Federal Register Notice 2474-NC-CMS:

Request for Public Comment on Initial, Recommended Core Set of Children's Healthcare Quality Measures for Voluntary use by Medicaid and CHIP Programs

Background Report (available at

http://www.ahrq.gov/chipra/corebackgrnd.htm)

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Table

Table 1. Initial, recommended set of children's health care quality measures

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Appendix A

A-1 Acronyms and Abbreviations

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A-3 Agency for Healthcare Research and Quality, National Advisory Council (NAC) Subcommittee on Children's Healthcare Quality Measures for Medicaid and Children's Health Insurance Programs (SNAC)

A-4 CHIPRA HHS Federal Quality Workgroup

A-5 Public Commenters

A-6 Description of the Modified Delphi I Scoring Process

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A-8 Description of the Modified Delphi Process to Rate and Select Valid, Feasible, and Important Measures

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Appendix B

Table B-1: Measures that met the Delphi-2 criteria for discussion at the September 17-18 SNAC meeting but were not part of the SNAC's top 25 initial, core recommended set

Table B-2: Measures that did not meet the Delphi-2 criteria for discussion and voting at the September 17-18 SNAC meeting

Executive Summary

Title IV of the Children's Health Insurance Program Reauthorization Act (CHIPRA; Public Law 111-3) required the Secretary of the U.S. Department of Health and Human Services (HHS) to identify and post for public comment by January 1, 2010, an initial, recommended core set of children's health care quality measures for voluntary use by Medicaid and Children's Health Insurance Programs (CHIP), health insurance issuers and managed care entities that enter into contracts with such programs, and providers of items and services under such programs.

This background paper describes the publicly transparent, multi-stakeholder, evidence-informed process the Secretary used to identify that initial, recommended core set and the results of that process. Table 1 summarizes the measure set; additional details on the measures can be found in the results section and in the appendix.

The initial core measure set includes one or more measures for almost all of the health care topics and criteria specified in the legislation. Also in line with the CHIPRA requirements, quality measures are recommended for services to prevent disease and promote health and to treat and manage a spectrum of acute and chronic conditions experienced by children, including physical, mental, and dental disorders. The measure set includes measures designed to assess family experiences of care (FEC) and availability of services. Measures address services provided across the age continuum and in both ambulatory and inpatient settings. All but five of the measures are supported by evidence for a relatively high level of validity. The validity ratings for others are supported by substantial professional consensus.

There were, however, a number of legislative topics for which currently available, valid, and feasible measures could not be identified, and some legislative criteria that could not be met.

These include measures of the "most integrated health care delivery settings" (e.g., the medical home), more valid measures of availability of services, and importantly, a core measure of duration of enrollment and coverage for use in quality reporting. Measures are also needed to assess the outcomes of health care, the quality of children's care for mental health and substance abuse services, other specialty services, and care in inpatient and emergency settings, as well as settings not part of the mainstream medical delivery system. In addition, neither the recommended measure set as currently specified, nor the body of measures in use by Medicaid, CHIP and others, currently meet the CHIPRA goals of measuring and improving quality across all enrollees in Medicaid and CHIP programs and identifying disparities by race and special health care needs status. Thus, additional work is needed to develop measures and specifications to meet these challenges and to provide technical assistance to the Medicaid and CHIP programs and the plans and providers on which they rely to deliver high quality care. The CHIPRA legislation was visionary in seeing to the future work that would be needed to fully implement and use a core measure set across Medicaid and CHIP programs, as well as other public and private purchasers and programs. Initiatives are under way at the Agency for Healthcare Research and Quality (AHRQ) and the Centers for Medicare & Medicaid Services (CMS) to meet these challenges. For example, in response to CHIPRA, the Secretary has issued a solicitation for grant applications from Medicaid programs, the results of which will contribute enormously to measure improvement, implementation of quality improvement strategies, and the use of health information technology (health IT) to facilitate the use of health care quality measures for children.[1] CHIPRA also provided for a program of grants and contracts to advance and improve pediatric quality measures and called for State reporting to the public and to Congress (via the Secretary). Other activities include efforts to consider the initial core set in pay

for performance, health IT, [2] and other CMS efforts to facilitate implementation of the measures across the Medicaid and CHIP populations. These include further development of the Federal-State National Quality Framework. The public comments called for in the Federal Register Notice to which this background paper is linked will be fully utilized in all efforts to facilitate use of the measures. As the capstone for measure development and enhancement, CHIPRA set a target date of January 1, 2013 for identification of an improved, recommended core measure set.

In summary, stimulated by CHIPRA and building on our and the States' longstanding interest in health care quality improvement, HHS and the States are rejoining their efforts to use the measures to identify areas in need of improvement and monitor progress toward the goal of a high quality health care system for all children.

Background

Legislation

Title IV (Section 401(a)) of the Children's Health Insurance Program Reauthorization Act (CHIPRA; Public Law 111-3; February 3, 2009) amended Section 1139 of Title XI (42 U.S.C. 1301 et seq.) by adding a new section 1139A on Child Health Quality Measures (Appendix A-2).

Section 1139A called for the Secretary of the U.S. Department of Health and Human Services (HHS) to "identify and publish for general comment an initial, recommended core set of child health quality measures for use by State programs administered under titles XIX and XXI, health insurance issuers and managed care entities that enter into contracts with such programs, and providers of items and services under such programs."

The legislation called for identification of "existing quality of care measures for children that are in use under public and privately sponsored health care coverage arrangements, or that are part of reporting systems that measure both the presence and duration of health insurance coverage over time."

Further, measures were asked to be identified for the following topics, although others could be included: duration of enrollment and coverage; preventive and health promotion services; treatment and management for acute and chronic conditions in children; family experiences of care, most integrated health care settings; and availability of services. CHIPRA also calls for evidence-based measures and measures that can identify disparities in health care quality by race and ethnicity, socioeconomic status, and special health care need.

Consultation was required with entities identified in subsection (b)(3) of 1139A ("States; pediatricians, children's hospitals, and other primary and specialized pediatric health care professionals (including members of the allied health professions) who specialize in the care and

treatment of children, particularly children with special physical, mental, and developmental health care needs; dental professionals, including pediatric dental professionals; health care providers that furnish primary health care to children and families who live in urban and rural medically underserved communities or who are members of distinct population sub-groups at heightened risk for poor health outcomes; national organizations representing children, including children with disabilities and children with chronic conditions; national organizations representing consumers and purchasers of children's health care; national organizations and individuals with expertise in pediatric health quality measurement; and voluntary consensus standards-setting organizations and other organizations involved in the advancement of evidence-based measures of health care." The measures are to be published no later than January 1, 2010.

AHRQ/CMS Partnership

In response to this legislative directive, the Agency for Healthcare Research and Quality (AHRQ) and the Centers for Medicare & Medicaid Services (CMS) signed Memorandum of Understanding MOU 9-119 in April 2009 giving AHRQ leadership responsibilities for identifying the initial core set, working in very close partnership with CMS. CMS has the authority for implementation of all CHIPRA provisions.

Methods

The initial core set of Children's Healthcare Quality Measures for Voluntary Use by Medicaid and CHIP Programs was developed using a transparent and evidence-informed process, with broad input from multiple stakeholders. Key components included multiple opportunities for public comment including a CMS-led listening session for Medicaid and CHIP

officials; an AHRQ National Advisory Council Subcommittee that contributed expertise on validity, feasibility, and importance of measures in use; and supportive background work by AHRQ, CMS, and members of the CHIPRA Federal Quality Workgroup.

Creation of the Subcommittee on Children's Healthcare Quality Measures for Medicaid and CHIP Programs

In May 2009, the AHRQ Director approved a Charter creating the Agency for Healthcare Research and Quality's National Advisory Council for Healthcare Research and Quality (AHRQ NAC) Subcommittee on Children's Healthcare Quality Measures for Medicaid and CHIP Programs (SNAC). The AHRQ NAC had agreed to provide advice to AHRQ and CMS to facilitate their work to recommend an initial core set of measures of children's health care quality for Medicaid and CHIP programs. To provide the requisite expertise and input from the range of stakeholders identified in the CHIPRA legislation, the NAC established the Subcommittee on Children's Healthcare Quality Measures for Medicaid and CHIP Programs (SNAC; see Appendix A-3 for a list of members).

The SNAC was charged with: (a) providing guidance on criteria for identifying an initial core measurement set; (b) providing guidance on a strategy for gathering additional measures and measure information from State programs and others; and (c) reviewing and applying criteria to a compilation of measures currently in use by Medicaid and CHIP programs to begin to select the initial core measurement set. SNAC recommendations were to be provided to the NAC, which in turn advises the Director of AHRQ.

Nominations for SNAC members to represent the range of stakeholders were sought from CMS and the CHIPRA Federal Quality Workgroup (Appendix A-4). An emphasis was placed on identifying Medicaid and CHIP officials because of their unique role as potential

implementers of the initial core set. Although more were invited, four State Medicaid program officials (from Alabama, Minnesota, Missouri, District of Columbia), and one State CHIP official were able to participate as SNAC members. Others represented Medicaid, CHIP, and other State programs more generally (i.e., representatives of the National Academy on State Health Policy, National Association of State Medicaid Directors, and the Association of Maternal and Child Health Programs).

Representatives of health care provider groups came from the American Academy of Family Physicians, American Academy of Pediatrics, American Board of Pediatrics, the National Association of Children's Hospitals and Related Institutions, the National Association of Pediatric Nurse Practitioners, and a Medicaid health plan representative. The interests of families and children were represented by the March of Dimes. Individual SNAC members provided expertise in children's health care quality measurement, children's health care disparities, tribal health care, dental care, substance abuse and mental health care, adolescent health, and children's health care delivery systems in general. Two members of the NAC also participated in the SNAC.

The SNAC Co-Chairs Rita Mangione-Smith, MD, MPH and Jeffrey Schiff, MD, MBA were selected because of their expertise in children's health care quality measurement and leadership roles in the Medicaid Medical Directors Learning Network, respectively. The SNAC charter expires December 31, 2009. [3, 4]

The SNAC held two public meetings (July 22-23 and September 17-18, 2009) and accomplished a substantial amount of work outside of the meetings in order to help the NAC, AHRQ, CMS, and the Secretary meet the CHIPRA legislative deadline of January 1, 2010. Details are provided later in this section.

Public Input

Multiple ongoing opportunities for public input were provided as part of this process. In June 2009, AHRQ established a Web site to provide information on the Agency's role in CHIPRA implementation, in close collaboration with CMS, and an email address through which the public could comment on the process. In addition, both SNAC meetings were open to the public and provided opportunities on each day for anyone to make formal public comments. Additional opportunity for public comment came during the July 24, 2009 NAC meeting at which the SNAC Co-Chairs presented on the process used and results of the July 22-23, 2009, SNAC meeting.[5] In addition, the SNAC co-chair, Dr. Schiff, arranged for a conference call for members of the Medicaid Medical Directors Learning Network (MMDLN) to seek input on the measure identification and recommendation process. Several members of the MMDLN responded by nominating children's health care quality measures in use by their States for consideration for the initial core measure set. Finally, on September 30, 2009, CMS led a listening session for Medicaid and CHIP officials so that they could comment on the initial, recommended core measure set.

Those making public comments through these mechanisms included individual health care practitioners, additional Medicaid and CHIP programs, representatives of industry groups, child and family advocates, and members of the CHIPRA Federal Quality Workgroup. A list of public commenters is included in the Appendix (Appendix A-5).

First SNAC Meeting July 22-23, 2009

The first SNAC meeting was held July 22-23, 2009, in Washington, DC. The meeting was open to the public. This section describes preparation for the first SNAC meeting, the focus of SNAC discussions, presentations to the SNAC, refinements to methodology made during the

meeting, and the identification of a preliminary group of measures to further consider for inclusion in the final core set, as well as needs for additional information and work.

Preparation

AHRQ and CMS staff and the subcommittee Co-Chairs began conferring prior to the first scheduled SNAC meeting. Seventy-seven measures in use by Medicaid and State Children's Health Insurance Program (SCHIP) programs were identified by AHRQ staff with the assistance of CMS, and a process to initially evaluate those measures was agreed upon by AHRQ and CMS.

Prior to the July meeting, the SNAC Co-Chairs, working through AHRQ, provided subcommittee members with standard definitions and criteria recommended for use in evaluating the validity and feasibility of quality measures (Appendix A-6). SNAC members were asked to apply these evaluation criteria to the 77 measures using the RAND Corporation's modified Delphi process.[2] Previous work has shown this method of evaluating quality measures to be reliable and to have content, construct, and predictive validity in other applications.[3-5]

The modified Delphi process involved individual SNAC members scoring the initial identified set of Medicaid and CHIP quality measures for validity and feasibility on a 1- to 9-point scale (with 1 denoting the measure was not valid or feasible and 9 indicating it was definitely valid and feasible). Objective information (e.g., on underlying scientific soundness of the measures) related to both measure validity and feasibility was provided to the extent it was available. However some measures were scored in this round without adequate identification of numerators, denominators, or measure specifications. Measure specifications are essential for evaluating feasibility. Instructions to the SNAC for Delphi I noted that scores for validity could be guided by professional consensus when published evidence to support the measure's validity was insufficient.

