STATE REPORTING OF THE CENTRAL LINE-ASSOCIATED BLOOD STREAM INFECTION (CLABSI) MEASURE: SUMMARY OF WORKGROUP FINDINGS AND RECOMMENDATIONS

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Background

The Children's Health Insurance Program Reauthorization Act (CHIPRA) mandated that the Secretary of Health and Human Services develop an initial core set of children's health care quality measures for voluntary reporting by Medicaid and CHIP. States began reporting data on the initial core set of measures in December 2010. Among the initial core set of 24 measures, the central line-associated blood stream infection (CLABSI) rate was the only measure with no states reporting for FFY 2010, and only Oregon reported the measure for FFY 2011. In addition, many states requested technical assistance (TA) to clarify the specifications for the CLABSI measure. The frequency of TA requests, coupled with the lack of reporting for FFY 2010, highlighted the need to better understand barriers that states and providers were facing in reporting CLABSI incidents for their Medicaid and CHIP populations.

As part of its Technical Assistance and Analytic Support Program for the Initial Core Set of Children's Health Care Quality Measures, the Centers for Medicare & Medicaid Services (CMS) convened a Workgroup to discuss ways to enhance state reporting of the CLABSI measure from the core set of children's health care quality measures. Providers, quality measurement experts, infection control practitioners with expertise in CLABSI, state Medicaid/CHIP officials, and other health care quality leaders were invited to participate in three telephone meetings to develop recommendations to CMS to improve state data collection and reporting efforts for CLABSI and ultimately improve health outcomes among children enrolled in Medicaid and CHIP. Specifically, the Workgroup was charged with:

1. Defining the challenges of collecting and reporting the CLABSI measure as now specified
2. Offering recommendations to CMS on how to clarify or revise the measure specifications to facilitate state data collection and reporting efforts related to the CLABSI measure

The National Initiative for Children's Healthcare Quality (NICHQ) facilitated the Workgroup as part of the CMS Technical Assistance and Analytic Support Team. This document summarizes the Workgroup findings and recommendations for consideration by CMS in measuring patient safety among Medicaid/CHIP-insured children cared for in intensive care settings. The list of Workgroup members is included in Appendix A.

This document is a product of the Children's Health Care Quality Measures Technical Assistance and Analytic Support Program, sponsored by the Centers for Medicare & Medicaid Services. The program team is led by Mathematica Policy Research, in collaboration with National Committee for Quality Assurance, Center for Health Care Strategies, and National Initiative for Children's Healthcare Quality.

Summary of Findings

NICHQ facilitated three conference calls with the CMS CLABSI Workgroup, conducted a literature review of the epidemiology of pediatric CLABSIs and interventions to improve pediatric CLABSI rates in intensive care units, and interviewed selected experts in order to inform CMS's efforts. The main findings of the Workgroup included the following:

- CLABSIs among children cause significant harm and incur substantial expenses for Medicaid and CHIP, even though the absolute number of episodes is relatively small.
- Successful strategies exist to lower CLABSI rates; numerous initiatives are underway, especially among children's hospitals, to reduce the frequency of these events. These initiatives are implemented at the institutional or unit level, and do not target specific patient populations by insurance status.
- No valid and reliable data exist as to whether CLABSI rates are different for Medicaid/CHIP- insured children compared with other children, nor is there information about whether improvement efforts have a differential impact on different populations of children.[1] None of the experts with whom we consulted believe this is an area in which disparities by coverage status exist.
- In a very limited set of interviews, some, but not all, state Medicaid leaders believed that having counts or rates of Medicaid/CHIP-specific CLABSI would be helpful in driving change and improvement, and particularly in enabling Medicaid agencies to play an active role in such activities. Others felt that Medicaid's major role in health care financing at the state-level would enable it to participate in or drive improvement efforts.

Given that CLABSI is an important adverse event and that some leaders believe having Medicaid/CHIP-specific data would be helpful, the Workgroup explored the feasibility of collecting such data.

