

Attachment A: CHIPRA Pediatric Quality Measures Program (PQMP) Candidate Measure Submission Form (CPCF)

Italics indicate instructions for how to complete a specific field. << >> indicates the name of a text field in the online version of this form. + indicates an upload field in the online version of this form.

Submission Guidelines

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

Section I. Basic Measure Information

Risky sexual behavior among adolescents is an important issue that can lead to a host of adverse health outcomes. Understanding an adolescent's sexual activity status can aid health care providers in tailoring services and administering screenings. The Children's Initial Core Set includes a measure that assesses whether sexually active female adolescents received annual Chlamydia screening, as recommended by clinical guidelines (*Chlamydia Screening in Women*). This measure requires identifying adolescents who are sexually active. The measure is currently specified for administrative data and relies on claim/encounter and pharmacy data (specifically, prescriptions for contraceptives). While use of claims data is attractive due to ease of use, we sought to develop a measure that improves on the denominator specification and could be measured at a health care provider level using electronic health record (EHR) systems. The *Sexual Activity Status Among Adolescents* measure assesses whether adolescents' sexual activity status was documented in the medical record. While the measure serves the immediate purpose of improving on the denominator of the chlamydia screening measure, it also can be used by providers to tailor the health care visit for both males and females.

I.A. Measure Name

Sexual Activity Status Among Adolescents

I.B. Measure Number (auto generated)

«Measure_Number»

I.C. Measure Description

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

The percentage of adolescents 12 to 20 years of age with a primary care visit during the measurement period for whom sexual activity status was documented.

This measure is recommended for health care provider-level reporting and has been tested in EHRs. Specifications are provided for both provider and population level reporting.

I.D. Measure Hierarchy

Please note here if the measure is part of a measure hierarchy or is part of a measure group or composite measure. The following definitions are used by AHRQ's National Quality Measures Clearinghouse and are available at <http://www.qualitymeasures.ahrq.gov/about/hierarchy.aspx>:

I.D.1. Please identify the name of the **collection** of measures to which the measure belongs (if applicable). A Collection is the highest possible level of the measure hierarchy. A Collection may contain one or more Sets, Subsets, Composites, and/or Individual Measures.

NA

I.D.2. Please identify the name of the measure **set** to which the measure belongs (if applicable). A Set is the second level of the hierarchy. A Set may include one or more Subsets, Composites, and/or Individual Measures.

NA

I.D.3. Please identify the name of the **subset** to which the measure belongs (if applicable). A Subset is the third level of the hierarchy. A Subset may include one or more Composites, and/or Individual Measures.

NA

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

I.E. Numerator Statement

Documentation of any of the following during the measurement year or the six months prior to the measurement year:

- Sexual activity status – current (e.g. sexually active, abstinent)
- Sexual activity status – past
- Number of sexual partners
- Current or past diagnosis of a sexually transmitted infection (STI)
- Use of non-hormone based methods of birth control (e.g. rhythm method; barrier methods such as condoms, diaphragm)
- Prescription for birth control/contraception with indication for pregnancy prevention
- Current or past diagnosis of pregnancy

Documentation of Prescription for birth control/ contraception alone would count towards the numerator only when it is documented with an indication for contraception/pregnancy prevention.

The current *Chlamydia Screening in Women* measure does not allow for an exclusion for women who are on contraceptives for non-contraceptive reasons (potential non-contraceptive reasons include treatment of acne, dysmenorrhea, menstrual irregularities such as premenstrual syndrome and dysfunctional uterine bleeding, pelvic pain from endometriosis, and Polycystic Ovarian Syndrome). With information learned from testing this measure, NCQA intends to explore revising the *Chlamydia Screening in Women* measure to exclude women who have a prescription for birth control but have documentation that it is being prescribed for non-contraceptive use.

I.F. Numerator Exclusions

None

I.G. Denominator Statement

Adolescents who turn 12 through 20 years of age during the measurement year.

I.H. Denominator Exclusions

None

I.I Data Sources

Check off all data sources specified by the measure.