The RAND modified Delphi method outlines cut-points for passing scores on validity and feasibility. For validity, the median passing score used is more stringent, i.e., 7-9 on the 9-point scale, than the median passing score for feasibility, which requires a median score of 4-9 to pass. The rationale for this difference is that for validity, either the evidence exists to support the measure or it does not, which results in relatively objective information being available to make this assessment. Feasibility is a more subjective assessment than validity. Some Medicaid or CHIP programs may find a measure quite feasible to implement (due to their infrastructure, amount of available funding, etc), while others will not. For the purposes of the July meeting, measures with a median validity score of 6 or 7 and a median feasibility score of ≥ 4 were discussed by the SNAC. Measures with a validity score of 6 or 7 were selected for discussion, as these measures were deemed controversial and in need of further consideration by the group.

Median scores and a display of the distribution of scores across voting members were calculated and prepared for SNAC review by AHRQ staff prior to the July meeting. The median scores summarized the individual scores of SNAC members on these two domains (i.e., validity and feasibility). The median scores and the display of distribution across voting SNAC members were presented at the July SNAC meeting and used to determine whether candidate measures would be discussed further.

SNAC Meeting

The SNAC spent most of the first day reviewing the criteria for validity and feasibility; identifying criteria for importance; discussing the measures that were deemed "controversial" after Delphi Round 1, i.e., measures with a median validity score of 6 or 7, median feasibility of > 4, and a relatively wide distribution across members, suggesting little consensus among the group. Forty-five of 77 measures met these criteria. On the second day, the SNAC heard

presentations by experts commissioned by AHRQ and CMS to provide further input into the overall process.

Additional input and discussion: Presentations to SNAC and the participating public. At the July 22-23, 2009, SNAC meeting, members and the public present at the meeting heard several presentations and engaged in discussions with presenters. Presentations by the AHRQ Director, Carolyn Clancy; CMS's Director of the Center for Medicaid and State Operations (CMSO), Cindy Mann; and the Director of the Division of Evaluation, Quality and Health Outcomes in CMSO, Barbara Dailey, set the stage for the meeting. The AHRQ Director provided the charge to the SNAC, and the CMSO Director expressed a strong desire for the SNAC to recommend a grounded and parsimonious core set that could be implemented voluntarily by State programs, health plans, or provider groups.[6, 7] Representatives of the National Quality Forum, the National Committee on Quality Assurance, and the Center for Health Care Strategies spoke on the challenges of implementing health care quality measures for children.

In addition, several experts who had been asked to write federally supported white papers on specific aspects of measurement in the legislation presented their early thoughts about their work. These experts addressed the charges to them of conceptualizing and assessing the validity, feasibility, and importance of measures of mental and behavioral health care, family experiences of care, duration of enrollment and coverage, availability of services, and the "most integrated health care setting." AHRQ and CMS also asked that papers be prepared analyzing data sets of the National Academy for State Health Policy, Health Management Associates, and the Child and Adolescent Health Measurement Initiative (CAHMI) database from the 2007 National Survey of Children's Health (NSCH). An additional environmental scan of Medicaid and CHIP

Web sites had also been commissioned to identify additional children's health care quality measures that may have been missed in the first effort by AHRQ staff and CMS. Not all authors could participate in the July SNAC meeting. All presentations are included in the transcript of the July meeting posted at http://www.ahrq.gov/chip/chipraact.htm.

Refinements to methodology. During the July meeting, the SNAC agreed upon refinements to the methodology to be used for future rounds of the modified Delphi process. Importance was added as a third domain to consider when evaluating potential measures in addition to validity and feasibility. The SNAC worked to establish consensus on the criteria to use to rank the importance of measures under consideration. To be considered important, at least some of the following criteria had to be met by the measure. The criteria are listed in order of decreasing weight as determined through a voting process by SNAC members on July 23, 2009:

1. The measure should be **actionable**. State Medicaid and CHIP programs, managed care plans, and relevant health care organizations should have the ability to improve their performance on the measure with implementation of quality improvement efforts.
2. The **cost** to the Nation for the area of care addressed by the measure should be substantial.
3. Health care systems should clearly be **accountable** for the quality problem assessed by the measure.
4. The **extent** of the quality problem addressed by the measure should be substantial.
5. There should be documented **variation** in performance on the measure.
6. The measure should be **representative** of a class of quality problems, i.e., it should be a "sentinel measure" of quality of care (QOC) provided for preventive care, mental health care, or dental care, etc.

7. The measure should assess an aspect of health care where there are known **disparities**.

8. The measure should contribute to a final core set that represents a **balanced portfolio** of measures and is consistent with the intent of the legislation.

9. Improving performance on measures included in the core set should have the potential to **transform care** for our Nation's children.

Similar to feasibility, the threshold for a passing score on importance was also set at ≥ 4 on the 9-point scale, as this was felt to be the most subjective of the three evaluation domains.

The SNAC members were asked to score each of the measures that had passed the first round of Delphi scoring for validity and feasibility on the new criterion of importance. AHRQ staff then summarized these scores using the median value. Measures were considered to pass the importance criterion if the median score was > 4.

The refinement process further involved reviewing, discussing, and reaching consensus on criteria the SNAC would use to evaluate the validity and feasibility (including reliability) of candidate measures that would be considered for potential inclusion in the recommended core set.

Other steps and decisions. The SNAC's discussion of controversial measures resulted in the recommendation that further information related to measure validity, feasibility and importance would be needed prior to further consideration of these controversial measures. The SNAC asked AHRQ staff to obtain that information.

During their July deliberations, the SNAC also determined that a call for nominations of additional pediatric quality measures in use (either within or outside of the Medicaid and CHIP programs) should be used to identify a larger set of measures to consider for the final core set.

SNAC members expressed a strong desire to recommend a grounded and parsimonious core set of measures that could be implemented voluntarily by State programs, health plans, and provider groups, and agreed on a target number of no more than 25 measures. The SNAC acknowledged that such a core set would be incomplete, but efforts would be made to balance the set to accomplish the legislative goals and the goals articulated in the SNAC discussion of measure importance. The SNAC agreed to bring forth to the NAC's attention measures not accepted into the core set and aspects of child health for which current measures do not exist.

Conclusions. By the end of the July SNAC meeting, SNAC members had identified a preliminary set of 24 measures that had clearly passed criteria for validity and feasibility in the first round of Delphi scoring and also passed scoring for importance using the criteria agreed to by the SNAC at the July meeting. This preliminary list of measures is available at the AHRQ CHIPRA Web site as part of the SNAC Co-Chairs presentation to the NAC on July 24 (see below).[5] The Co-Chairs made clear that this preliminary group of measures would be subject to further research by the AHRQ staff as needed and included in the second round of Delphi scoring prior to the September SNAC meeting. In addition, SNAC members were invited to nominate additional measures for consideration.

First SNAC Report to the NAC

The SNAC Co-Chairs reported to the NAC immediately after the July meeting (on July 24, 2009).[5] This presentation included a review of the SNAC-refined criteria for the measure evaluation (validity, feasibility, and importance), as well as the preliminary list of 23 measures passing all three domains after the initial round of Delphi scoring. The SNAC report is available in the form of a slide presentation at http://www.ahrq.gov/chip/chipraact.htm.[6]

Second SNAC meeting September 17-18, 2009

The SNAC held its second meeting on September 17-18, 2009, in Washington, DC. In addition to being open to public participation onsite, the meeting was Webcast. The technology allowed for greater participation and public comment. A link to the Webcast is available at http://www.connectlive.com/events/ahrq2009/.

Preparation for the Meeting

Additional Measure Nominations. Shortly after the July meeting, the AHRQ staff in collaboration with the SNAC Co-Chairs developed a measure nomination template. This template was created in order to collect a standardized set of information on all measures nominated for potential inclusion in the core set (see Appendix A-7). The nomination template was made available in early August 2009, and nominations were accepted until August 24, 2009. In addition to measure nominations by SNAC members, public nominators included members of the Medicaid Medical Directors Learning Network, the American Medical Association Physician Consortium for Performance Improvement, the National Partnership for Women and Families, and the Child and Adolescent Health Measurement Initiative on behalf of The Commonwealth Fund. Additional nominations were obtained through e-mail to the AHRQ public comment e-mail address. CHIPRA Federal Quality Workgroup nominations also came from CMS and the Health Resources and Services Administration (HRSA).

In addition to all newly nominated measures, each measure that either (1) passed Delphi round one or (2) was considered controversial by the SNAC during their first meeting in July was entered into the measure template, with required information, by AHRQ staff. Authors of the CHIPRA-commissioned papers also recommended measures for consideration and additional sources of data for quality measurement based on their works in progress. Measures recommended by the contractors included a measure of medical home (for "most integrated

health care setting") using items from the Healthcare Effectiveness Data and Information Set (HEDIS) Consumer Assessment of Healthcare Providers and Systems (CAHPS®) surveys, a preliminary measure of availability also using items from the HEDIS CAHPS®, and measures of duration of enrollment based on work done by researchers primarily using Medicaid and CHIP enrollment data. In addition, one of the works in progress focused on the type of data (e.g., race/ethnicity) and measures that could be obtained from the Medicaid Statistical Information System (MSIS) statistics.

At a minimum, nominators were asked to identify the measure numerator and denominator, measure specifications, and current use of the measure. Substantial effort was put into obtaining all of the information requested in the template for every measure under consideration. The nominators entered information into the nomination template. Each template was then supplemented with additional information where necessary by AHRQ staff and the SNAC Co-Chairs. Through this work, a standardized set of information was made available for almost all measures for consideration by the SNAC members during their second round of Delphi scoring (Appendix A-8). One-page summary sheets that abstracted information from the measure nomination templates were provided for each measure under consideration (see Appendix A-9).

By mid-September 2009, the SNAC had 121 measures to consider during a second modified Delphi process.

Delphi II scoring by the SNAC. Using a second modified Delphi scoring process prior to the September meeting but including the SNAC-identified criteria for importance (Appendix A-8), SNAC members selected 65 of the 121 measures as meeting criteria for validity, feasibility, and importance. As in Delphi I, SNAC members were instructed to use professional consensus

on the underlying scientific soundness of the measures in cases of insufficient published evidence.

SNAC September Meeting Deliberations

As at the first SNAC meeting, the SNAC first heard opening remarks from the Directors of AHRQ and CMSO and an overview of the meeting agenda and process.[8] Unlike the first meeting, there were no invited presentations (other than during public comment periods on Days 1 and 2). Due to the time constraints and the need to identify for NAC consideration a reasonable core set of measures near the SNAC's target number of 25, the initial plan was to only discuss and consider the 65 measures that passed the second modified Delphi scoring process as candidates for the core set. However, initial discussions at the September 17-18, 2009, SNAC meeting resulted in adding back five measures that did not strictly pass the second Delphi round (i.e., those with high median feasibility and importance scores [> 7] and median validity scores of 6 or 6.5 rather than the cutoff of 7) to the list of measures to be discussed and voted on during the meeting. Thus, 70 of the 121 measures scored in Delphi round two were discussed and considered for the core set.

Electronic voting process. Throughout the 1-and-a-half-day meeting in September, a method of electronic confidential voting was used extensively by SNAC members. This method was chosen because in small groups some members may dominate a discussion, leading to group decisions that do not reflect the true sense of the group membership.[6] Through private electronic voting, the SNAC process was most likely to obtain the candid individual preferences of members, accumulating to a consensus of the SNAC.

Discussion of overlapping measures. On day 1 of the meeting, SNAC members engaged in detailed discussions of measures felt to have substantial overlap. For example, multiple measures pertaining to premature birth passed the criteria for validity, feasibility, and importance, as did multiple dental measures. They also reviewed and prioritized measures based on several characteristics pertaining to legislative and feasibility criteria, including: data source (administrative, medical record, health IT, survey); site of care (primary care, specialty care, inpatient, emergency, mental health, substance abuse, dental); measure type (outcome, process, structural); care continuum (screening, prevention, diagnosis, treatment, care coordination); accountable entity (state program, health plan, provider); child ages to which the measure applied; and availability of data to report disparities.

Elimination of multiple overlapping measures, merging of some measures within specific categories, and voting. After discussions were completed, a series of votes was conducted that resulted in elimination of multiple measures and merging of some measures within a given category. For example, three separate well-child-care visit (WCV) measures that apply to different age groups were combined into one measure for voting purposes. Similarly, multiple measures of premature birth were eliminated, narrowing measures in this area to one measure of low birth weight. Measures in each category (e.g. prevention/health promotion, care of children with chronic disease) were rank-ordered within the category. Lowest scoring measures were eliminated from further consideration. This process resulted in 31 measures for final consideration on the second day of the meeting.

