Life Course Indicator: Oral health preventive visit for children

The Life Course Metrics Project

As MCH programs begin to develop new programming guided by a life course framework, measures are needed to determine the success of their approaches. In response to the need for standardized metrics for the life course approach, AMCHP launched a project designed to identify and promote a set of indicators that can be used to measure progress using the life course approach to improve maternal and child health. This project was funded with support from the W.K. Kellogg Foundation.

Using an RFA process, AMCHP selected seven state teams, Florida, Iowa, Louisiana, Massachusetts, Michigan, Nebraska and North Carolina, to propose, screen, select and develop potential life course indicators across four domains: Capacity, Outcomes, Services, and Risk. The first round of indicators, proposed both by the teams and members of the public included 413 indicators for consideration. The teams distilled the 413 proposed indicators down to 104 indicators that were written up according to three data and five life course criteria for final selection.

In June of 2013, state teams selected 59 indicators for the final set. The indicators were put out for public comment in July 2013, and the final set was released in the Fall of 2013.

Basic Indicator Information

Name of indicator: Oral health preventive visit for children (LC-41)

Brief description: Percent of children who received a preventive dental visit in the past 12 months.

Indicator category: Health care access and quality

Indicator domain: Service/Capacity

Numerator: Number of children ages one to 17 surveyed who received at least one preventive dental visit in the past 12 months

Denominator: Total child population ages one to17

Potential modifiers:

- Age groups (one to five, six to 11, 12 to 17)
- Gender
- Race/ethnicity (Hispanic, NH White, NH Black, NH Multi-racial, NH Other)
- Primary household language (Spanish, English)
- Household income level (zero-99 percent FPL, 100-199 percent FPL, 200-399 percent FPL, 400 percent or higher FPL)
- Household income level SCHIP (zero-199 percent FPL, 200-299 percent FPL, 300-399 percent FPL, 400 percent FPL or higher)
- Family structure (two parent – biological or adoptive, two parent – at least one step parent, mother only – no father present, all other family structures),
- Special Health Care Needs status (CSHCN, non-CSHN)
- Special Health Care Needs type (Non-CSHCN, CSHCN – prescription medication, CSHCN – above routine services, CSHCN prescription medication and above routine services, CSHCHN – functional limitations)
- Emotional, behavioral or developmental issues (one or more emotional, behavioral or developmental issues, no qualifying emotional, behavioral or developmental issues, non-CSHCN
- Medical home (care does not meet all medical home criteria, medical home)
- Type of Insurance (public insurance, private insurance, uninsured)

- Consistency of health care coverage (consistently insured, currently uninsured or periods with no coverage)
- Adequacy of current insurance (adequate, inadequate)
- Rural urban commuter areas (urban core, suburban, large town, small town/rural)
- Urban/Rural residence (urban, rural)

Data source: National Survey of Children's Health (NSCH)

Notes on calculation: Numerator: number who indicated at least once in response to the question: During the past 12 months/since [his/her] birth, how many times did [child name] see a dentist for preventive dental care such as check-ups and dental cleanings? Analysts who use the raw datasets should apply the appropriate survey weights to generate the final estimates.

Similar measures in other indicator sets: HP 2020 focus area OH-7 (Leading Health Indicator); NQF measure 1334, Chronic Disease Indicator; National Oral Health Surveillance System Indicator

Life Course Criteria

Introduction

The health of the mouth and surrounding structures is central to a person's overall health and well-being. The craniofacial complex (collective dental, oral, and craniofacial tissues) allows people to speak, smile, smell, taste, chew, protect against microbial infections, and swallow. Consequently, many oral health conditions undermine self-image and self-esteem, discourage normal social interaction, or lead to chronic pain, stress and depression. These conditions can also interfere with vital functions including breathing, food selection, eating, speaking and daily living activities such as school and social interactions. Preventable oral health problems remain common in U.S. children, particularly in children of low socioeconomic status. In 2000, the Surgeon General reported that tooth decay is the most common chronic childhood disease and a silent epidemic of oral disease affecting the nation's poor children. Persistent disparities exist in access to and use of oral health preventive visits across age, racial and ethnic groups, insurance status, insurance type, language, and others, with many of these disparities pronounced in young children. To improve the prevalence of receipt of oral health preventive services among children, numerous partnerships may be leveraged – including among payers (especially Medicaid and Children's Health Insurance Program (CHIP)), diverse health professionals and training programs, community organizations and schools. These partnerships are critical in intervening in preventable health conditions in children and influencing an individual's engagement in oral health that may influence health across the lifespan, including in adolescence, pregnancy (influencing birth outcomes), and later life.