Data Source	[Online form will have radio buttons]
a. Administrative Data (e.g., Claims data)	

b. Paper Medical Record	<input checked="" type="radio"/>
c. Survey – Health care professional report	<input type="radio"/>
d. Survey – Parent/caregiver report	<input type="radio"/>
e. Survey – Child report	<input type="radio"/>
f. Electronic Medical Record	<input checked="" type="radio"/>
g. Other (If other, please list all other data sources in the field below).	<input type="radio"/>

I.J. Measure Owner

National Committee for Quality Assurance (NCQA) on behalf of the National Collaborative for Innovation in Quality Measurement (NCINQ)

I.K. National Quality Forum (NQF) ID (if applicable)

NA - new measure

Section II: Detailed Measure Specifications

Provide sufficient detail to describe how a measure would be calculated from the recommended data sources, uploading a separate document (+ Upload attachment) or a link to a URL. Examples of detailed measure specifications can be found in the CHIPRA Initial Core Set Technical Specifications Manual 2011 (February 2011), published by the Centers for Medicare & Medicaid Services and available at <http://www.medicare.gov/Medicare-CHIP-Program-Information/By-Topics/Quality-of-Care/Downloads/InitialCoreSetResouceManual.pdf> and <http://www.medicare.gov/Medicare-CHIP-Program-Information/By-Topics/Quality-of-Care/CHIPRA-Initial-Core-Set-of-Childrens-Health-Care-Quality-Measures.html>. Although submission of formal programming code or algorithms that demonstrate how a measure would be calculated from a query of an appropriate electronic data source are not requested at this time, the availability of these resources may be a factor in determining whether a measure can be recommended for use.

+ Upload the detailed specifications document here

Section III. Importance of the Measure

In the following sections, provide brief descriptions of how the measure meets one or more of the following criteria for measure importance. Include references and data.

III.A. Evidence for general importance of the measure

Provide evidence for all applicable aspects of general importance:

- Addresses a known or suspected quality gap or disparity in quality (e.g., addresses a socioeconomic disparity, a racial/ethnic disparity, a disparity for Children with Special Health Care Needs (CSHCN) a disparity for limited English proficiency (LEP) populations.
- Potential for quality improvement (i.e., what is known about effective approaches to reducing the quality gap or disparity in quality.)
- Prevalence of condition among children under age 21 or pregnant women.
- Severity of condition and burden of condition on children, family, and society (unrelated to cost)
- Fiscal burden of measure focus (e.g., clinical condition) on patients, families, public and private payers, or society more generally, currently and over the life span of the child.
- Rarity of condition (e.g., not often addressed or affects smaller vulnerable population)
- Association of measure topic with children's future health – for example, a measure addressing childhood obesity may have implications for the subsequent development of cardiovascular diseases.
- The extent to which the measure changes across developmental stages, such as infancy, early childhood, middle childhood, adolescence, young adulthood, etc.

This measure assesses the percentage of adolescents whose sexual activity status was documented in the medical record. Sexual activity status documentation provides important and actionable information to health care providers.

Importance

Adolescents experience adverse sexual and reproductive health outcomes, such as sexually transmitted infections (STIs) like chlamydia and unplanned pregnancy, at alarming rates in the U.S. In 2009, an estimated

517,174 cases of chlamydia and other STIs and 2,036 cases of HIV were reported among high schoolers aged 15 to 19 years (CDC-YRBS 2011). In addition, an estimated 745,000 females younger than 20 years of age become pregnant every year (Gavin et al 2010). Determining an adolescent's sexual activity status and history is an important first step in identifying those at risk for contracting STIs or becoming pregnant. For example, the U.S. Preventive Services Task Force (USPSTF) recommends STI screening (chlamydia, gonorrhea, HIV and syphilis) based on sexual activity status and other risk factors.

Given the trends regarding adolescent sexual behaviors, it is important to address this issue. According to the 2011 Youth Risk Behavior Surveillance System, 47.4 percent of high school students have had sex at least once, 33.7 percent are currently sexually active (defined as having had sex in the three months prior to administration of the survey) and 15.3 percent reported having had sex with four or more partners in their life. Adolescents' curiosity about sex is also beginning at a fairly young age with 6.2 percent of students reporting having had sex for the first time before the age of 13 (CDC-YRBS 2011).

Opportunity for Improvement: Sexual Activity Status Documentation

Oftentimes an adolescent's provider is overlooked as a credible source of sexuality information; however providers play an important role in reducing adolescents' sexual health risks (Clark et al. 2012). Research suggests that primary care providers are missing opportunities to identify sexually active adolescents. Providers frequently fail to document sexual histories of new patients or to complete a sexual history detailed enough to educate patients about sexual risk behaviors (Clark et al. 2012). As a result, providers may also be missing opportunities to screen adolescents for STIs such as chlamydia.