Getting to 25 measures to recommend to the NAC. On day 2 of the meeting, three rounds of voting were conducted in succession. SNAC members could vote for their top 20 measures out of the 31 that remained. In round one, SNAC members individually voted for their top 10

measures; in round two their next 5 measures; and in round three their final 5 measure choices. Measures voted for in the first round received 3 points per vote, measures voted for in the second round received 2 points per vote, and measures voted for in the third round received 1 point per vote. A priority score was then calculated for each measure representing the total points assigned to that measure by SNAC members after the three rounds of voting. The final rank order of the measures based on priority scores was examined by the SNAC to assess how the acceptance of various cut-points (i.e., 10, 15, 20, 25 total measures) would fulfill the goal of arriving at a grounded, parsimonious, balanced core set of measures. The SNAC voted to recommend the top 25 measures on the list (see Appendix A-10). (Appendix B lists the measures that were discussed during the September SNAC meeting but not included in the SNAC's initial, recommended core measure set, as well as the measures that did not pass the criteria for Delphi II scoring.)

The SNAC Co-Chairs delivered a written summary report to the NAC Chair.

Additional Consideration of SNAC-Recommended Measures

Several rounds of review prior to posting focused on the SNAC-recommended initial core set. The CHIPRA Federal Quality Workgroup held a conference call during which several questions about the measures were clarified. CMS held a listening session for Medicaid and CHIP officials and other key stakeholders in Medicaid and CHIP health care quality on September 29, 2009, during which comments were made. In addition, participants in the listening session (as well as others on the mailing list who were not able to participate) were invited to send comments to the public comment e-mail address by September 30, so that the comments would be available in time to develop a recommendation to the Secretary. These and

other public comments were used to prepare the Results section of this background paper (see below).

Following on these comments, AHRQ and CMS staff examined the SNAC-recommended set and agreed to the following modifications for purposes of public posting: (1) separate the well-child-care visit measures into three separate measures by age group; (2) eliminate from the set the National Committee for Quality Assurance (NCQA) annual dental visit measure; (3) eliminate the measure of suicide risk assessment for children with major depressive disorder; and (4) remove from the set the clinician-group level CAHPS® primary care survey. The annual dental visit measure was removed because two other dental measures were recommended using State/CMS Early Periodic Screening, Diagnosis, and Treatment (EPSDT) data.[9] Suicide risk assessment for children with major depressive disorder was eliminated because of likely feasibility issues; the measure as nominated is not yet in use for children. Similarly, field experience with the clinician-group level CAHPS® primary care survey is limited at this time.[10] Although having a measure of family experiences of care at the provider level was seen as important by the SNAC, the cost of an additional survey in tight economic times was an additional concern.

Results

Overall Summary

In total, 24 measures are being recommended for the initial core set of health care quality measures for children. These include 13 measures of the quality of prevention and health promotion services, 5 measures of the quality of management of acute conditions; 4 measures of the quality of management of chronic conditions; 1 family experiences of care measure, and 1 availability (access) measure (Table 1). These represent a set of measures that address care

across multiple settings (ambulatory [primary care, specialty care], emergency department (ED), and inpatient); multiple conditions (pregnancy, vaccine-preventable conditions, sexually transmitted infections, overweight, social and behavioral developmental delays, dental, appropriate antibiotic use for respiratory conditions, asthma, diabetes, and mental health); and multiple ages (in utero, neonatal, early childhood, school age, and adolescence). Taken together, the measure set is relevant to all 37.3 million children enrolled in Medicaid or CHIP who are potentially at risk for poor quality of care.[11] The lack of value represented by poor quality is a problem for the programs themselves and to society. While some measure topics address conditions with relatively low prevalence (e.g., children with diabetes, children with central lines[a] hospitalized in intensive care units), the costs of inadequate or unsafe treatment are high. The well-child-care visit, general screening, and family experiences of care measures are relevant to all 37.3 million children.

Fourteen of the measures are currently NCQA HEDIS measures reported by Medicaid managed care plans, two are CMS-EPSDT program measures (both dental); three are measures submitted by individual State Medicaid or CHIP programs; one is a measure used by State Medicaid programs under a grant program; one is a measure derived from national vital statistics using State birth certificate data; one as nominated is stewarded by the California Maternal Quality Collaborative; and one is a measure used by the National Health Safety Network at the Centers for Disease Control and Prevention (CDC).

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[a] A central line allows concentrated solutions to be infused with less risk of complications. It permits monitoring of special blood pressures including the central venous pressure, the pulmonary artery pressure, and the pulmonary capillary wedge pressures. The central line can be used for the estimation of cardiac output and vascular resistance. The near end of the catheter may also be connected to a chamber for injections given over periods of months. A central line saves having to have frequent small injections or "drips" placed in the arms. A central line may also allow a patient to have medicine or fluids at home instead of in the hospital. http://www.medterms.com/script/main/art.asp?articlekey=14394

In terms of levels of evidence for underlying scientific soundness, two measures are grade A, 13 are grade B, 2 are both B and D; 1 is grade C, 4 are grade D alone, and 2 could not be graded. Given the well-known paucity of rigorous research on the effectiveness of services commonly provided to children[12] and to pregnant women, the number of measures with a Grade of B is impressive.

Eight of the measures as nominated require administrative data only, 10 currently use a hybrid of administrative and chart (medical records) data, one uses a combination of Medicaid enrollment data and State birth certificate data, one uses survey data, and others use other combinations. Information on the sources of data for some measures was not provided.

General Themes

When considering the measures individually and as a group, it is critical to note a number of themes identified by the SNAC, Medicaid and CHIP officials in the listening session, and the public.

Importance of all measures considered. First, all measures considered, including the measures that were not included in the final SNAC and HHS recommendations, are important from some perspective. There were very few measures that were considered relatively unimportant by the SNAC on average (Appendix B). Second, decisions for inclusion were based primarily on considerations of validity and feasibility for use.

Size of the initial, recommended core set. In relation to the multiple health care needs of children and the CHIPRA legislation measurement domains, the initial core set of 24 measures seems relatively small. To many who are being asked to implement the measures, the number seems large. It is clear that implementation will not be automatic, and the number of measures in the recommended initial core set should be considered in the overall context of the CHIPRA

legislation and other legislative and Federal Executive Branch initiatives, as well as in the context of the economic crisis faced by most States.[13]

Clear needs for technical assistance and time for implementation. By law, measures in the core set are intended for voluntary use; States, health plans, and providers are not required to use them. CMS will assist States by identifying standard measure specifications and providing focused, tailored technical assistance on information systems and measurement. States will receive a matching Federal Medical Assistance Percentage (FMAP) for the "effective collection and reporting of measures." With the implementation of the American Recovery and Reinvestment Act of 2009 (ARRA) for health IT adoption, State concerns about the burden of using medical records for quality measurement should lessen over time. Eligible providers will receive ARRA incentive payments for "meaningful use" of measures and information technology. Additional incentives for use of a core set with standardized specifications will include the ability of States to benchmark their own performance against aggregated data. Some States are already using many of the measures identified for the initial core set. Inevitably, implementation of the core measure set will take place over time, using a carefully staged process..

Improvements to the measure set are needed to meet legislative requirements. Implementation of the set "as is" will not be sufficient to achieve the vision of a comparable, evidence-based, understandable set of measures that can identify racial and ethnic, socioeconomic, and health condition disparities in health care for children. In making its recommendations for the initial core measure set, the SNAC emphasized that the measures would need to be reconfigured to be able to reflect children's health care quality across all Medicaid and CHIP programs, providers, consumers, and intermediaries (e.g., health plans

contracting with State Medicaid programs). Modifying the measures for a more comprehensive set of programs and beneficiaries will take time and resources.

One example of the need for modification is the NCQA HEDIS measures, which comprise the bulk of the initial, recommended core measure set. NCQA HEDIS measures are currently used for reporting by Medicaid Managed Care plans, and may not be used for children enrolled in CHIP or children in States with limited or no Medicaid managed care. In 2008, 51% of Medicaid and CHIP child enrollees (17 million Medicaid enrollees and 5.3 million CHIP) were enrolled in managed care organizations.[11] Many States have no managed care presence.[b] In some States, children with standalone CHIP coverage are not enrolled in managed care, but children in CHIP Medicaid expansion programs are. The highest number of plans and States reporting to NCQA is 163, across 32 States.[14]

Second, other measures—specifically those using data from State birth certificates reported to the National Vital Statistics System (NVSS), those used by non-government entities (e.g., California Maternal Quality Collaborative), and those currently in use by selected States—vary across States in measurement methodology or do not appear to be in use by States as currently specified.

Paucity of reporting to identify disparities. Few of the proposed measures are currently used to report data that distinguish care quality by race, ethnicity, tribe, socioeconomic status, or special health care need status among children, all of which are required by the CHIPRA legislation and are critical in light of the demographics of the U.S. child population.[15, 16] Attention to improving the capacity of measures and datasets to assess disparities is needed.

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[b] Arkansas, Idaho, Louisiana, Maine, Mississippi, Montana, North Carolina, North Dakota, South Dakota, Vermont, West Virginia.

Duration of enrollment considerations. For all measures, a common duration of enrollment calculation is essential to make valid and reliable assessments of health care quality in programs and populations and comparisons across and within institutions, programs, and States.

Need to specify accountable entities. Additionally, the SNAC agreed that it is critical to identify the appropriate entities that should be held accountable for health care quality in the multi-layered approach to care delivery (e.g., providing the service, facilitating care delivery).[17]

Need to develop and enhance children's health care quality measures. The initial core set and its voluntary implementation provide starting points for most intents and purposes. The recommended list (and the compilations of measures from which it was drawn) represents a significant achievement of a number of persistent and talented communities: those intensely engaged in measuring and improving health quality; child health researchers; child health advocates; Federal programs that supported and disseminated children's health care quality measures; and many others. The measures available today were developed and implemented without significant support. Medicaid and CHIP programs have traditionally not been able to acquire the significant resources needed to measure and improve health care for any of their populations. Thus, in addition to the work needed on the initial core set, there is a need to develop measures in several areas. The SNAC noted in particular the need for additional measures of specialty care, inpatient care, substance abuse care, and mental health treatment, as well as measures that link mainstream clinical care with other services that children receive (i.e., coordination of care), health outcome measures, and measures of the medical home.

Fortunately, CHIPRA provided support for advancing and improving pediatric quality measures and called for priorities to be set to guide a new pediatric quality measures program.

States are also encouraged to experiment with and evaluate the core measure set using funds for the CMS demonstration projects.[18]

Recommended Measures

This section describes each of the recommended measures, organized by the measurement area specified by the CHIPRA legislation: prevention and health promotion, acute care, chronic care, family experiences of care, and availability of services. Although authors commissioned by AHRQ and CMS made progress in the areas of most integrated health care setting and duration of enrollment, it was not possible to identify any valid measures that were ready for immediate use for these topics. These are areas ripe for further development and testing.

Each description addresses the following, to the extent information is available: numerator and denominator of the measure (including requirements for continuous enrolment if applicable); levels at which the measure is specified and reported (e.g., health plan, provider, State); current reporting of the measure by number of entities (e.g., health plan, State); evidence level grade; SNAC voting results; information pertaining to the importance of including the measure in an initial core measure set (e.g., prevalence of the condition, size of the affected population, costs to Medicaid, current performance, and variations in performance), and challenges to implementation of the measure. In addition, NCQA has kindly provided information on specifications for HEDIS measures. These specifications are available at http://www.ncqa.org/tabid/1083/Default.aspx.

Prevention and Health Promotion

Services to promote healthy birth, prevent prematurity, and prevention/health promotion for pregnant adolescents enrolled in Medicaid and CHIP. In requiring measures suitable for assessing the quality of preventive and health promotion services, CHIPRA noted a

particular need for measures of the quality of services in the perinatal period that would promote healthy birth and prevent prematurity. Although more research on causal linkages is needed, prematurity is a growing problem in the United States. Maternal behaviors such as smoking affect gestational age and other aspects of infant development; smoking cessation counseling during prenatal care is recommended.[19] In addition, perinatal services can affect the health of pregnant women; thus, some measures below should be reported separately for pregnant adolescents.

1. Timeliness of prenatal care. This measure assesses the number of pregnant women who had a prenatal visit in the first trimester or within 42 days of enrollment in the organization. Only women who delivered live babies and who were continuously enrolled between 43 days prior to delivery through 56 days after delivery are counted in the denominator. Current reporting levels are for health plans. Data can be stratified by women's age groups.

The rationale behind the measure is that early prenatal care (in the first trimester of pregnancy) is that it helps prevent premature birth and other infant health problems. In addition, prenatal care is designed to improve the health of women during pregnancy.

The measure has evidence grades of B and D. The SNAC voting process resulted in a rank of 9 for this measure. The data sources for this measure are administrative and medical records. The measure is currently in use by 158 Medicaid managed care (MMC) health plans across 32 States.

