the various existing pediatric inpatient surveys, survey vendors uniformly compare hospital scores among the hospitals that contract with them. Were Child HCAHPS to become a core measure, it would be possible for data to be collected in existing CAHPS databases maintained by CMS and AHRQ. Child HCAHPS scores are produced using a case-mix adjustment model, allowing for meaningful comparison of inpatient pediatric patient experience of care across hospitals nationwide. A national pediatric database would be valuable in permitting national comparison of case-mix-adjusted scores.

Because Child HCAHPS enables collection of information on the experience of hospitalized pediatric patients, it can be used to assess the quality of inpatient care for a substantial number of children who make up an important fraction of the overall U.S. patient population (Clark, et al., 1998). Furthermore, patient experience scores vary within and across hospitals, suggesting room for improvement (Elliott, et al., 2010). Child HCAHPS could serve as a valuable tool to assess the experiences of children and their parents following hospitalization and could inform interventions in clinical practice designed to improve the quality of hospital care.

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## Section 14: Identifying Information for the Measure Submitter

**First Name:** Mark  
**Last Name:** Schuster, MD, PhD  
**Title:** William Berenberg Professor of Pediatrics, Harvard Medical School  
Chief of General Pediatrics and Vice-Chair for Health Policy,  
Department of Medicine, Boston Children's Hospital  
**Organization:** Boston Children's Hospital  
**Mailing Address:** 300 Longwood Avenue  
**City:** Boston  
**State:** MA  
**Postal Code:** 02115  
**Telephone:** 617-355-5859  
**Email:** cepqm@childrens.harvard.edu

**The CHIPRA Pediatric Quality Measures Program (PQMP) Candidate Measure Submission Form (CPCF) was approved by the Office of Management and Budget (OMB) in accordance with the Paperwork Reduction Act.**

**The OMB Control Number is 0935-0205 and the Expiration Date is December 31, 2015.**

### **Public Disclosure Requirements**

**Each submission must include a written statement agreeing that, should U.S. Department of Health and Human Services accept the measure for the 2014 and/or 2015 Improved Core Measure Sets, full measure specifications for the accepted measure will be subject to public disclosure (e.g., on the Agency for Healthcare Research and Quality [AHRQ] and/or Centers for Medicare & Medicaid Services [CMS] websites), except that potential measure users will not be permitted to use the measure for commercial use. In addition, AHRQ expects that measures and full measure specifications will be made reasonably available to all interested parties. "Full measure specifications" is defined as all information that any potential measure implementer will need to use and analyze the measure, including use and analysis within an electronic health record or other health information technology. As used herein, "commercial use" refers to any sale, license or distribution of a measure for commercial gain, or incorporation of a measure into any product or service that is sold, licensed or distributed for commercial gain, even if there is no actual charge for inclusion of the measure. This statement must be signed by an individual authorized to act for any holder of copyright on each submitted measure or instrument. The authority of the signatory to provide such authorization should be described in the letter.**

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