The *Sexual Activity Status Among Adolescents* measure was developed and tested in the context of providing an improved means for identifying sexually active adolescents for the *Chlamydia Screening in Women* measure, as chlamydia is the most frequently reported bacterial STI in the U.S. (across all age groups) (CDC, 2010). Adolescents and young adults (age 15 to 24) have four times the reported rate of chlamydia of the total population (CDC 2011). Unidentified chlamydia infection can result in serious and far-reaching adverse health outcomes.

In women, unidentified or untreated chlamydia can spread to the uterus or fallopian tubes and cause pelvic inflammatory disease (PID), which occurs in about 10 to 15 percent of women with untreated chlamydia. PID and infections in the upper genital tract can cause permanent damage to the fallopian tubes, uterus, and surrounding tissues and can also lead to chronic pelvic pain, infertility, and potentially fatal ectopic pregnancy. Chlamydia may also increase one's risk of becoming infected with HIV if exposed (CDC-Chlamydia 2011).

Chlamydia is easily detectable through screening, and a measure that promotes standardized documentation of sexual activity status may aid in identifying adolescents who should be screened. Chlamydia screening recommendations only apply to females at this time. However, as understanding sexual activity status gives providers actionable information and allows them to tailor other health care services as needed, our stakeholder panels concluded it was important to include males in the *Sexual Activity Status Among Adolescents* measure.

Health Disparities

Overall, the prevalence of high school students who have ever had sex is highest among African American students (60 percent) compared to Hispanic (48.6 percent) and Caucasian (44.3 percent) students. The rate of being currently sexually active (defined as having had sex in the three months prior to administration of the survey) was also highest among African American students (41.3 percent) compared to Hispanic (33.5 percent) and Caucasian (32.4 percent) students. In addition, the rate of students reporting having had sex with four or more sexual partners was nearly double for African American students (24.8 percent) compared to Hispanic (14.8 percent) and Caucasian (13.1 percent) students (CDC-YRBS 2011).

With respect to Chlamydia, the rate among African Americans (1,167.5 cases per 100,000 population) was more than eight times the rate among Caucasians (138.7 cases per 100,000 population). The rate among Hispanics (369.6 cases per 100,000) was also higher than Caucasians (2.7 times higher).

III.B. Evidence for importance of the measure to Medicaid and/or CHIP

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

- The extent to which the measure is understood to be sensitive to changes in Medicaid or CHIP (e.g., policy changes, quality improvement strategies)
- Relevance to the Early and Periodic Screening, Diagnostic and Treatment benefit in Medicaid¹
- Any other specific relevance to Medicaid/CHIP or to populations overrepresented in Medicaid or CHIP

The *Sexual Activity Status Among Adolescents* measure assesses whether health care providers document the sexual activity status of their adolescent patients. As described above, risky sexual behavior and chlamydia infections occur more frequently among adolescents from minority racial/ethnic groups. Children covered by Medicaid and CHIP are typically of lower socioeconomic status and are disproportionately of non-Caucasian race/ethnicity. The average CHIP income eligibility level for children is 241 percent of the Federal Poverty Level (FPL) (Medicaid.gov 2012), and Medicaid coverage rates for children 0-18 years are more than double for African Americans (29 percent) and Hispanics (27 percent) compared to Caucasians (12 percent) (StateHealthFacts.org 2010). Furthermore, these populations are at a higher risk of being currently sexually active, becoming sexually active at a younger age, having more partners, contracting an STI and becoming pregnant during adolescence.

This measure aligns with the goals of Early and Periodic Screening, Diagnosis, and Treatment (EPSDT), a mandatory set of services and benefits for all individuals under age 21 who are enrolled in Medicaid. The purpose of the EPSDT program is to ensure the provision of comprehensive health care services for children and adolescents. Under EPSDT guidelines, all sexually active adolescents and young adults should be screened annually for gonorrhea and chlamydia. Sexually active youth should also be counseled about the schedule of Human Papillomavirus (HPV) vaccines and screened for syphilis if at risk. The measure ensures health care providers document sexual activity status in order to determine the appropriateness of these services for the adolescents.

III.C. Relationship to other measures, if any

Describe how this measure complements or improves on an existing measure in this topic area for the child or adult population (if known), or if it is intended to fill a specific gap in an existing measure. If this question does not apply, please note this.