The measure is potentially important. In 2007, Medicaid was the expected payer for 2,131,852 (or 42.14 percent of all) discharges related to the Major Diagnostic Category 14 (MDC 14), "pregnancy, childbirth, and the puerperium," with total charges of $24 billion, according to the Healthcare Cost and Utilization Project (HCUP).[20] About $1.3 billion of these Medicaid charges were accounted for by women ≤ age 17 (123,000 discharges). Performance

data reported by NCQA as valid indicate that an average 81.37 percent of adolescent women in reporting MMC health plans received timely prenatal care. Lower scoring plans reported an average receipt rate of 67 percent, and higher reporting plans reported an average rate of 92 percent, suggesting considerable variation across plans.

To enable all State Medicaid and CHIP programs to report on this quality measure across all populations and programs, several challenges will need to be met: (1) specifying a reasonable enrollment and coverage duration for the denominator, and (2) improving the capacity of administrative or other electronic health record (EHR)-extractable data to make collection more feasible. Improving the inter-operability of data across the different settings where pregnant women may seek care will also improve the validity and reliability of performance reports.

Other concerns include the underlying scientific soundness of the measure. An extremely well-cited and reputable report in the early 1980s estimated that $3 could be saved with every $1 spent on prenatal care.[21] However, since that time there have been studies that question the use of prenatal care overall as an evidence-based quality measure. One reason is that factors other than health care services can affect pregnant women's and infants' health outcomes, and many believe that factors beyond the control of the health care delivery system are more important than the timing, amount, and quality of health care delivered during pregnancy. From some perspectives, starting to provide health care during pregnancy is too late, and attention should be paid to preconception care. Rigorous evidence reviews have found that some services provided during prenatal care are effective and should be recommended, and others are not recommended based on the available evidence (per the U.S. Preventive Services Task Force, USPSTF).[22] Still other specific services routinely provided do not have a sufficient evidence base.[22] The current consensus is that an optimal set of prenatal care measures would focus on the content of prenatal

care (i.e., the extent to which evidence-based services are received). In addition, research is also needed on the effectiveness of other services for which evidence is currently insufficient and to determine the optimal timing and frequency of prenatal care for pregnant women.

2. Frequency of on-going prenatal care. This measure ascertains the number and percent of females in the denominator who had an unduplicated count of less than 21 percent, 21-40 percent, 41-60 percent, 61-80 percent, or more than 81 percent of expected visits, adjusted for the month of pregnancy at enrollment and gestational age. The denominator is the number of Medicaid-enrolled females who delivered a live birth on or between November 6th of the year prior to the measurement year and November 5th of the measurement year.

This is a process measure with evidence grades of B and D. The measure was ranked number 2 in SNAC voting.

The measure is currently well-specified for health plan and provider reporting and is currently validly reported to NCQA by 94 MMC health plans across 28 States, using the enrollment denominator of delivery of a live birth on/between November 6th of the year prior to the measurement year and November 5th of the measurement year. Current data sources for this measure are administrative and medical records.

The measure can be considered important to stimulating future Medicaid and CHIP efforts to improve the health status of infants and adolescents, based on health care utilization and quality performance data. In 2007, Medicaid was the expected payer for 2,131,852 (or 42.14 percent of all) discharges related to the major diagnostic category of "pregnancy, childbirth, and the puerperium," with total charges of $24 billion.[20] About $1.3 billion of Medicaid charges were accounted for by women ages ≤ 17, who had 123,000 discharges in this category. NCQA reports that in 2007, 60 percent of pregnant women of all ages in the reporting health plans got 81

percent or more of the recommended number of prenatal visits. As with the measure of timeliness of prenatal care, in order to enable all State Medicaid and CHIP programs to report on this quality measure for all covered populations, several challenges will need to be met: (1) specifying a reasonable enrollment and coverage duration for the denominator, and (2) improving the capacity of administrative or other EHR-extractable data to make collection more feasible. Improving the inter-operability of data across the different settings where pregnant women may seek care will also improve the validity and reliability of performance reports.

Other major concerns include the underlying scientific soundness of the measure. These concerns are similar to the issues discussed under Timeliness of Prenatal Care. The current consensus is that an optimal set of prenatal care measures would focus on the content of prenatal care (i.e., the extent to which evidence-based services are received). In addition, research is also needed on the effectiveness of other services for which evidence is currently insufficient and to determine the optimal timing and frequency of prenatal care for pregnant women.

3. Percent of live births weighing less than 2,500 grams. This is a measure derived from State-reported birth certificate data compiled in the National Vital Statistics System (NVSS) of the United States. The measure assesses the number of resident live births less than 2,500 grams as a percent of the number of resident live births in the State reporting period. Data are also available on very low birth weight (under 1,500 grams) babies.

This is an outcome measure with an evidence level of grade B. SNAC voting resulted in a ranking of 10 for this measure.

Low birth weight (often used as a proxy for premature birth) is an important condition that is highly prevalent, with disparities across States and across racial, ethnic, and income groups. Low birth weight is an important predictor of health outcomes for infants, and it is costly to the health

care system and society. In 2006, 8 percent of babies weighed less than 2,500 grams at birth (345,369 babies). The rate was higher among babies born to non-Hispanic black women (14 percent). The 2010 Healthy People target is 5% or less.

National data are not available on the number of these births to women enrolled in Medicaid or CHIP, although some States link NVSS data to Medicaid enrollment data. In 2007, Medicaid was the expected payer for 49 percent of hospital discharges (11,000 discharges) for Clinical Classification Software (CCS) principal diagnosis category "short gestation, low birth weight, and fetal growth retardation," at a total cost of $1.5 billion.

An advantage of using State and national vital statistics data for this measure is that data on the race and ethnicity of the mother are available, which would help permit an assessment of disparities as directed by the CHIPRA legislation. Socioeconomic status could be derived from the ZIP code of the mother's residence, although this method has its limitations. However, State Medicaid and CHIP officials report that they will face challenges in reporting this measure because it is not readily obtainable from Medicaid and CHIP administrative data, and States currently linking NVSS to Medicaid data use different methods. A standardized approach would need to be agreed upon to ensure that data are comparable across State Medicaid and CHIP programs. A standardized approach would also be needed if a Federal agency were to be made responsible for reporting on the measure for Medicaid and CHIP enrollees.

As discussed for the measures of prenatal care above, one of the challenges of this and other outcome measures is uncertainty about the extent to which the health care delivery system, and prenatal care services specifically, should be held accountable for poor results.

4. Cesarean rate for low-risk first birth women. This measure assesses the percent of women who had a cesarean section (C-section) among women with first live singleton births (also known as nulliparous term singleton vertex [NTSV] births) at 37 weeks of gestation or later.

This is a process measure with grade B evidence. SNAC voting resulted in a ranking of 16 for this measure. The measure nominated is the one in use by the California Maternal Quality Collaborative (CMQC).

Concern has been expressed recently about rising rates of cesarean deliveries with no indicated risk. C-sections have been associated with harm to the newborn as well as to the mother. The overall rate of C-sections rose steadily from 20 percent of all births in 1996 to 30.3 percent in 2005.[23] Those who have used the CMQC measure find high rates of NTSV C-sections (10-22 percent) and wide variation among hospitals (10.5 percent-30.2 percent in a large health care delivery network, and 10.3 percent -34.2 percent across 40 Arizona hospitals).[24, 25] Approximately one-third of all hospital discharges for all C-sections have Medicaid as an expected payer[24, 25]; the cost to Medicaid for all C-sections was $9.4 billion for 582,167 C-sections in 2007. Of these, 23,834 discharges were among women less than 17 years old, at an aggregate cost of $400 million.

Not every State has a Maternal Quality Collaborative to collect the data. However, if every State collected the data as recommended on the U.S. Standard Certificate of Live Birth, and standards were established for linking to Medicaid and CHIP enrollment data, State programs could report the data at the State level. National Provider Information (NPI) on birth attendant and insurance data is also recommended to be collected on the standard birth certificate. Specifications are also available for using hospital discharge data.

Immunizations. Immunizations are a well-known approach to protecting children and the general population from infectious disease. The initial core set includes measures of immunization status for children at age 2 and adolescents at age 13.

5. Childhood Immunization Status. This NCQA HEDIS measure assesses the extent to which children who have reached their 2nd birthday (and have been continuously enrolled for 12 months prior to the birthday) received four diphtheria, tetanus, and acellular pertussis (DTaP) vaccinations; three polio (IPV); one measles, mumps and rubella (MMR); two H influenza type B (Hib); three Hepatitis B (HepB); one chicken pox (VZV); and four pneumococcal conjugate vaccines. (Variations by type of vaccine are also reported.)

This is a process measure with an evidence grade of B. SNAC voting resulted in a ranking of 1 for this measure. Current data sources for reporting to NCQA are administrative and medical records. The measure is currently reported to NCQA by 163 MMC health plans in 32 States.

Providing immunizations to children is an important public health strategy. All 2-year-olds enrolled in Medicaid and CHIP should have up-to-date immunizations. The national mean among health plans submitting valid reports to NCQA in 2007 was 65.4 percent (for Composite 3). Plans in the Northeast region of the United States have reported higher rates than plans in the South Central region.[26] Consistent with the NCQA 2007 data, a 2002 survey by the American Academy of Pediatrics (AAP) found that immunization coverage was 60 percent for preschool children in Medicaid/CHIP, 82 percent for those with other insurance, and 66 percent for uninsured children.[27]

Challenges to having valid immunization rates across Medicaid and CHIP programs and populations include the fact that immunizations are provided under several programs that provide services outside the primary health care setting, including the Vaccines for Children program.[28]

Survey data collected by the National Immunization Program at the CDC, using a larger age range (19-36 months) finds higher overall rates of children up to date on their immunizations (80 percent overall), although this is a slightly different set of immunizations than used in the NCQA Composite 3 measure.[29] In the National Immunization Survey (NIS), lower rates occur among children with family incomes that are negative/poor, near poor/low, and middle compared to children with family incomes that are high, using the standard Federal Poverty Level rate, as well as between black and white children. Survey data linking insurance source to young children's up-to-date status on immunizations have not yet been reported publicly.

6. Immunizations for Adolescents. In 2010, this revised NCQA HEDIS measure will be used to assess the extent to which adolescents who are 13 years of age during the measurement year (and have been continuously enrolled for 12 months prior to the measurement year) had one dose of meningococcal vaccine (MCV4) and one tetanus, diphtheria, and acellular pertussis vaccine (Tdap) or one tetanus, diphtheria toxoids vaccine (Td).

The evidence level for this measure is grade B. The SNAC voting process ranked the measure at 7. The current reporting specifications are for health plans and providers. In 2007, 22 of 36 State programs with managed care organizations/health insuring organizations (MCOs/HIOs) said they measured adolescent immunizations.[c] For the NCQA measure, the data sources are administrative and medical records. The new specifications would permit access through electronic medical records.

Because this is a revised measure for implementation in 2010, there are no performance data from NCQA. However, CDC's National Immunization Survey-TEEN is now collecting

[c] The data are not from NCQA, so it is unclear if the NCQA measure at the time was used by these States. The data are from a CMS survey.

information on health insurance source and reports that 40.6 percent of publicly insured teens had both the appropriate doses of Tdap vaccine since 10 years of age and the appropriate dosage of meningococcal vaccine since 2 years of age.[30] [d] The rate for teens covered by private health insurance was approximately the same (41.0 percent). The most substantial difference was among teens not covered by health insurance; 23.1 percent of these teens were up to date on both vaccines.

The Advisory Committee on Immunization Practices (ACIP) recommends one dose of Tdap (or Td) immunizations and one dose of MCV4 for 11-12 year-olds. Preventing pertussis in adolescents would reduce disease among that population and perhaps others by eliminating a reservoir of the disease. In 2007, 10,454 cases of pertussis were reported across all age groups, 2,650 of which were among 5-14 year-olds and 1,694 of which were among 15-24 year-olds.[31] Pertussis symptoms can last for months and lead to school absences, but the condition is not life-threatening, and long-term effects are rare. Meningococcal disease, on the other hand, can be deadly or debilitating; 312 cases among 5-24 year-olds were reported in 2007.[31] Current performance data for this measure are not available from NCQA. Jain and Hennessey reported a 27.2 percent Hib immunization rate for publicly covered 13-14 year-olds in 2006.[32]

Screening. Screening to identify health conditions for early intervention with effective treatments is a primary purpose of preventive (well-care) visits. Three screening services were identified as important for children and adolescents: weight assessment documentation, use of standardized screening tools for potential delays in social and emotional development among young children, and Chlamydia screening for females ages 16-20.

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[d] The Tdap measure includes Tdap, Td, and Td/Tdap containing vaccine, unknown subtype. Meningococcal vaccine includes Menactra, Menomune, and meningococcal-unknown vaccine type.

7. Weight assessment for children/adolescents. This new NCQA measure assesses the number of children ages 2-18 who had at least one outpatient visit with a primary care provider or an obstetrician-gynecologist (OB/GYN) during the measurement year (and was continuously enrolled in the measurement year) whose medical record documents that a Body Mass Index (BMI) assessment was performed during a visit.

