Pediatric Oral Health Performance Measurement: Current Capabilities and Future Directions

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Abstract

This paper offers an overview of performance measurement in health care, provides a synopsis of the findings and recommendations of an Oral Health Expert Panel organized by the National Committee for Quality Assurance (NCQA) under contract with the Health Care Financing Administration (HCFA), and discusses challenges and possible future directions for pediatric oral health care performance measures development. Existing performance measures for pediatric oral health care are extremely limited; however, several new measures have been proposed and are in various stages of development and testing. Measures capable of being implemented in the short-term focus on access and use of services, rely on administrative data sources, and represent refinements and enhancements of current measures. Measures proposed for future implementation focus more on the effectiveness of care, consumer assessments of care and plan performance, and the value of services provided to enrolled children. Recommendations are targeted toward high-risk children who, for the most part, are covered by public programs (e.g., Medicaid and the Children's Health Insurance Program). Nevertheless, the entire set of recommended measures is considered to be relevant to all pediatric populations and applicable to all forms of dental care coverage, including state-administered programs and commercial third party arrangements. [J Public Health Dent 1999;59(3):136-40]

Key Words: Children, performance measures, pediatric oral health, dental services, Medicaid, Children's Health Insurance Program, dental insurance, dental plans, managed care.

The preamble of a recent consensus statement on principles for performance measurement (1) by the American Medical Accreditation Program, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), and the National Committee for Quality Assurance (NCQA) noted the following:

> The current health care environment is characterized by an emphasis on performance with respect to cost and quality, growing demands for accountability, increased consumer and purchaser choice in a market-driven health care system, and consequent rapid and major reconfiguration of health care delivery and health care organizations. In each of these areas, performance measurement—the quantitative assessment of health care processes and outcomes for which an individual physician or other practitioner, provider organization, or health plan may be accountable—plays a critical role. Consequently, the interest in performance measurement is increasing among consumers, purchasers, quality oversight bodies (such as regulatory agencies and private sector accrediting bodies), as well as among health professionals and health care organizations.

The three organizations responsible for this statement view themselves as significant contributors to the public-private partnership through which health care quality oversight is accomplished in the United States, and as public sources of objective information about the evaluation of practitioners, provider organizations, and health plans. As such, they are committed to supporting the efficient collection and appropriate use of data for performance measurement in health care (1).

Performance measurement concepts are relevant and a high priority for public benefit programs (e.g., Medicaid and Medicare) regardless of whether individual states choose to delegate a portion of their programs' administrative responsibility to managed care organizations or fully administer their own programs. Performance measurement also is taking on increasing importance for private purchasers of group health insurance and consumers. Thus, performance measurement has many purposes, including, but not limited to: providing information needed for quality oversight by external bodies, including regulatory agencies and private sector accrediting bodies; providing comparative information to assist consumers and purchasers, both public and private, in selecting among practitioners, provider organizations, and health plans; and facilitating prudent management of health care resources.

Within that context and in view of its role as the primary public agency responsible for pediatric oral health services for children, the Health Care Financing Administration (HCFA) in October 1998 asked NCQA to establish an expert panel to identify and evaluate current pediatric oral health performance measures. The panel also was charged with recommending one

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or more measures for immediate application to the assessment of oral health services for Medicaid children and other pediatric populations.

The panel's final report (2), the end product of the project, provides an overview of its findings and conclusions concerning the current state of pediatric oral health in the United States and the way dental care is delivered, the current state of performance measurement in pediatric oral health, recommendations for immediate and future measure development, and current limitations facing measure development efforts in this area.

The panel's recommendations lay the groundwork for the development, testing, and possible inclusion of pediatric oral health measures in HEDIS® (Health Plan Employer Data and Information Set is a registered trademark of NCQA), NCQA's standardized set of performance measures for commercial, Medicare, and Medicaid managed care organizations. HEDIS® divides the spectrum of care into the following eight domains, each of which includes measures that provide information about a specific topic related to care, service, or value (2):

- effectiveness of care,
- access/availability of care,
- satisfaction with the experience of care,
- health plan stability,
- use of services,
- cost of care,
- informed health care choices, and
- health plan descriptive information.

The panel's report and recommendations also represent a resource for agencies, organizations, and individuals interested in monitoring the performance of pediatric oral health care provided through public programs—e.g., Medicaid and the Children's Health Insurance Program (CHIP)—and commercial third party arrangements.

This paper provides a synopsis of the panel's findings and recommendations, and comments on the current environment and possible future directions for pediatric oral health care performance measurement. Additional details of the panel's composition, findings, and recommendations can be found in the original report (2).