Implications for equity

Despite improvements in oral health for the overall U.S. population, oral health disparities exist by socioeconomic status, gender, age, location and racial and ethnic groups. Children from lower income families and racial/ethnic minority groups continue to be disproportionately affected by oral disease than their counterparts. Only one third of eligible children enrolled in Medicaid/CHIP were reported to have received any preventive dental services, in spite of the American Academy of Pediatric Dentistry (AAPD) recommendation of more frequent use of preventive dental measures for children at higher risk for oral disease.[1]

Barriers to obtaining dental care for poor children, the elderly, and racial and ethnic minorities include lack of insurance, the inability to speak English, and lack of dentists who accept Medicaid or see children with special health care needs.[2] People in racial minority groups reported more difficulty in trying to obtain children's dental care,[3] with the most pronounced challenges experienced among Mexican American and African American non-Hispanic children ages two to four years and ages six to eight years.[4]

More than 108 million children and adults lack dental insurance, more than two and a half times the number of individuals who lack medical insurance.[2] Uninsured children have a higher burden of dental disease than their insured peers and experience substantially less access to dental services. Children from families without dental insurance are three times more likely to have dental needs than children with either public or private insurance.[3]

The decision of dentists to participate in Medicaid and CHIP plans impacts access to dental services, especially for children with special health care needs. In addition to the challenges in finding dentists who accept Medicaid and CHIP, parents of children with special health care needs may struggle with the high out-of-pocket cost of specialized care, which remains a barrier to regular preventive oral health visits.[5]

Public health impact

Use of dental services and maintaining good oral health habits in childhood is beneficial to both oral health and general health later in life. Several studies have linked dental caries (tooth decay) in the primary teeth to caries in the permanent teeth.[6,7] Oral health care visits for children allow for the provision of preventive and educational services as well as the early identification and treatment of existing oral disease. Through early and regular oral health care visits, children can avoid complex and expensive restorative and emergency dental treatment in later years, ultimately leading to significant savings in dental expenditures.

Preventable oral health problems remain common in U.S. children, particularly in children of low socioeconomic status. In 2000, the Surgeon General reported that tooth decay is the most common chronic childhood disease and a silent epidemic of oral disease affecting the nation's poor children.[3] The prevalence of dental caries among children ages five to 11 years is 26 percent and 67 percent among children aged 12-17 years.[8] The American Academy of Pediatric Dentistry (AAPD), the American Academy of Pediatrics (AAP), the American Dental Association (ADA), and the American Association of Public Health Dentistry (AAPD) all recommend establishing a dental home and the first dental visit by age one year. Adhering to these recommendations and increasing the number of children who have had a preventive dental visit in the past 12 months can decrease oral health problems, such as dental caries, in children and improve general health later in life.

Leverage or realign resources

Medicaid and CHIP must provide dental services, including diagnostic, preventive and related services for all eligible enrollees under the age of 12. However, obtaining dental care for children in these programs remains a challenge, as most dentists accept few or no Medicaid or CHIP patients. In 2008, less than 37 percent of children enrolled in Medicaid received any dental services.[9] Dentists cite low payment rates, administrative requirements and patient issues as why they do not treat Medicaid patients.[9] Partnerships with dental providers, public health dentistry professionals, and public payers are critical to overcoming these hurdles and expanding access to preventive services for this vulnerable population.

Federal efforts to improve access to dental services for children in underserved areas (such as expanding dental services in health centers, providing scholarships and loan repayment for dentists and hygienists who practice in underserved areas for three years, and funds to support new dental service sites in underserved areas) are underway but the effect is unknown.[9] Increasing delivery of preventive dental services by medical care providers is an innovative practice. In 2009, 35 state Medicaid programs allowed reimbursement of medical care providers for preventive dental services for children.[10] The Institute of Medicine (IOM) convened a committee to assess the current oral health care system and recommend strategies to achieve a vision to improve oral health care for vulnerable and underserved populations.[11] The committee identified that the separation of oral health care from overall health care is a factor limiting access to oral health care for many Americans, and encourages the use of nondental health care professionals for screening and delivering oral health care services. The committee also suggested that oral health education and training could be integrated into health professional school curricula. Further, to increase the exposure of future dental care providers to underserved populations, the committee recommended providing students with clinical experiences in community-based settings, and expanding recruitment and support for students from underrepresented communities. Together, community-based partnerships between health professional schools and community health centers, including Federally Qualified Health Centers, could help to overcome access issues to preventive dental services.