This is a process measure with an evidence grade of D. SNAC voting resulted in a rank of 4 for this measure, although members noted that a better measure would actually provide the BMI results. In 2005, the USPSTF graded screening by BMI as "I" for insufficient evidence because at the time there were almost no studies demonstrating that followup interventions would be effective in reducing weight for overweight children. [e, 33] NCQA specifications and current reporting levels are for health plans. Specifications are available at the health care provider level. NCQA data sources are administrative and medical records. Because 2009 was the first year of reporting on this measure, performance data and information on the number of plans and States with valid reporting rates are not publicly available.

Having a documented BMI is considered by many to be an important first step in preventing overweight and obesity in children. All 2- to 18-year-old children enrolled in Medicaid and CHIP could be eligible for this measure. Publicly covered children are more likely to be overweight (using the 85th percentile).[34] According to 2006 AHRQ Medical Expenditure Panel Survey (MEPS) data, 36.9 percent of publicly insured children ages 6-11 are overweight, compared to 30.5 percent of uninsured and 20 percent of privately insured children. Among 12-17 year-olds, 21.5 percent of Medicaid/CHIP children are overweight, compared to 12.4 percent of uninsured children and 11.8 percent of privately insured children.

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[e] The USPSTF is currently doing an update of their evidence review.

Because the NCQA measure requires medical chart review, State Medicaid and CHIP programs will face challenges in reporting on these data. A performance measurement code for BMI documentation is available for adults but not for children. As noted above, almost half of Medicaid- and CHIP-enrolled children are not in managed care plans, and an alternative method will be needed for those States and for other publicly insured children in primary care case management (PCCM) and fee-for-service (FFS) programs. In addition, SNAC members professed a preference for measuring quality using outcomes data (e.g., the actual BMIs) tracked over time.

8. Screening using standardized screening tools for potential delays in social and emotional development. This measure assesses the extent to which children at various young ages from 0-36 months were screened for social and emotional development with a standardized, documented tool or set of tools.

This is a process measure with an evidence of grade B. SNAC voting resulted in a rank of 11 for this measure. Selected State Medicaid and CHIP programs with Assuring Better Child Health and Development (ABCD) initiative grants are using this measure,[35] and staff from additional programs are being trained on the measure as part of a training academy.[36] The data sources are administrative, chart review, and other data (e.g., cards filled out by providers). Data are collected in racial/ethnic populations other than non-Hispanic white, but those data were not included in the reports received by the SNAC.

Evidence is scarce that screening for social or emotional problems in young children leads to better health outcomes, primarily due to the paucity of rigorously done treatment intervention studies for these conditions**.** The conditions may emerge gradually over months or years, and endpoints for successful outcomes may be difficult to define. However, well-done surveys have

shown that parents are eager to discuss their child's social and emotional development with doctors and other health care providers. Studies also demonstrate that the use of standardized tools for screening is more likely to result in accurate identification of a child with such problems.

An estimated 9.5 million Medicaid- and CHIP-enrolled preschool children are eligible for screening (Table 1). In the United States, 17 percent of children (12 million children) were found to have a behavioral disability such as autism, mental retardation, or attention-deficit/hyperactivity disorder. Medicaid serves more than 25 percent of all children in the United Sates (and more than half of all poor and low-income children). Children from poor families are at greater risk than those from non-poor families for poorer outcomes, including those related to mental development.[37] The 2007 National Survey of Children's Health (NSCH) found that publicly insured children were 1.9 times as likely as privately insured children (18.3 percent versus 9.7 percent, respectively) to have one or more of six specified learning, developmental, or behavioral conditions.[38]

Currently, information on performance is only available from several State programs engaged in the ABCD program. In the program, States select practices to test strategies for the delivery of developmental services to young children at risk for or with social or emotional developmental delays. In each State, the average screening rate using an objective screening tool improved considerably after program implementation.[35] The greatest increases were in California (two managed care plans) and Minnesota (from 0 percent pre-implementation to 93-94 percent post-implementation for both). Referral rates improved among most States; however, the States experienced difficulty in assuring receipt of followup services.

An advantage of this measure is that claims can be entered to document providers' use of objective screening tools. Some States also provided a cross-walk to match diagnoses to the DSM-IV (Diagnostic and Statistical Manual of Mental Disorders) codes required for claims payment. However, participating BCD States have used differing codes and denominator populations. Standardization across States will be needed if information is to be valid and comparable across States and the Medicaid and CHIP populations they serve.

9. Chlamydia screening for women. This measure assesses the extent to which at least one Chlamydia test is given during the measurement year to sexually active[f] women ages 16-20 years of age as of December 31 of the measurement year and with no more than one gap in enrollment of up to 45 days during the measurement year.[39]

This is a process measure with an evidence grade of B. SNAC voting resulted in a ranking of 14 for this measure. Measure specifications are available at health plan and provider levels, and reports are made by health plans participating in Medicaid managed care. In 2008, 129 health plans across 30 States reported valid data to NCQA. The data source is administrative records, an advantage from a State and health plan perspective.

Chlamydia screening is important for adolescents. Chlamydia is a sexually transmitted infection that causes pelvic inflammatory disease, a condition that can result in sterility. According to the CDC's 2007 Youth Risk Behavior Surveillance System survey, 47.8 percent of students (9th-12th grade) have ever had sexual intercourse.[40] Further, 7.1 percent did so before age 13; 14.9 percent did so with four or more individuals; and 35.0 percent did so with at least

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[f] Two methods identify sexually active women: pharmacy data and claim/encounter data. The organization must use *both* methods to identify the eligible population; however, a member only needs to be identified in one method to be eligible for the measure.
Pharmacy data. Members who were dispensed prescription contraceptives during the measurement year (Table CHL-A).

one person in the last 3 months. Of the 35.0 percent currently sexually active students, 61.5 percent said they had used a condom during their last sexual intercourse. In 2007, 13,848 cases of Chlamydia were reported among 5-14 year-olds and 779,280 cases among 15-24 year-olds.[31] (Data specific to Medicaid and CHIP enrollees are not available.)

In 2007, the national mean performance rate across Medicaid managed care health plans reporting to NCQA with valid data was 48.56 percent. The average rate for plans at the 10th percentile was 31.62 percent, and at the 90th percentile the average rate was 65.26 percent. Medicaid health plan performance was, however, better than performance among commercial health plans (34 percent).

Well-care visits (WCVs). Current American Academy of Pediatrics (AAP) guidelines suggest that all children receive a WCV at a specific periodicity depending on age because the visits are the gateway to immunizations and early identification of problems, and they provide opportunities to discuss developmental issues with parents and deliver evidence-based and other recommended specific preventive services. The three well-child visit measures currently specified by NCQA are recommended.

10-12. Well-child Visits (WCV)—three NCQA measures: 1) WCVs in the first 15 months of life; 2) WCVs in the 3rd, 4th, 5th, and 6th years of life; 3) Adolescent WCVs. These measures assess, for each age group, the number of children who received a well-child or preventive care visit from a primary care practitioner (including, for adolescents, an obstetrician-gynecologist) during the measurement year.

For the youngest group, children who turn 15 months during the measurement year and are continuously enrolled from 31 days after birth to 15 months of age are in the measure denominator. The number of visits is counted (0, 1, 2, 3, 4, 5, 6 or more visits) for this age group.

For 3-, 4-, 5- and 6-year-olds, the criterion is at least one well-child visit with a primary care practitioner during the measurement year. Children must be ages 3, 4, 5, or 6 at the end of the measurement year and be continuously enrolled for the measurement year. For adolescents, those who are 12-21 years of age must have at least one comprehensive well-care visit during the measurement year to meet the criterion. Adolescents must also be enrolled continuously for the measurement year.

These are process measures with an evidence grade of B. SNAC scoring resulted in a rank of 5 for this measure. Measure specifications are available at the health plan and provider levels and are reported at the health plan level. The measures are currently reported to NCQA by about 160 MMC health plans across 32 States. (The level of reporting does not vary by age group.) The data sources are administrative and medical records.

In 2007, the national mean performance across health plans for WCV in the first 15 months of life was 52.9 percent for six or more visits, and the 10th and 90th percentiles were 28.9 percent and 73.7 percent, respectively. Only 5.68 percent of these young children had no visits, according to data reported by NCQA. For annual WCVs for 3-6 year olds, the national mean was 65.11 percent, and the 10th & 90th percentiles were 50.9 percent and 78.9 percent, respectively. For adolescent WCVs, the national mean was 41.88 percent, and the 10th and 90th percentiles were 26.2 percent and 56.7 percent, respectively.

While this measure was ranked high by the SNAC, there is increasing interest in measuring the content of well child care visits rather than the mere fact of a visit.[41] Measures of specific content are being field-tested by NCQA. The future challenge for State Medicaid and CHIP programs is that the more specific a measure is, the more difficult it may be to obtain from claims data. The relatively low number of States reporting may reflect the limited number of

States with wide use of Medicaid managed care plans. In order for the current measure to be applicable across all Medicaid and CHIP States and populations, new specifications will need to be identified and tested. The same will be true of the content-specific measures being tested by NCQA, should they show promise during field testing.

Dental. Dental services are a required service for most Medicaid-eligible individuals under the age of 21, as a component of the EPSDT benefit,[42] and with the advent of CHIPRA, dental services are a required benefit for CHIP enrollees.

13.) Total eligibles receiving preventive dental services (EPSDT measure Line 12B). This is an EPSDT measure that assesses the percent of unduplicated children who received a dental preventive service (defined by Healthcare Common Procedure Coding [HCPC] codes D1000-D1999) as a function of the number of children eligible for EPSDT services as shown on line 1 of the CMS-416 form. "Unduplicated" means that each child is counted only once for purposes of this line even if multiple services were received.

This is a process measure for which there was not enough evidence to specify an evidence level grade. The U.S. Preventive Services Task Force concluded that the evidence is insufficient to recommend for or against routine risk assessment of preschool children by primary care clinicians for the prevention of dental disease, but they did recommend that primary care clinicians prescribe oral fluoride supplementation at currently recommended doses to preschool children older than 6 months of age whose primary water source is deficient in fluoride.[43] The recommendation about routine risk assessment did not apply specifically to dental providers. SNAC voting resulted in a ranking of 6 for this measure. As one of the EPSDT measures, this measure is reported by CMS in national and State-level reports, based on State self-report data.[44]

Preventive visits are recommended to provide dental hygiene, fluoride applications, and to identify dental caries and other oral health problems. In 2006, more than two-thirds of low-income children in the United States (69 percent) received dental coverage through Medicaid and CHIP during at least part of the year.[45] That number will rise with the CHIPRA requirement. However, according to the national EPSDT report, only 32 percent of eligibles in 2008 (9,920,468 children) received preventive dental services under EPSDT.

This measure, in combination with the EPSDT measure on dental treatment services, was preferred to the NCQA HEDIS measure of annual dental visits because the HEDIS measure is reported by NCQA only for children in managed care, and because the NCQA HEDIS measure assesses the total number of visits annually, rather than the total number of children served, and the nature of their visits (preventive or treatment). Using the EPSDT report would prevent States from having to collect an additional component of dental care from a different source (CMS-416 also reports the number of children receiving any dental treatment, a summation of the preventive and treatment visit data). Medicaid and CHIP officials also raised concerns about variation in EPSDT reporting across States, which could affect the validity and reliability of cross-State comparisons.

Management of Acute Conditions

Upper respiratory conditions . Upper respiratory infections (URIs) are among the most common reasons for children's acute care encounters with health care providers. Health care quality is an issue for URIs because URIs present opportunities for the overuse of antibiotics. Most URIs are time-limited and, if viral, cannot be cured with antibiotics.

14. Pharyngitis- appropriate testing. This NCQA measure assesses whether a strep test was administered in the 7-day period from 3 days prior through 3 days after the first eligible episode

date. An eligible episode is an outpatient visit with a diagnosis of pharyngitis at which an antibiotic was dispensed. The measure counts children ages 2-18 who were continuously enrolled 30 days prior to the episode date through 3 days after the episode date.

The purpose of the measure is to reduce the unnecessary use of antibiotics by ensuring that antibiotics were not given without a diagnosis of strep. Without the presence of a bacterial infection, antibiotics are ineffective in treating pharyngitis.

This is a process measure with an evidence grade of A. SNAC voting resulted in a rank of 18 for this measure. The measure is currently specified at the health plan and provider levels, and it is currently reported at the health plan level. Administrative data are used for reporting. The data source is administrative records. The measure is currently reported to NCQA by 108 MMC health plans in 28 States.

Overuse of antibiotics continues to be a problem, and opportunities for inappropriate use abound. Acute pharyngitis was the leading diagnosis for 6.4 million visits to physician offices and hospital outpatient departments for all children under age 15 in 2006 and 6.2 million visits in 2001.[46] Improvement is still needed in this measure. In 2007, the national mean performance among plans reporting to NCQA was 58.65 percent, with 10th and 90th percentiles of 31.75 percent and 77.31 percent, respectively.