Current Status of Pediatric Oral Health Performance Measures

To assess the current status of performance measures in pediatric oral health, a thorough review of existing performance measurement sets was undertaken. The expert panel and NCQA staff conducted this review to identify potential measures currently being used or under development in the area of pediatric oral health. Several sources were searched, including NCQA's 1995 Public Call for Measures; CONQUEST, a measures data base sponsored by the Agency for Health Care Policy and Research (AHCPR); National Library of Health Indicators, a measure data base sponsored by the JCAHO; Foundation for Accountability's (FACCT) adopted measurement sets; MEDLINE; and other relevant federal agencies and organizations.

From those existing performance measurement sets and the work conducted by various federal agencies and organizations, 17 oral health measures were identified. The 17 measures included the *Annual Dental Visit* measure—the only pediatric oral health measure currently in HEDIS® and reported only by Medicaid managed care plans—13 measures that are being developed by AHCPR under the Expansion of Quality of Care Measures (Q-SPAN) project, and three measure concepts from NCQA's Public Call for Measures. However, not all were relevant to pediatric populations.

The expert panel and NCQA staff subsequently compiled an inventory of 60 oral health measures (including relevant measures identified above) and measure concepts identified in the literature, dental report cards, and research proposals. To facilitate the expert panel's review of these measures, NCQA staff conducted an initial assessment of each measure using the HEDIS® desirable attributes (2) and categorized each one into the following five tables:

- current, past, and closely related pediatric oral health measures;
- measures assessed as being not relevant, scientifically sound, and/or feasible;
- measures assessed as being somewhat relevant, scientifically sound, and/or feasible;
- suggested survey measures; and
- measures assessed as being most relevant, scientifically sound, and/or feasible.

The panel's analysis, discussion, and recommendation on each of the 60 measures identified in the inventory are provided in the tables at the end of the report (2).

Expert Panel Recommendations

From the list of 60 measures, the panel focused on three measures that are most relevant, scientifically sound, feasible, and practical (given the limitations outlined in the following comments) for short-term development and implementation. Measures recommended for possible inclusion in future versions of HEDIS® are targeted initially to the Medicaid and Children's Health Insurance Program, but as pointed out before, are relevant and applicable to commercial managed care populations as well. In fact, the panel considers the entire set of proposed measures to be relevant to all pediatric populations and applicable to all forms of dental care coverage, including state-administered programs.

The expert panel recognized that resources for information systems, data collection, and evaluation are limited in Medicaid and CHIP programs, as well as in commercial plans. Accordingly, the panel selected measures for immediate (short-term) development that draw from administrative sources only, thereby minimizing the burden and cost to plans, programs, and providers collecting the data.

Measure Recommendations for the Short Term. The three measures identified by the expert panel for immediate measure development (i.e., within one to three years) include:

1. Revised ***Annual Dental Visit.*** The current HEDIS® *Annual Dental Visit* measure reports the percentage of Medicaid enrolled members aged 4 through 21 years who were continuously enrolled during the reporting year and had at least one dental visit during the reporting year (2). The ***Revised*** *Annual Dental Visit* measure extends the age range and stratifies the percentages of enrolled members who had at least one dental visit by the following age categories: <1, 1–2, 3–5, 6–9, 10–14, 15–18, and 19–20 years.

The *Annual Dental Visit* measure is currently part of HEDIS® 1999; however, only health plans serving Medicaid populations are required to report

this measure. The measure describes the percentage of Medicaid enrolled members aged 4 through 21 years who were continuously enrolled during the reporting year who had no more than one gap in enrollment of up to 45 days and had at least one dental visit during the reporting year. (For Medicaid, a 45-day gap in enrollment is the equivalent of a 30-day or one-month eligibility period.) *Annual Dental Visit* is a relevant, scientifically sound, and feasible measure for collecting and comparing information from plans about access to dental care for children in Medicaid.

However, the American Academy of Pediatric Dentistry (AAPD), American Dental Association (ADA), and American Academy of Pediatrics (AAP) recommend children begin seeing a dentist at age 1 because there is sufficient evidence that oral disease begins well before age 2 (3). Earlier intervention—including interventions directed toward parents of infants—would help prevent at least a portion of the dental disease and other oral health problems encountered by children. Therefore, the panel recommended that the age range for the *Revised Annual Dental Visit* measure and the next recommended measure, *Use of Dental Services by Children*, be lowered to include children aged 1 and younger.