A number of innovative partnerships also may be explored with regard to improving the oral health of children and increasing access to preventive dental visits. For example, partnerships between schools and oral health providers could focus on delivery of oral health services as well as expanding dissemination of public health messages, such as reducing intake of sugary drinks and snacks (possibly through their removal from the school).

Increasing dental services to all children, adolescents, and adults as well as closing the gap in dental service use between income strata are goals of Healthy People 2020. HP 2020 objective OH-8 is to "Increase the proportion of low-income children and adolescents who received any preventive dental service during the past year" and objective OH-7 is to "Increase the proportion of children, adolescents, and adults who used the oral health care system in the past 12 months."[12] The healthypeople.gov website contains evidence-based information and recommendations related to these oral health objectives.

Predict an individual's health and wellness and/or that of their offspring

Preventive oral health care has a significant impact on oral diseases and conditions that affect people throughout their lifespan.[2] Chronic oral-facial pain conditions, oral and pharyngeal cancers, oral soft tissue lesions, and birth defects such as cleft lip and palate are all conditions that can have improved outcomes through consistent oral health care visits.[2]

Dental caries remain a common chronic disease in the United States. Left untreated, the pain and infections caused by dental caries can lead to long-term health and social problems that in many cases could be completely prevented. Ensuring use of preventive oral health services early in life may influence an individual's perspective and engagement in oral health in the future, putting in place healthy behaviors for a lifetime. Evidence links poor oral health, especially gum disease, to several chronic diseases (diabetes, heart disease and stroke), and in pregnant women, poor oral health has been linked to premature birth and low birth weight.[13,14] Additionally, many systemic diseases initially manifest orally, and preventive dental visits may lead to earlier diagnosis of these conditions. Poor oral health during critical and sensitive periods of life can alter health trajectories and have an intergenerational impact on health. Further, oral health can be improved using a life course approach similar to those applied to other chronic conditions because many of the behaviors, nutritional habits, and social determinants that influence oral health have also been linked to chronic diseases.[16]

Data Criteria

Data availability

The National Survey of Children's Health (NSCH), sponsored by the Maternal and Child Health Bureau of the Health Resources and Services Administration, examines the physical and emotional health of children ages zero to 17 years of age. The survey is administered using the State and Local Area Integrated Telephone Survey (SLAITS) methodology, and it is sampled and conducted in such a way that state-level estimates can be obtained for the 50 states, the District of Columbia, and the Virgin Islands. The survey has been designed to emphasize factors that may relate to the well-being of children, including medical homes, family interactions, parental health, school and after-school experiences, and safe neighborhoods. The Maternal and Child Health Bureau leads the development of the NSCH and NS-CSHCN survey and indicators, in collaboration with the National Center for Health Statistics (NCHS) and a national technical expert panel. The expert panel includes representatives from other federal agencies, state Title V leaders, family organizations, and child health researchers, and experts in all fields related to the surveys (adolescent health, family and neighborhoods, early childhood and development etc.). The most recent data set, the 2011-2012 NSCH, encompasses a sample size of more than 95,000 children with approximately 1,800 interviews completed in each of the 50 states and the District of Columbia.

MCH programs can readily gain immediate access to the data through datasets released by the National Center for Health Statistics, and on the MCHB sponsored Data Resource Center for Child and Adolescent Health Website (www.childhealthdata.org). Data from the 2011/2012 NSCH were made available in early 2013. The survey questionnaire and raw dataset are available for download on the Centers for Disease Control and Prevention (CDC) NCHS website in SAS format. The Data Resource Center (DRC) website provides data nationwide, for all 50 states and the District of Columbia. Additionally, both the raw datasets and the website allow users to stratify measures by sociodemographic groups, including but not limited to age, sex, race/ethnicity, primary household language, household income, and special health care needs. Cleaned, state-specific datasets with new variables that include national and state indicators are available at no cost in SAS and SPSS formats. For information on how to order state-specific sets, contact cahmi@ohsu.edu. Local data is not searchable. The NSCH is not administered annually. Over the past decade, the NSCH has been administered four times.