15. Otitis Media with Effusion (OME) - avoidance of inappropriate use of systemic antimicrobials. This AMA PCPI measure assesses the extent to which children ages 2-12 years presenting with otitis media with effusion (fluid in the middle ear) were not prescribed systemic antimicrobials. The rationale for the measure is the same as that for the measure assessing antibiotic use for pharyngitis.

This is a process measure with an evidence grade of A. SNAC voting resulted in a ranking of 18 for this measure (it tied with the pharyngitis measure). According to the nominator, the measure can be collected using computerized prescription order entry technology. The current data source is administrative records using Current Procedural Terminology (CPT) Category II codes.

As with pharyngitis, opportunities for inappropriate antibiotic use are frequent. About 90 percent of children have OME at some time before school age, most often between the ages of 6 months and 4 years. In the first year of life, more than 50 percent of children will experience OME, increasing to more than 60 percent by age 2 years. Many episodes resolve spontaneously within 3 months, but about 30 percent to 40 percent of children have recurrent OME, and 5 percent to 10 percent of episodes last 1 year or longer.

Performance data for this measure specified by the American Medical Association Physician Consortium for Performance Improvement (AMA PCPI) were not reported because the measure as nominated currently is not yet in use. Availability of data from administrative data sources increases its feasibility for use by Medicaid and CHIP programs.

Dental treatment. As noted above, dental services are a required EPSDT service for most Medicaid enrollees under age 21 and are now a requirement under CHIPRA. EPSDT captures access to dental treatment, as well as preventive services, on CMS Form 416 Line 12C.

16. Total Early Periodic Screening, Diagnosis, and Treatment (EPSDT) eligibles who received dental treatment services (EPSDT CMS Form 416 Line 12C). This is an EPSDT measure that assesses the percent of unduplicated children who received a dental treatment service (defined by CMS' HCPC codes D2000-D9999) as a function of the number of children eligible for EPSDT services as shown on line 1 of the CMS-416 form. "Unduplicated" means

that each child is counted only once for purposes of this line even if multiple services were received.

The measure has an evidence grade of D. States report data to CMS using form CMS-416, based on specifications provided by CMS.[47]

The need for performance improvement on this measure is difficult to assess, given the denominator used, which does not reflect the number of children in need of dental treatment services. In 2008, 18 percent of eligible children (5,654,499) received dental treatment services.[44] Roughly one-third of low-income children ages 6-19 have untreated tooth decay, compared with 15 percent of children at or above twice the poverty level.[48] Eighty percent of tooth decay is found in 25 percent of children ages 5 to 17, mostly from low-income and other vulnerable groups.

Medicaid and CHIP officials raised concerns about variation in EPSDT reporting across States, which could affect the validity and reliability of cross-State comparisons.

Emergency Department Use. Emergency departments are a critical feature of the U.S. health care delivery system. Sometimes, however, their availability relative to other settings of care means that they may be used when traditional ambulatory settings would be more appropriate and less costly.

17. Emergency Department (ED) Utilization - average number of emergency room visits per member per reporting period. This measure, in use by the State of Maine's MaineCare program, assesses the number of visits per member per year as a function of all child and adolescent members enrolled and eligible during the measurement year.

The intent of using this measure is to reduce unnecessary ED visits.

This is a proxy outcome measure with an evidence grade of B. SNAC voting resulted in a ranking of this measure as 2. The data source is administrative records.

The measure is potentially important given the proportion of ED visits paid for by Medicaid: 61.65 percent of all ED visits of children < 1 and 41.87 percent of all ED visits of children 1-17 yrs in 2006.[49] [g]

Some Medicaid and CHIP officials expressed concerns about this measure, given the multitude of reasons for which children come in contact with the ED. As with other ambulatory care-sensitive condition measures, data from this measure are probably best used to raise potential red flags about the quality and accessibility of ambulatory care, with in-depth studies being conducted when plans or providers vary from the average rate.

Inpatient Patient Safety. In 2007, children ages 0-17 accounted for 6.3 million inpatient community hospital discharges, half of which had Medicaid as an expected payer, for total aggregate charges to Medicaid of $42 billion. Health care-associated infections are a major public health concern, for which HHS has a multifaceted, cross-entity action plan.[50] Routine surveillance is a major component of the plan.

18. Pediatric catheter-associated blood stream infection rates (intensive care and high risk nursery patients). This measure assesses the number of central line-associated blood stream infections (CLABSI) identified during periods selected for surveillance as a function of the number of central line catheter days selected for surveillance in pediatric and neonatal intensive care units. Children at risk are patients in pediatric intensive care units (PICUs), neonatal intensive care units (NICUs), and other intensive care units (ICUs).

[g] Data on ED visits are limited to those EDs based in hospitals.

This is an outcome measure with an evidence grade of B. SNAC voting resulted in a ranking of 17 for this measure. The data source for the measure is medical records; data are collected by hospital infection control staff.

Health care-associated infections are regarded as "never events," that is, adverse events that should never occur during patient care. Data on the number of children at risk are difficult to come by because at the current time, PICU and NICU placements are not recorded in hospital discharge data. The Healthcare Cost and Utilization Project's (HCUP) Kids Inpatient Database (KID) procedures data suggest that 108,000 hospitalized children with central lines may have been at risk for CLABSI in 2006. However, experts in hospital discharge data note that other procedures for the most severely ill children (e.g., children undergoing chemotherapy, brain surgery) may dominate the available procedure code fields, meaning that the HCUP number is certainly an underestimate. A SNAC member with expertise in this area estimated that there are between 400,000 and 600,000 PICU admissions in a year. National Healthcare Safety Network (NHSN) data for 2007 report a pooled mean of CLABSI rates and central line utilization ratios of 2.9 in pediatric medical/surgical units and 1.0 in pediatric medical ICUs.[51] In level III NICUs, the rate is a gradient by birth weight category, ranging from a pooled mean of 3.7 for infants ≤ 750 g to 2.0 for infants ≥ 2500 g.

Medicaid and CHIP officials on the SNAC reported that many States are working to try to include this measure in their quality monitoring, but that the data have been difficult to obtain. Current national reporting (i.e., NHSN reports) does not include reporting of patients by source of insurance. However, that information is typically available in hospital discharge records and could be reported. According to one analysis, the information has the potential downside of reflecting "expected" rather than actual source of payment,[52] so some modifications might be

needed. Nineteen States require reporting of hospital-associated infections performance across all populations.[53]

Management of Chronic Conditions

Almost 20 percent of children ages 0-17 have a special health care need, defined as a chronic condition.[38, 54] Among the leading chronic conditions are asthma, attention-deficit/hyperactivity disorder (ADHD), and mental health conditions. Long considered a disease of middle age and older people, diabetes is also emerging as an important chronic condition, in large part due to the epidemic of overweight and obesity among children. Asthma has a substantially higher prevalence among black children and somewhat higher among Hispanics. Given the racial and ethnic disparities in overweight and obesity, diabetes is also likely to be more prevalent among these groups.

Asthma. Apart from dental caries, asthma is the most prevalent chronic physical condition among children. As of 2007, 12.9 percent of children covered by Medicaid reported they currently had asthma (N=2,699,000, equal to one-third of all U.S. children with asthma in that year).[55] Hospitalization rates for black children with asthma are two to three times as high as they are for non-Hispanic white children.[56, 57]

19. Annual number of asthma patients (≥ 1 year old) with ≥ 1 asthma-related emergency room (ER) visit. This State of Alabama Medicaid program measure is similar to the overall measure of ED utilization (measure 17 above), except that the patient population is children with asthma, and the denominator is the number of patients. The denominator is all children ≥ 1 year of age diagnosed with asthma or treatment with at least two short-acting beta adrenergic agents during the measurement year.

This is an outcome measure with an evidence of grade C. SNAC voting resulted in a rank of 3 for this measure. The data source is administrative records.

ED visits are important to measure because they are expensive and provide a gateway to hospitalization. A relatively large body of literature suggests a relationship between the quality and accessibility of ambulatory care and use of the emergency department, although definitive causal evidence linking specific ambulatory care practices and ED visits is lacking. Asthma is the most prevalent chronic physical condition among children. As of 2007, 12.9 percent of children covered by Medicaid reported they currently had asthma (N=2,699,000, equal to one-third of all U.S. children with asthma in that year).

The measure was nominated by the State of Alabama Medicaid Medical Director. Its use by other State programs is not known. However, it seems feasible to use with administrative data, and the State of Alabama specifications can provide a model for implementation.

ADHD Care. About 4.5 million children 5-17 years of age had ever been diagnosed with ADHD as of 2006. Children with Medicaid were more likely than uninsured children or privately insured children to have a diagnosis. The 2007 NSCH estimates that 4.2 percent of children nationally take medication for ADHD.[38] The rate is higher (6.5 percent) among publicly insured children than among children with private insurance and uninsured children (3.6 percent and 1.5 percent, respectively). Sixty-three percent of parents of publicly insured children ages 2-17 report that their child's ADHD is moderate or severe, which is 30 percent higher than among parents of privately insured or uninsured children.[38]

20. Followup care for children prescribed attention-deficit/hyperactivity disorder (ADHD) medication (continuation and maintenance phase). This measure assesses the extent to which children ages 6-12 diagnosed with ADHD as of the index prescription start date (IPSD) had, in

addition to the followup visit in the initiation phase, at least two followup visits with a practitioner within 270 days (9 months) of the end of the initiation phase. To be eligible, children must have remained on the medication for 210 days and be continuously enrolled for 120 days prior to IPSD through 30 days after the IPSD.

This is a process measure with an evidence grade of D. SNAC voting resulted in a ranking of 12 for this measure. Measure specifications are available for reporting by health plans and providers. The measure is currently reported to NCQA by 73 MMC health plans across 24 States. The data source is administrative records.

Followup care for children prescribed ADHD medications is critical, and performance improvements are needed, at least among health plans reporting data to NCQA. In 2007, the national mean among reporting plans with valid data was 38.83 percent, with the 10th percentile plans at 13.21 percent and the 90th percentile plans at 58.33 percent.[14]

Concerns about this measure come from several perspectives. Health care providers express concerns that only followup visits in person count, rather than by followup by phone. Reporting levels and rates may vary across plans and States, depending on whether children's ADHD care is covered in a carve-out plan. From a health outcomes perspective, the measure lacks any information on the nature of the followup visit and whether appropriate adjustments in care were made, if needed. Balancing all of these perspectives in a single measure would be difficult, although the prevalence of ADHD makes the topic a good candidate for measure enhancement or development.

Mental and Behavioral Health. Information about the prevalence of mental and behavioral health problems is difficult to come by.[58] Parents of children ages 2-17 reported to the NSCH that 3.8 percent of their children were depressed, 4.5 percent were anxious, and 6.9 percent had

behavior or conduct problems.[38] For older children, self-reports using standardized assessment tools may be more accurate. Relatively old research shows that one in five children and adolescents aged 9 to 17 years experience symptoms of mental health problems that cause some level of impairment in a given year, and that only 20 percent get treatment.[59]

21. Followup after hospitalization for mental illness (NCQA). This measure assesses whether individuals aged 6 years and older who have had a mental hospitalization and were discharged from the hospitalization had an outpatient visit, intensive outpatient encounter, or partial hospitalization with a mental health practitioner within 7 or 30 days after discharge (two rates are reported). To be eligible for this measure, the member must be continuously enrolled from the day of discharge through 30 days after.

This is a process measure with an evidence grade of B. SNAC voting resulted in a ranking of 14 for this measure. Current measure specifications are available at the health plan and provider levels, and current reporting is at the health plan level. Administrative records provide the data. The measure is reported to NCQA by 55 health plans across 17 States. Participation in reporting may be affected by the number of States using carve-out plans to provide mental health services.

Child and adolescent hospitalizations for mental health conditions typically indicate high levels of severity. In 2006, Medicaid paid for 69,200 community hospital discharges for mental health and substance abuse conditions as a primary diagnosis among children 0-17.[60] Another 238,383 discharges were for mental health and substance abuse conditions as a secondary diagnosis. In 1997, 37.6 percent of all child inpatient psychiatric hospitalizations were paid for by Medicaid, equal to 107,602 children.[61] The most dominant conditions for which children with Medicaid as expected payer were hospitalized in community hospitals in 2006 were mood disorders (38,000 discharges) and ADHD/disruptive behaviors (14,293 discharges).[60] The Child

Health Insurance Research Initiative (CHIRI™) reports that mental health issues (e.g., attention and behavior disorders) were second only to asthma as the top health problems of State CHIP-enrolled children with special health care needs, as reported by their families.[62]

Performance data for this measure are not currently available separately for children. For all ages combined, commercial rates were higher than Medicare and Medicaid rates. For all ages combined, 42.5 percent of Medicaid health plans had followup within 7 days (bottom region, South Atlantic; top region, Northeast). 61.5 percent had followup within 30 days (bottom region South Atlantic, 39.1 percent; top region Northeast, 80.7 percent).[26]

Validity and reliability of reporting may be affected by variations in the use of carve-outs across plans and States. NCQA has indicated their willingness to change the measure reporting fields so that children can be reported separately from adults.