The panel also argued that the *Annual Dental Visit* measure by itself does not provide adequate information about the children accessing dental care, nor about what services are being performed. Hence, at a minimum, the panel recommended that the current measure be stratified by age to provide more useful information about access to dental care by different age groups. The recommended age groups (<1, 1–2, 3–5, 6–9, 10–14, 15–19, and 19–20 years) acknowledge that children at different ages have different dental needs. (These age groups parallel those recommended as part of the revised HCFA-416 EPSDT performance reporting form, which has recently received federal approval.)

Although access is an important issue—especially in Medicaid, where children's access to dental care has been criticized (4)—the panel agreed that additional information on the types of services being provided would greatly enhance this measure and make it more relevant to assessing access to care, use of services, and effectiveness of care provided to pediatric populations over time. Therefore, the panel recommended that this measure eventually be replaced by the *Use of Dental Services by Children* measure described next.

2. ***Use of Dental Services by Children.*** This measure profiles the utilization of various types of services by children and is stratified by age (<1, 1–2, 3–5, 6–9, 10–14, 15–18, and 19–20 years). The measure consists of the following elements:

A. Percentage of enrollees who received any dental service—This component would replace the ***Revised*** *Annual Dental Visit* measure in evaluating the percentage of children who had some dental service or procedure performed by a dental provider.

B. Percentage of enrollees who received any preventive service—This component seeks to evaluate what proportion of enrolled children are receiving preventive dental care. Comparisons to other components of the measure (e.g., components C and D) and relevant benchmarks can facilitate assessments of whether children are getting expected levels of preventive services.

C. Percentage of enrollees who received any treatment service—This measure examines the extent to which enrolled children are receiving restorative and other treatment services (i.e., services beyond diagnostic and preventive services), and begins to address the issue of whether comprehensive services are being provided to meet the gamut of dental needs among children.

D. Percentage of enrollees who received a comprehensive or periodic exam—This component identifies the proportion of enrolled children who had a complete dental examination and serves as an indicator of the use of comprehensive services versus treatment for emergencies.

In recommending that the *Use of Dental Services by Children* measure be developed and implemented for immediate use in the Medicaid and CHIP managed care populations, the panel sought to provide a mechanism for evaluating the basic access and service needs of children. Major elements of this measure (components A–C) are contained in a recently adopted revision of the data collection instrument—HCFA Form-416—used routinely by states to report annually on the delivery of Medicaid/EPSDT (Early and Periodic Screening, Diagnosis, and Treatment) services. As a result of the recent HCFA-416 revision, HCFA will be requiring that components A–C be collected by states for all EPSDT dental providers, including dental managed care plans. The panel decided to enhance the HCFA-416 measure by adding a fourth component (D) to its proposed measure that would identify those children who received a comprehensive or periodic dental examination. This addition permits a differentiation between, for example, children who receive an emergency visit as their only use (and would be counted in component A) versus those who receive more complete dental examinations.

The panel reiterated the need for a measure such as the *Use of Dental Services by Children* that would provide information on access, use of services, and even an element of the effectiveness of care being provided to the pediatric Medicaid and CHIP populations over time. The panel recommended that the *Use of Dental Services by Children* measure undergo a complete measure work-up and be presented to NCQA's Committee on Performance Measurement (CPM) and other pediatric measure development groups as a leading candidate for replacing the current *Annual Dental Visit* measure.

3. ***Dental Sealant Ratio*** (ratio of occlusal sealants to occlusal restorations). This measure examines the ratio of sealed occlusal surfaces in permanent molar teeth to restored occlusal surfaces in permanent molar teeth. The measure would examine first molars in 5–8-year-olds and second molars in 11–14-year-olds.

The panel discussed the need for a dental sealant measure and agreed that this ratio measure provided a way to assess how effectively sealants are being used to prevent further disease or decay among Medicaid and CHIP children. The panel considered and rejected an alternative measure based solely on dental sealant utilization rates because of concerns about sealant overuse or misuse and the potential for erroneous interpretation of the results. Although the proposed measure attempts to address the benefit of prevention (sealants) over treatment, several panel members voiced

analogous, but lesser, concerns about the ability to "game" the *Dental Sealant Ratio* measure and its interpretability (i.e., whether it would require further risk-adjustment with regard to income, ethnicity, or access).

Although guidelines exist regarding the use of dental sealants (5), the panel also expressed concerns over the potential overuse of sealants (i.e., sealants on surfaces that are not at high risk of disease). However, targeting sealants to those teeth at greatest risk (i.e., permanent molars) and children at greatest risk for caries (i.e., those from low-income families) is expected to enhance their cost effectiveness. The National Institute of Dental and Craniofacial Research is currently funding research to examine the cost effectiveness of sealants.