The question in the NSCH pertaining to preventive oral health visits (During the past 12 months, how many times did [CHILD'S NAME] see a dentist for preventive dental care, such as check-ups and dental cleanings) was included in the

2011-2012 and 2007 NSCH. The 2003 NSCH included a question worded differently: During the past 12 months, did [CHILD'S NAME] see a dentist for any routine preventive dental care, such as check-ups, screenings, and sealants?

Data quality

The main limitation of the NSCH is that the information provided is from parent recollection of screenings received and perception of child's health and development over the past year. The survey methodology does not provide an opportunity for confirmation with medical records or physical measurements. The NSCH is weighted to represent the national population of non-institutionalized children ages zero to 17 years. According to the survey documentation, missing data for income were relatively high for 2011-2012 data, and a study of nonresponse patterns indicated that excluding records with missing income could impact the representativeness of the remaining data; therefore, a data file with imputed values for income is provided to be used with the datasets.

The NSCH documentation presents both response rates and completion rates. For 2011-2012 data, the combined national response rate for both landline and cell phone samples was 23 percent. The completion rate, which is calculated as the proportion of households known to include children that completed all sections up to and including Section Six (for children less than six years of age) or Section Seven (for children six to 17 years of age), was 54.1 percent for the landline sample and 41.2 percent for the cell-phone sample.

Qualitative testing of the entire 2007 National Survey of Children´s Health was conducted by the National Center for Health Statistics. They conducted cognitive interviews with the 2007 NSCH Computer-Assisted Telephone Interview (CATI) to make sure the entire survey instrument was functioning properly. N=640 interviews were completed over three days in December 2006. The questionnaire was then revised and finalized based on feedback from participants in these interviews.

Previously validated questions and scales are used when available. All aspects of the survey are subjected to extensive literature and expert review. Respondents' cognitive understanding of the survey questions is assessed during the pretest phase and revisions made as required. All final data components are verified by NCHS and DRC/CAHMI staff prior to public release. Face validity is conducted in comparing results with prior years of the survey and/or results from other implementations of items.

Romaire and colleagues (2012) compared estimates of dental service use and delayed dental care and trends in use and delay across four surveys: the 2003 and 2007 National Survey of Children's Health (NSCH), the 2003-2004 National Health and Nutrition Examination Survey (NHANES), the 2003 and 2007 National Health Interview Survey (NHIS), and the 2003 and 2007 Medical Expenditure Panel Survey (MEPS). The researchers found variance across the prevalence estimates due to the items and data collection procedures employed by the surveys; however this difference among estimates was less for preventive dental use as compared to dental service use. NHANES had the lowest estimate of preventive dental use in 2003 (67 percent) whereas MEPS had the highest (78 percent). The slight increase in the proportion of children with a preventive dental visit between 2003 and 2007 as found from the NSCH was also reflected in the MEPS. Across all surveys, disparities in dental services by key sociodemographic characteristics (e.g. age, race/ethnicity, insurance status, income, and children with special health care needs status) were consistent. The authors describe the differences between the prevalence estimates as related to the number of survey items used, the recall period, and use of prompts and probes (MEPS) and their influence on social desirability bias or validity and accuracy of parent reports. The authors conclude that specific research or policy questions may guide the selection of the data source, and suggest that the NSCH may best answer questions concerning state-level geographic variation or contextual factors, which the other surveys lack.[15]

Simplicity of indicator

Analysis results for the overall indicator and all sub-groups listed above are available at the NSCH Data Resource Center website. Datasets are available for download if additional analysis is desired. Survey data are weighted to be representative of the population; some sub-groups at the state level have small cells that will affect the ability to detect a significant difference. Overall this is a simple indicator to explain and use.

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To learn more, please contact Caroline Stampfel, Senior Epidemiologist at cstampfel@amchp.org or (202) 775-0436.

Association of Maternal & Child Health Programs
2030 M Street, NW, Suite 350
Washington, DC 20036
(202) 775-0436 ▪ www.amchp.org

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