Diabetes. Health care providers and others are raising concerns about the rising rate of diabetes among children and adolescents. Part of the reason for concerns about overweight and obesity in children is the relationship between those problems and diabetes.

22. Annual hemoglobin A1C testing (all children and adolescents diagnosed with diabetes). This State of Alabama Medicaid program measure assesses the extent to which patients ages 5-17 with a diagnosis of diabetes and/or notation of prescribed insulin/oral hypoglycemics/antihyperglycemics for at least 12 months receive at least one hemoglobin A1C test. Receipt is defined by documentation of a face-to-face visit for diabetes care between the physician and the patient that predates the most recent visit by at least 12 months.

This is a process measure with an evidence grade of D. SNAC voting resulted in a rank of 13 for this measure. Data sources are administrative and medical records. Alabama Medicaid is currently using this measure

For people with diabetes, hemoglobin A1c testing is important. This is a well-known health care quality measure for the adult population.[63] The prevalence of diabetes is relatively low among young people (0.22 percent among people younger than 20 years of age, or 176,000 people[64]), although there are a substantial number of young people considered to be pre-diabetic. In addition, there is concern that the current epidemic of obesity and overweight among children and adolescents may result in an explosion of diabetes among children and young adults. Both overweight and diabetes tend to be more prevalent in African Americans and Hispanics. Using the AHRQ Pediatric Quality Indicator (PDI), the rate of hospital admissions for short-term complications of diabetes among 6-17 year-olds increased from 27.1 per 100,000 population in 2000 to 36.1 per 100,000 population in 2005.[63] Data are not available by source of insurance, but rates were lower for children who lived in high-income communities.

Performance data for this measure as specified are not available.

A challenge to feasibility of use by States and plans may be low numbers of children and adolescents with diabetes in any one setting. Low numbers can be highly unreliable.

Family Experiences of Care

The CHIPRA legislation explicitly asked for core measures for family experiences of care. Such measures have been in use and constantly updated for children with and without chronic conditions for more than a decade. The SNAC recommended that all children be surveyed using

the core survey and all supplements, given their appropriateness for children with and without chronic conditions.

23. HEDIS CAHPS® 4.0H including supplements for children with chronic conditions and Medicaid Plans. CAHPS® is a family of surveys of experiences of care, an aspect of patient-centeredness. Parents or other responsible adults report about experiences of care during visits in which they accompany their children. Currently, health plans reporting to NCQA must collect and report data for the CAHPS® Health Plan Survey 4.0H, Child Version, with or without Children with Chronic Conditions items. If an organization does not want to collect and report Children with Chronic Conditions, it uses a version of the questionnaire that does not contain the CCC questions (this is consistent with what AHRQ refers to as the 'core questionnaire'). The questionnaires are the same for Medicaid and commercial plans, but the vendor changes the question wording look-back from 12 months (commercial) to 6 months for Medicaid

This is an outcome measure with an evidence grade of B. SNAC voting resulted in a ranking of 8 for this combination of measures. Current reporting is at the health plan level. The core instrument is currently reported to NCQA by 38 health plans. HEDIS CAHPS® for children with chronic conditions is currently reported to NCQA by 28 health plans.

Patient-centered (and for children, family-centered) care is a key domain of health care quality. Some leaders in quality have referred to patient-centeredness as the "true north" of health care delivery.[17] As recommended by the SNAC, all children enrolled in Medicaid and CHIP should be assessed for patient-centeredness of services using all components of CAHPS® (e.g., core instrument, plus the CAHPS® for Children with Chronic Conditions and the Medicaid 4.0 CAHPS®). The sense of the group was that many of the items previously deemed relevant only to children with chronic conditions (e.g., coordination of care, health plan responsiveness)

are equally applicable across the child population. They also noted that the health plan survey items would be relevant to all covered children.

Performance data from CAHPS® are not available from NCQA, probably because of the relatively low number of health plans reporting to NCQA. Other States may use the measure, but not report it to NCQA. However, data are available from other sources that use identical or similar items and composite.[65] For example, the National CAHPS Benchmarking Database reports data on responses to HEDIS measures. For example, 53 percent of 19,019 respondents responded to the item "Child's personal doctor seemed informed and up-to-date about care from other doctors or providers" by checking "always." Only 22 percent nationally responded "never or sometimes" to this item.[66]

Feasibility is recognized as a major challenge for this measure. Surveys can be resource-intensive.

Availability of Services

CHIPRA directed the Secretary to include measures of the availability of services, either in the initial, recommended core set or as a topic in the pediatric quality measures program. Availability of services is an important topic, given the many reports of lack of providers and some providers' unwillingness to serve Medicaid patients.[67-69] We considered measures of realized access to care (e.g., utilization of primary care practitioners) to be incomplete measures of availability because the reasons for lack of utilization could go well beyond lack of availability (e.g., parents don't perceive a need for the service). However, realized access is a piece of availability and a way to measure access under capitated primary care arrangements.

Access to Services.

24. Access to primary care practitioners, by age and total. For children aged 12-24 months, and 25 months-6 years, this NCQA measure assesses the receipt of one or more visits with a primary care provider during the measurement year. For children aged 7-11 and 12-19 years, the measure assesses the receipt of one or more visits with a primary care provider during the measurement year or the year prior to the measurement year. Continuous enrollment for the younger two age groups is required for the measurement year. For the two older age groups, continuous enrollment is required for both sequential measurement years.

This is a proxy measure for availability of services. There is no evidence grade because it is an access measure rather than a traditional quality measure. Access may be considered a health care quality measure from a systems perspective. Specifications are available at the health plan and provider levels, and reporting is at the plan level. The measure is currently reported to NCQA by between 120 and 129 health plans across 30-32 states, depending on age group. The data source is administrative records.

This measure can be considered important from two perspectives. From a payer perspective, it is good to know whether enrolled children are getting any care. Access to primary care practitioners is essential for children to have well child visits and the opportunity for social and developmental screening, two measures also included in the recommended set. Performance on this measure is generally good. The younger the child, the better the performance is. The national mean for Medicaid-enrolled children aged 12-24 months in reporting plans was 93.4 percent; the 10th and 90th percentiles were 87.7 percent and 98.4 percent, respectively. For children 25 months-6 years of age, the national mean was 84.3 percent; the 10th and 90th percentiles were 74.2 percent and 91.9 percent, respectively. For children 7-11 years of age, the national mean was 85.86 percent; the 10th and 90th percentiles were 75.5 percent and 94.1 percent, respectively.

For children aged 12-19 years, the national mean was 82.66 percent; the 10th and 90th percentiles were 70. 6 percent and 91.8 percent, respectively.

The measure is feasible to use because it comes from administrative data. The measure cannot be considered a true availability of services measure because it deals with only primary care, and because the reasons for non-use of primary care services may vary, from lack of availability, to lack of time, to lack of perceived need, and other factors.

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TABLE -- INITIAL, RECOMMENDED CORE CHILDREN'S HEALTHCARE QUALITY MEASURES FOR VOLUNTARY USE BY MEDICAID AND CHIP PROGRAMS

Measure Number	LEGISLATIVE MEASURE TOPIC/Subtopic/Current Measure label	Current Numerator[i]	Current Denominator and Enrollment Criteria	Rank by SNAC score	Current Measure Steward	Current Data Source	Evidence Grade	Est. Number of Medicaid and CHIP Enrollees At Risk of Poor Healthcare Quality
	PREVENTION AND HEALTH PROMOTION							
	Prenatal/Perinatal							
1	Frequency of ongoing prenatal care	Women in the denominator sample who had an unduplicated count of less than 21%, 21-40%, 41-60%, 61-80%, or more than 81% of expected visits, adjusted for the month of pregnancy at enrollment and gestational age	Medicaid-enrolled women who delivered a live birth on/between Nov 6 of the yr prior to measurement yr & Nov 5 of the measurement yr Continuous enrollment 43 days prior to delivery through 56 days after delivery Data can be reported separately for adolescent women	2	NCQA	H	B & D	2.1 million births/year; 123,000 adolescents < 17 gave birth[1]
2	Timeliness of prenatal care—the percentage of deliveries that received a prenatal care visit as a member of the organization in the first trimester *or* within 42 days of enrollment in the organization	Number of women in the denominator sample who had a prenatal visit in the first trimester or within 42 days of enrollment	All deliveries during the measurement year Continuous enrollment 43 days prior to delivery through 56 days after delivery Data can be reported separately for adolescent women	9	NCQA	H	B & D	2.1 million births/year; ; 123,000 adolescents < 17 gave birth[1]
3	Percent of live births weighing less than 2,500 grams	Number of resident live births less than 2500 grams	Number of resident live births in the State reporting period Data can be reported separately for adolescents	10	NVSS	O[ii]	B	2.1 million births/year at risk for LBW[1]
4	Cesarean rate for nulliparous singleton vertex	The number of women in the denominator who had a cesarean section	First live singleton births ≥ 37 weeks gestation with vertex presentation (no breech/transverse fetal positions)	16	CMQC	O[iii] or A[iv]	B	2.1 million total births/year at risk for C-section[1]
	Immunizations							
5	Childhood immunization status	Children who received 4 DTaP vaccinations, 3 IPV, 1 MMR, 2 Hib, 3 Hepatitis B, 1 VZV, and 4 pneumococcal conjugate vaccines on or before their second birthday (Composite 3; other composites are available)	Enrolled children who turn 2 yrs of age during the measurement year Continuous enrollment for 12 months prior to child's second birthday	1	NCQA	H	B	4.9 million children ages 0-2[2]
6	Immunizations for adolescents	Number of people in the denominator who had one dose of meningococcal vaccine (MCV4) and one tetanus, diphtheria toxoid, and acellular pertussis vaccine (Tdap) or one tetanus, diphtheria toxoid vaccine (Td) by their 13th birthday. The measure calculates a rate for each vaccine and one combination rate.	Adolescents who turn 13 yrs of age during the measurement year Continuous enrollment for 12 months prior to the member's 13th birthday	7	NCQA	H	B	10.1 million adolescents ages 13-18[2]

TABLE -- INITIAL, RECOMMENDED CORE CHILDREN'S HEALTHCARE QUALITY MEASURES FOR VOLUNTARY USE BY MEDICAID AND CHIP PROGRAMS

Measure Number	LEGISLATIVE MEASURE TOPIC/Subtopic/Current Measure label	Current Numerator[i]	Current Denominator and Enrollment Criteria	Rank by SNAC score	Current Measure Steward	Current Data Source	Evidence Grade	Est. Number of Medicaid and CHIP Enrollees At Risk of Poor Healthcare Quality
	Screening							
7	Weight assessment for children/adolescents	Children in the denominator population who had evidence of Body Mass Index (BMI) documentation during the measurement year	Children 3-17 yrs of age who had an outpatient visit with a PCP or OB-GYN during the measurement yr Continuous enrollment – the measurement year Optional exclusion: pregnant women	4	NCQA	H	D; I[v]	31.9 million children ages 2-18[2]
8	Screening using standardized screening tools for potential delays in social and emotional development	Number of children screened for social and emotional development with a standardized, documented tool or set of tools as part of a well child or other visit to primary care provider - 3 rates (one for each age range in the denominator)	Children ages 0-12 months, 12-24 months, or 24-36 months who had a WCV/other primary care visit during the measurement yr who were enrollees in Medicaid/CHIP	11	None[vi]	H	B	9.5 million ages 0-3[2] 14 million ages 0-5[2]
9	Chlamydia screening for women	At least one Chlamydia test during the measurement year	Women 16-20 yrs of age as of Dec 31st of the measurement year who were identified as sexually active. Continuous enrollment – The measurement year	14	NCQA	A	B	4.2 million females ages 16-18[2]
	Well-child Care Visits (WCV)							
10	WCVs in the first 15 months of life	The number of children who received 0, 1, 2, 3, 4, 5, 6 or more well child visits with a PCP during their first 15 months of life	Children who turn 15 months during the measurement yr. Continuous enrollment 31 days-15 months of age, with no more than one gap in enrollment of up to 45 days during the continuous enrollment period.	5	NCQA	H	B	2.6 million children ages 0-1[2]
11	WCVs in the third, fourth, fifth and sixth years of life	Well-child visit at 3-6 years: At least one well-child visit with a PCP during the measurement year	Children aged 3-6 yrs as of Dec 31st of the measurement yr Continuous enrollment - the measurement year		NCQA	H	B	8.7 million children ages 3, 4, 5, and 6[2]
12	WCV for 12-21 yrs of age - with PCP or OB-GYN	Adolescent Well Care: Adolescents with at least one comprehensive well-care visit with a PCP or an OB/GYN practitioner during the measurement year.	Adolescents 12-21 yrs of age as of Dec 31st of the measurement yr Continuous enrollment – the measurement yr		NCQA	H	B	11.9 million adolescents ages 12-18; 16,979,724 adolescents ages 12-21[2]
	Dental							
13	Total eligibles receiving preventive dental services (EPSDT measure Line 12B)	The total unduplicated number of children receiving dental treatment services defined by HCPC codes D1000 - D1999 (ADA codes D1000 - D1999)	The total no. of children shown on line 12b of the CMS-416 Form which represents the total unduplicated number of all individuals under age 21 determined to be eligible for EPSDT services. Unduplicated means each child is counted only once for the purposes of this line if multiple services were received.	6	States/ CMS	O[vii]	NA	31,930,562 EPSDT-eligibles In future: all CHIP enrollees[2]