- Administrative data (discharge or claims-based) substantially underestimate rates of CLABSI (administrative measures identified only 6 percent in one study and 33 percent in another study of those who actually had a CLABSI occurrence), effectively ruling out the use of administrative data at the current time as a legitimate approach to generating state-level, insurance-specific rates.
- The Centers for Disease Control and Prevention (CDC) National Healthcare Safety Network (NHSN) represents the de facto standard for measurement of CLABSI rates. Several sources noted that all hospitals serving children report CLABSI incidents to the CDC as voluntary reporters, as mandated by their state, or pursuant to CMS's Prospective Payment System requirements.

[1] The Agency for Healthcare Research and Quality (AHRQ) provided data on CLABSI rates using the patient safety indicators for Pediatric CLABSI and Neonatal CLABSI; these data are shown in Table 1. However, the insensitivity of these and the uncertainty as to whether these measures are biased limits the inferences we can make from administrative data.

- At the current time, the data reported by hospitals to the NHSN do not allow a consistent mechanism for identifying whether a specific incident affected a child insured by Medicaid/CHIP.
- A number of mechanisms exist by which it may be possible to indicate whether a specific case of a CLABSI occurred to a child insured by Medicaid/CHIP at the time of the infection (that is, the numerator for the CLABSI rate). Further work is needed to assess the burden each of the approaches will entail for states, hospitals, and/or the federal government (see Recommendations, below).
- Experts indicated that none of these mechanisms would allow a true calculation of Medicaid/CHIP-specific rates as they do not enable insurance-specific counts of the denominator, "central line days." The Medicaid/CHIP-specific denominator may be estimated by applying the rate of Medicaid/CHIP coverage in that unit, although the accuracy of this approach is uncertain.

Workgroup Recommendations to Facilitate Reporting of State-level CLABSI Rates for Children Covered by Medicaid or CHIP

1. CMS should clarify to a high level of specificity the extent to which hospitals that have neonatal intensive care units (NICUs) and pediatric intensive care units (PICUs) currently report to the CDC NHSN, particularly stand-alone children's hospitals. CMS should also determine the characteristics of non-reporting hospitals (if any) to ascertain the potential for bias if certain types of hospitals are excluded systematically.
2. CMS, through its Office of Clinical Standards and Quality and in partnership with CDC, should create state-specific reports for CLABSI rates in NICUs and PICUs for inclusion in the core set of children's health care quality measures for Medicaid/CHIP. The analysis should highlight on a state-by-state basis any limitations in reporting or other specific characteristics of the data that could limit the validity of the CLABSI measure.
3. CMS should post hospital NICU and PICU CLABSI data on Hospital Compare with appropriate safeguards for reporting for hospitals with small sample sizes.
4. CMS, AHRQ, and CDC should work together to conduct a research study examining whether children insured through Medicaid/CHIP have different (higher) rates of CLABSIs than other children, as well as examine whether hospitals that serve a higher proportion of Medicaid/CHIP-insured children have higher rates than other hospitals. Until such evidence is produced, CMS should not impose the burden of collecting and reporting Medicaid/CHIP status for CLABSI on states or hospitals.
5. If the results of the research study noted above indicate that CLABSI rates are higher for Medicaid/CHIP than for other payers, CMS should explore the validity and feasibility of various approaches to determining the number of Medicaid/CHIP-specific CLABSIs :
    a. Including a Medicaid/CHIP insurance number on CLABSI cases reported in the NHSN

b. Including a Medicaid/CHIP insurance indicator (yes/no) on CLABSI cases reported in the NHSN

c. Including a personal identifier on CLABSI cases reported in the NHSN that submitting hospitals or the state Medicaid/CHIP agency can use post-submission to determine if Medicaid/CHIP insured a child at the time a CLABSI occurred

6. If the results of the research study noted above indicate that CLABSIs are higher for Medicaid/CHIP than for other payers, CMS, AHRQ, and CDC should undertake a study to determine whether applying the proportion of Medicaid/CHIP days in a unit to the overall Central Line Days in that unit provides a valid estimate of the actual number of Central Line Days for Medicaid/CHIP insured children.[2] Should this be found to be a valid approach, CMS should then develop specifications for calculating hospital-specific rates for Medicaid/CHIP-insured children and aggregating these rates to produce an overall state rate.