Because all recommended measures are directed initially at high-risk populations (i.e., children enrolled in Medicaid and CHIP who are more likely to develop tooth decay and have unmet dental needs), the panel concluded that higher rates are desirable for the *Use of Dental Services by Children* and the other two measures. Interpretation of the measures' findings may need to be considered carefully when applied to other populations, such as the commercial sector, given the possible impact of various sociodemographic factors (6). Data from local, state, and national surveys (e.g., the National Health and Nutrition Examination Survey) or needs assessments may be helpful in determining the utility of this measure and expected levels of performance.

Because of the relative homogeneity within the Medicaid and most CHIP pediatric populations with respect to tooth decay (6), and the current paucity of performance measures available to evaluate access to and utilization of dental services by children, the panel believes that the *Use of Dental Services by Children* measure promises to be a valuable tool for assessing the performance of plans and public programs responsible for providing dental care to Medicaid and CHIP children. Individual plans and providers also can use the data collected to evaluate their internal quality improvement initiatives.

Measure Recommendations for the Future. With regard to future measure development (i.e., measures likely to require additional time to develop), the expert panel recommends that efforts be focused on:

1. ***Assessment of Disease Status***—the percentage of all child enrollees who have had their periodontal and caries status assessed within the past year.
2. ***New Caries Among Caries-active Children***—the proportion of all caries-active child enrollees who receive treatment for caries-related reasons within the reporting year.
3. ***New Caries Among Caries-inactive Children***—the proportion of all previously caries-inactive child enrollees who receive treatment for caries-related reasons within the reporting year.
4. ***Preventive Treatment for Caries-active Children***—the percentage of all caries-active child enrollees who receive a dental sealant or a fluoride treatment within the reporting year.

Although the first four measures (*Assessment of Disease Status, New Caries Among Caries-active and Caries-inactive Children*, and *Preventive Treatment for Caries-active Children*) are dependent, in part, upon the systematic implementation of diagnostic codes that are not now widely available or used in dentistry, panel members felt that measures of this type represent the future of clinical performance measurement in pediatric oral health. The panel believes that the information generated by the proposed measures may be beneficial in understanding how plans and providers meet the oral health needs of children, how better outcomes can be achieved and, eventually, may prove useful in assessing the cost effectiveness of preventive or treatment strategies. The panel recognized the burden and cost of collecting data from chart reviews (the only method currently available for collecting this information in the vast majority of dental treatment facilities today) and consequently acknowledged that it would not be practical to implement the proposed measures until dental diagnostic codes have been established, adopted, and evaluated. The ADA is scheduled to release a limited set of dental diagnostic codes in 1999; however, it remains to be seen how quickly they will be adopted and used by practicing dentists.

5. ***Pediatric Oral Health Survey Module***—inquires about: access, regular source of care (availability), timeliness, involvement in decision making, overall satisfaction with care, and level of unmet needs.

NCQA's member satisfaction survey was changed in 1998 and launched in HEDIS® 1999. In cooperation with AHCPR, NCQA combined its previous Member Satisfaction Survey with AHCPR's Consumer Assessment of Health Plan Survey (CAHPS) to create the CAHPS 2.0H™ survey (7), which currently is being used to collect managed care members' experience with care. CAHPS 2.0H has four surveys. Two of these surveys are directed at parents or caregivers of children in assessing their children's experience of care—one for the commercial population and one for the Medicaid population. The other two surveys are directed at adults' experience of care in the commercial and Medicaid populations. No questions related to dental care are contained within the core set of questions found in the CAHPS 2.0H.

AHCPR's original CAHPS 2.0 survey, which is in the public domain, contains a separate dental health module that could be added as supplemental questions to the CAHPS 2.0H. However, the module contains only three pediatric oral health survey questions that ask about whether the respondent's child has had a dental visit, the number of visits, and overall satisfaction with care. The expert panel recommended that additional survey measures related to access, availability of a regular source of care, timeliness of care, involvement in the decision-making process, overall satisfaction, and level of unmet need be developed and evaluated for future use. A psychometrically sound survey instrument designed as a supplemental module to existing CAHPS surveys could prove to be an invaluable, cost-effective tool for evaluating the adequacy and impact of different plans or programs.

6. ***Value of Services***—This measure is designed to provide information on the monetary *Value of Services* being delivered to Medicaid and CHIP beneficiaries to facilitate assessments of how plans manage the resources allocated for providing oral health care for their enrollees. The panel recommended examining either the proportion of a plan's premium dollars spent on clinical services or a plan's actual expenditures for clinical services per member per month (PMPM) as possi-

ble measures.