TABLE -- INITIAL, RECOMMENDED CORE CHILDREN'S HEALTHCARE QUALITY MEASURES FOR VOLUNTARY USE BY MEDICAID AND CHIP PROGRAMS

Measure Number	LEGISLATIVE MEASURE TOPIC/Subtopic/Current Measure label	Current Numerator[i]	Current Denominator and Enrollment Criteria	Rank by SNAC score	Current Measure Steward	Current Data Source	Evidence Grade	Est. Number of Medicaid and CHIP Enrollees At Risk of Poor Healthcare Quality
	MANAGEMENT OF ACUTE CONDITIONS							
	Upper Respiratory -- Appropriate Use of Antibiotics							
14	Pharyngitis - appropriate testing related to antibiotic dispensing	A strep test was administered in the 7-day period from 3 days prior through 3 days after the first eligible episode date	Children age 2-18 yrs who had an outpatient visit with a diagnosis of pharyngitis and were dispensed an antibiotic Continuous enrollment – 30 days prior to the episode date through 3 days after the episode date (inclusive)	18	NCQA	A	A	37.2 million children ages 0-18[2]
15	Otitis Media with Effusion - avoidance of inappropriate use of systemic antimicrobials – ages 2-12	Number of patients who were not prescribed systemic antimicrobials	All patients ages 2 mos-12 yrs with a diagnosis of Otitis Media with Effusion	18	AMA PCPI	A	A	21.8 million children ages 2-12[2]
	Dental							
16	Total EPSDT eligibles who received dental treatment services (EPSDT CMS Form 416, Line 12C)	The total unduplicated number of children receiving dental treatment services defined by HCPC codes D2000-D9999 (ADA/CDT codes 02000-09999)	The total no. of children shown on line 12c of the CMS-416 Form which represents the total unduplicated number of all individuals under age 21 determined to be eligible for EPSDT services. Unduplicated means that each child is counted only once for purposes of this line if multiple services were received.	17	States/ CMS	O[viii]	D	31.9 million EPSDT eligibles in 2008.[2] In future: all CHIP enrollees
	Emergency Department							
17	Emergency Department (ED) Utilization – Average number of ED visits per member per reporting period	Number of visits per member per year	All child and adolescent members enrolled and eligible during the measurement year	2	S/ME	A	B	37.2 million children ages 0-18[2]
	Inpatient Safety							
18	Pediatric catheter-associated blood stream infection rates (PICU and NICU)	Number of catheter-associated blood stream infections identified during the month selected for surveillance	Number of central line days during the month selected for surveillance	17	Hospitals/ CDC	MR	B	Unknown. 400,000-600,000 PICU discharges {Miller, 2009 164};108,000 children had procedures related to durable equipment[ix]
	MANAGEMENT OF CHRONIC CONDITIONS							
	Asthma							
19	Annual number of asthma patients (≥ 1 year old) with ≥ 1 asthma related ER visit (S/AL Medicaid Program)	Number of children ≥ 1 year old in the denominator sample who had ≥ 1 ER visit(s) during the measurement year (March 1 through February 28th) where the primary diagnosis assigned on the claim was asthma	All children ≥ 1 yr old diagnosed with asthma or are on at least two short-acting beta adrenergic agents during the measurement year	3	S/AL	A	C	2.7 million Medicaid-enrolled children ages 0-17 with asthma[3]

TABLE -- INITIAL, RECOMMENDED CORE CHILDREN'S HEALTHCARE QUALITY MEASURES FOR VOLUNTARY USE BY MEDICAID AND CHIP PROGRAMS

Measure Number	LEGISLATIVE MEASURE TOPIC/Subtopic/Current Measure label	Current Numerator[i]	Current Denominator and Enrollment Criteria	Rank by SNAC score	Current Measure Steward	Current Data Source	Evidence Grade	Est. Number of Medicaid and CHIP Enrollees At Risk of Poor Healthcare Quality
	ADHD							
20	Follow-up care for children prescribed attention-deficit/hyperactivity disorder (ADHD) medication (Continuation and Maintenance Phase)	Children ages 6-12 as of the index prescription start date, who in addition to the visit in the Initiation Phase, had at least two follow-up visits with a practitioner within 270 days (9 months) after the Initiation Phase ended	Children ages 6-12 as of the index prescription start date, with an ambulatory prescription dispensed for ADHD medication, who remained on the medication for at least 210 days Continuous enrollment – 120 days prior to the Index Prescription Start Date (IPSD) and 300 days after the IPSD	12	NCQA	A	D	6.5% of children with public coverage take medication for ADHD,[4] equal to approximately 2,419,909 children ages 0-18 in 2008[2]
	Mental Health							
21	Follow up after hospitalization for mental illness	People in the denominator without an outpatient visit, intensive outpatient encounter, or partial hospitalization with a mental health practitioner within 7 or 30 days after discharge (two rates)	Members 6 yrs of age or older who were hospitalized for treatment of selected mental health disorders and discharged Continuous enrollment date of discharge through 30 days after discharge	14	NCQA	A	B	22.8 million ages 6-18[2]
	Diabetes							
22	Annual hemoglobin A1C testing (all children and adolescents diagnosed with diabetes)	The number of patients in the denominator sample who have documentation of date and result for the most recent HbA1c test during the 12-month reporting period	A systematic sample of patients, ages 5-17, with a diagnosis of diabetes and/or notation of prescribed insulin/oral hypoglycemics/ antihyperglycemics for at least 12 months. This is defined by documentation of a face-to-face visit for diabetes care between the physician and patient that predates the most recent visit by at least 12 months.	13	S/AL	H	D	NA for Medicaid/CHIP – low prevalence in general population
	FAMILY EXPERIENCES OF CARE							
23	HEDIS CAHPS® 4.0 instruments including supplements for children with chronic conditions and Medicaid plans	Survey items	Currently denominator population varies – SNAC recommends collecting all survey data on all children enrolled in Medicaid and CHIP	8	NCQA	S	B	37.2 million children ages 0-18 [2]
	AVAILABILITY							
24	Children and adolescents' access to primary care practitioners (PCP), by age and total	Number of members in each age stratification who had at least a visit with a PCP	Children who fall into the following age groups: 12-24 months, 25 months-6 yrs, 7-11 yrs, 12-19 yrs as of December 31 of the measurement year Continuous enrollment – for 12-24 months, 25 months-6 yrs, the measurement year; for 7-11 yrs, 12-19 yrs, the measurement year and the year prior to the measurement year	16	NCQA	A	NA	37.2 million children ages 0-18 [2]

TABLE -- INITIAL, RECOMMENDED CORE CHILDREN'S HEALTHCARE QUALITY MEASURES FOR VOLUNTARY USE BY MEDICAID AND CHIP PROGRAMS

SNAC Calculation of Priority Scores: After deliberations and voting on day 1 of the September meeting, 31 measures remained under consideration. On day 2, there were three rounds of voting where SNAC members could vote for their top 20 measures out of the 31 that remained. In round one, SNAC members voted for their top 10 measures; in round two their next 5 measures; and in round three their last 5 measures respectively. Measures voted for in the 1st round received 3 points per vote, measures voted for in the second round received 2 points per vote, and measures voted for in the 3rd round received 1 point per vote. The Priority Score represents the total points assigned to that measure by SNAC members after three rounds of voting.

Evidence Grades: Based primarily on the Oxford Centre for Evidence-based Medicine (CEBM) levels of evidence criteria.[5]
Grade A = Consistent Level 1 studies
Grade B =Consistent Level 2 or 3 studies or extrapolations from Level 1 studies
Grade C = Level 4 studies or extrapolations from Level 2 or 3 studies
Grade D = Level 5 evidence or troublingly inconsistent or inconclusive studies of any level
Note: The types and rigor of studies at various levels of evidence depend on the study purposes (e.g., therapy/prevention, prognosis, diagnosis, differential diagnosis/symptom prevalence; economic and decision analyses). Most of the studies submitted or identified as documentation of underlying scientific soundness for the measures were therapy or prevention studies. For those studies, Level 1 studies are systematic reviews of randomized controlled trials (RCTs). Level 2 studies include systematic reviews of cohort studies, individual cohort studies, including low-quality RCTs), and "outcomes" research. Level 3 studies are systematic reviews with homogeneity of case-control studies or an individual case-control study. Level 4 studies are case-series and poor quality cohort and case-control studies. Level 5 evidence is defined as expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles."
See footnote for explanation of "I" grade.

Legend:

A	in Current Data Source column: Administrative
A	in Evidence Grade column – evidence grade A (see above)
B	Evidence Grade B (see above)
AHRQ	Agency for Healthcare Research and Quality (US DHHS)
AMA	American Medical Association
CDC	Centers for Disease Control and Prevention (US DHHS)
CHIP	Children's Health Insurance Program
CMS	Centers for Medicare & Medicaid Services (US DHHS)
CMQC	California Maternal Quality Collaborative
CPOE	Computerized prescription order entry
EPSDT	Early and Periodic Screening, Diagnosis and Treatment
H	Hybrid data source (administrative plus medical record/chart review)
HEDIS	Healthcare Effectiveness Data and Information Set (NCQA)
NA	Not available
NAC	National Advisory Council on Healthcare Research and Quality (AHRQ)
NCQA	National Committee for Quality Assurance
PCPI	Physician Consortium for Performance Improvement (AMA)
O	Other data source type (see footnotes for specific source type)
S	Survey
S/AL	State of Alabama
S/ME	State of Maine
SNAC	AHRQ NAC Subcommittee on Children's Healthcare Quality Measures for Medicaid and CHIP Programs

1. Agency for Healthcare Research and Quality HCUPNet. 2007 National statistics: Outcomes by patient and hospital characteristics for Major Diagnostic Category 14 Pregnancy, Childbirth & the Puerperium. Rockville, MD: AHRQ; 2007.

2. Centers for Medicare & Medicaid Services. Medicaid and CHIP enrollees by age group, 2008. *SEDS FY 2008 Master File -- January 22, 2009*. Baltimore, MD: Author; 2009:1.

3. Centers for Disease Control and Prevention. Summary of Health Statistics U.S. Children 2007 National Health Interview Survey. *National Health Interview Survey* [Jan. 2009; http://www.cdc.gov/nchs/data/series/sr_10/sr10_239.pdf. Accessed Oct. 14, 2009.

4. Bethell C. *A profile of leading health problems and health care quality for children using the 2007 National Survey of Children's Health: Draft for use by AHRQ and the SNAC.* Portland, OR: The Child and Adolescent Health Measurement Initiative (CAHMI); July 2009.

5. Oxford Centre for Evidence-based Medicine. Levels of Evidence. In: Howick J, Phillips B, Ball C, et al., eds. Oxford: Author; 2009:2.

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[i] Note that the SNAC recommended that revisions might be needed to the current numerators and denominators to be suitable for a broader range of Medicaid and CHIP programs and populations.
[ii] Birth certificate information plus enrollment data.
[iii] Birth certificate information plus enrollment data.
[iv] Hospital discharge data.
[v] The "I" grade comes from the U.S. Preventive Services Task Force (USPSTF) and means that the evidence was insufficient for the USPSTF to make a recommendation regarding the preventive service.
[vi] Developed with support of The Commonwealth Fund, which is also supporting implementation and testing in State Medicaid programs and elsewhere. States have differing data collection strategies.
[vii] EPSDT submissions using CMS Form 416.
[viii] EPSDT submissions using CMS Form 416.
[ix] The following procedures (using the Healthcare Cost and Utilization Project [HCUP] CCS classification) were included in the analysis of HCUP Kids Inpatient Database (KID) 2006 data, using HCUPNet. The numbers of procedures with Medicaid as expected payer follow the procedure labels. Children are inpatients ages 0-18 in non-federal hospitals.
5 Insertion of catheter or spinal stimulator and injection into spinal canal.
47 Diagnostic cardiac catheterization, coronary arteriography.
54 Other vascular catheterization, not heart.
55 Peripheral vascular bypass.
56 Other vascular bypass and shunt, not heart.
62 Other diagnostic cardiovascular procedures.
63 Other non-OR therapeutic cardiovascular procedures.
108 Indwelling catheter.
204 Swan-Ganz catheterization for monitoring.
102 Ureteral catheterization.