Summary

CLABSIs among infants and children cause substantial preventable harm and incur meaningful costs. On this basis, the Workgroup expressed support for keeping the CLABSI measure as part of the core set of children's health care quality measures. However, due to the significant burden that would be imposed on hospitals for collecting Medicaid/CHIP-specific data and the absence of research demonstrating disparities in pediatric CLABSI by payer, the Workgroup recommends that, for the present time, CMS generate state-specific rates for all children using the NHSN data.[3] In addition, federal agencies should collaborate to undertake targeted research to determine whether Medicaid/CHIP-specific rates provide useful additional information and, if so, to test the feasibility of potential approaches to obtaining this information.

[2] AHRQ and Child Health Corporation of America (CHCA) provided data on the proportion of children covered by Medicaid in hospitals and in NICUs/PICUs, respectively. These data are shown in Table 2.

[3] Based on the Workgroup recommendation, CMS decided to obtain state-level CLABSI data from NHSN for FFY 2012.

Table 1. Medicaid vs. Private Pay CLABSI Rates for Pediatric and Neonatal Patients, Using Administrative Data, 2009

Expected payment source	Events per 1000 Discharges	Std. Error	P value
Non-NICU, Pediatric CLABSI (PDI 12)	.	.	.
Private insurance	4.449	0.084	Reference
Medicare	5.647	0.654	0.069
Medicaid	4.886	0.074	0.000
Other insurance	3.935	0.235	0.040
Uninsured/self-pay/no charge	1.666	0.351	0.000
Neonatal CLABSI (NQI 03)	.	.	.
Private insurance	49.490	1.079	Reference
Medicare	54.389	16.189	0.763
Medicaid	51.227	0.913	0.219
Other insurance	64.788	3.489	0.000
Uninsured/self-pay/no charge	40.391	4.681	0.058

Source: Data provided by AHRQ using the Healthcare Cost and Utilization Project (HCUP) database.

Notes: All estimated rates are adjusted by age, birth weight, Diagnosis Related Group (DRG), the presence of a congenital anomaly, and transfers into the hospital. When reporting is by age, the adjustment is by birth weight, Diagnosis Related Group (DRG), the presence of a congenital anomaly, and transfers into the hospital. The AHRQ PDI software was modified to not use the present on admission (POA) indicators (nor estimates of the likelihood of POA for secondary diagnosis).

Private insurance is the reference group for significance testing. Estimated rates are slightly (<5%) higher for Medicaid-insured children compared to privately insured children for both Neonatal and non-NICU Pediatric CLABSI. The differences are statistically different for the non-NICU CLABSI rates.

These rates do not correspond directly to CDC's PICU and NICU CLABSI rates but instead represent pediatric CLABSI (across the entire institution, not just PICU) and neonatal CLABSI (across the entire institution, not just NICU). The NICU data are not stratified by birth weight (as are the CDC data).

Recent research suggests that administrative data substantially underestimate the reported CLABSI rate.

Table 2. Percentage of Hospitalized Children Insured by Medicaid, by Type of Hospital, 2009

.	All Children, All Hospitals with Children	PICU, CHCA Hospitals	NICU, CHCA Hospitals
10th percentile	11.1	.	.
25th percentile	30.8	45.2	41.7
50th percentile (Median)	50.3	49.5	54.8
75th percentile	66.7	58.1	68.3
90th percentile	78.9	.	.

Sources: Data on 'All Children, All Hospitals with Children' were provided by AHRQ using the Kids' Inpatient Database (KIDS). Data on "PICU, CHCA Hospitals" and "NICU, CHCA Hospitals" were provided by Child Health Corporation of America (CHCA) using the Pediatric Health Information System (PHIS) database.

APPENDIX A

CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTIONS (CLABSI) MEASURE

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