Although the panel acknowledged that a *Value of Services* measure is not specifically related to pediatric oral health, the panel felt strongly that such a measure would be important for purchasers, providers, program administrators, and beneficiaries in assessing how resources are being administered and allocated relative to the quality of care being provided. Several states already have embraced this concept and taken steps to limit the amount of administrative expenditures by dental plans and other health insurance organizations participating in state Medicaid programs.

Challenges Facing Pediatric Oral Health Measure Development Efforts

The expert panel identified the following areas where attention needs to be directed to facilitate development and implementation of the measures recommended for both the short and long term:

- limited scientific evidence and professional consensus on guidelines of care in pediatric oral health;
- lack of universally accepted codes that record formal diagnoses;
- limited use of computerized information systems that efficiently capture and compile relevant data for performance measurement;
- limited inclusion of dental benefits in managed health care plans and lack of leverage on dental managed care plans to participate in performance measurement activities;
- differences in pediatric oral health needs of Medicaid and commercial populations that limit comparisons across populations; and
- differences in the scope of pediatric oral health care training and services provided by general dentists and pediatric dentists, and characteristics and treatment needs of patients served by these provider groups.

Discussion and Next Steps

Performance measurement—the quantitative assessment of health care processes and outcomes for which an individual practitioner, provider, organization or health plan may be accountable—has taken on considerable momentum in various sectors of the US health care system (1,8). To a considerable degree, this rise parallels the growth of managed care. However, the argument can be made that the underlying force responsible for the growing emphasis on performance measurement—i.e., growing demands for accountability with respect to the processes, outcomes, and value of health care—is applicable to other types of arrangements, including public programs that have statutory and regulatory responsibilities for enrolled populations (e.g., Medicaid and CHIP).

The review conducted as part of the charge to the NCQA Oral Health expert panel revealed that few measures that meet contemporary criteria exist for pediatric oral health care (2). In the opinion of the panel, the single existent access measure identified as sound, reliable, and feasible—*Annual Dental Visit*—should be strengthened substantially or, preferably, replaced. Access to dental care by children is a critical issue in the public-sector programs, and to some extent even in the private sector; however, the current *Annual Dental Visit* measure does not address who is being seen and what services are being provided. In light of the many structural limitations inherent in current dental care financing and delivery systems and the intense sensitivities to the costs and burden of data collection, the panel recommended that the current single HEDIS® dental measure, *Annual Dental Visit*, be modified as soon as possible to include stratification by age groups and that, pursuant to further testing and refinement, it be replaced with a new measure, *Use of Dental Services by Children*, which profiles the use of different types of services. Like the current measure, the *Use of Dental Services by Children* measure is derived solely from administrative data. Pilot testing of a similar measure using statewide Medicaid data has demonstrated that the new measure is a useful tool for assessing differences in utilization across plans and geographic regions (9). The panel also recommended that additional development of a dental sealant measure, *Dental Sealant Ratio*, be pursued, but recognized that issues of interpretability will need to be carefully addressed during the testing and development stage of the work-up of this measure.

Access to care and the full range of services necessary to prevent and control dental diseases and restore diseased oral structures are important issues for all children, but especially for those most at risk for dental diseases—who tend to be children covered by public programs. Therefore, the access and utilization measures recommended for short-term development and implementation are critical to more effective monitoring and improvement of plan and program performance. However, measures of access and utilization provide only a limited basis for assessment of the degree to which health plans or programs address other important domains of performance measurement. Toward that end, the panel's recommendations for future measures provide direction for the development of additional measures that begin to address the domains of effectiveness of care, satisfaction with the experience of care, involvement in decision making, and the cost and value of care. Several of these measures already have been pilot tested as part of AHCPR's Q-SPAN project (10). Furthermore, funding currently is being sought to develop a CAHPS dental supplement with an anticipated development and testing timeline of approximately 12 months. Data for the *Value of Services* measure are readily available from administrative data files for the majority of existing plans and programs. Thus, although the panel categorized these as future measures, a considerable amount of preliminary development is already underway.

HEDIS® is the predominant instrument for health plan performance measurement at present, but has a limited capacity in terms of the number of measures that it can incorporate and still remain practical. This reality raises the question as to whether other mechanisms and sponsoring organizations will need to be developed to provide adequate performance measurement for health care services that are not the central focus of HEDIS® (e.g., dental care). The NCQA already is considering rotating some measures (i.e., fielding some measures on a less-than-annual basis) or eliminating from HEDIS® older measures that do not meet new, more rigorous criteria (11). Thus, it is likely and expected that further development and implementation of the recommended measures will need to be pursued by a variety of public and private entities.

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