This measure complements the four existing measures in the Initial Core Set that assess the receipt and content of adolescent well care: *Adolescent Well Care Visits*, *Weight Assessment and Counseling for Nutrition and Physical Activity for Children/Adolescents*, *Body Mass Index Assessment for Children/Adolescents*, *Immunizations for Adolescents*, *Chlamydia Screening in Women*. Further, as noted, the measure can be used to improve the denominator of the *Chlamydia Screening in Women* measure.

References:

American Medical Association. Guidelines for adolescent preventive services (GAPS): Recommendations and rationale. Chicago: American Medical Association; 1994.

Banas DA, Cromer BA, Santana M, et al. Comparison of clinical evaluation of genitourinary symptoms in female adolescents among primary care versus emergency department physicians. *J Pediatr Adolesc Gynecol*. 2010;23(2):71–76

The California Department of Public Health (CDPH) and the California STD/HIV Prevention Training Center. 2011. A Clinician's Guide to Sexual History Taking.

Centers for Disease Control and Prevention. Youth risk behavior surveillance—United States, 2011. *MMWR* 2012;61(SS-4)

Centers for Disease Control and Prevention. Sexually Transmitted Disease Surveillance 2010. Atlanta: U.S. Department of Health and Human Services; 2011

¹ The Early and Periodic Screening, Diagnostic and Treatment service, EPSDT, is a comprehensive set of benefits available to children and youth under age 21 who are enrolled in Medicaid. For more information, see <http://www.healthlaw.org/images/stories/epsdt/3-ESDPT08.pdf>

² Public Law 111-3, Available at: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_public_laws&docid=f:publ003.111

³ Under Section 214 of CHIPRA, states may elect to cover the following groups under Medicaid only or under both Medicaid and CHIP: pregnant women and children up to age 19 for CHIP or up to age 21 for Medicaid.

Centers for Disease Control and Prevention. 2010 Sexually Transmitted Diseases Surveillance. 2011. STD Trends in the United States: 2010 National Data for Gonorrhea, Chlamydia, and Syphilis. <http://www.cdc.gov/std/stats10/trends.htm>

Centers for Disease Control and Prevention. 2011. Sexually Transmitted Diseases (STDs). Chlamydia - CDC Fact Sheet. <http://www.cdc.gov/std/chlamydia/STDFact-Chlamydia.htm>

Centers for Disease Control and Prevention. 2012. Teen Pregnancy: About Teen Pregnancy. <http://www.cdc.gov/TeenPregnancy/AboutTeenPreg.htm>

Centers for Disease Control and Prevention. Sexually Transmitted Diseases (STDs). Sexually Transmitted Diseases Treatment Guidelines, 2010: Special Populations. <http://www.cdc.gov/std/treatment/2010/specialpops.htm>

Clark JK, Brey RA, Banter AE, Khubchandani J. The delivery of sexuality-related patient education to adolescent patients: A preliminary study of family practice resident physicians. J Fam Med Primary Care 2012;1:34-8. <http://www.jfmpc.com/article.asp?issn=2249-4863;year=2012;volume=1;issue=1;page=34;epage=38;aulast=Clark>

Goyal M, McCutcheon M, Hayes K, Mollen C. 2011. Sexual History Documentation in Adolescent Emergency Department Patients. Pediatrics. 128:000. <http://pediatrics.aappublications.org/content/early/2011/06/01/peds.2010-1775.full.pdf>

Medicaid.gov. Medicaid & CHIP Program Information: By Population – Children. 2012. <http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Population/Children/Children.html>

The National Campaign to Prevent Teen and Unplanned Pregnancy. 2012. Counting It Up: The Public Costs of Teen Childbearing. <http://www.thenationalcampaign.org/costs/>

StateHealthFacts.org. 2010. Medicaid Coverage Rates for the Nonelderly by Race/Ethnicity, states (2009-2010). <http://www.statehealthfacts.org/comparetable.jsp?ind=163&cat=3>

USPSTF A-Z Topic Guide. 2012. U.S. Preventive Services Task Force. <http://www.uspreventiveservicestaskforce.org/uspstf/uspsttopics.htm>

Weinstock H, Berman S, Cates W Jr. 2004 Sexually transmitted diseases among American youth: incidence and prevalence estimates, 2000. Perspect Sex Reprod Health. 36 (1):6–10.

IV. Measure Categories

CHIPRA legislation² requires that measures in the initial and improved core set be responsive to the services and topics of health care quality listed below. Moreover, the legislation requires the core set to address the needs of children across all ages³ and to reflect availability of care across the range of health care settings in which such care is furnished. Regardless of the eventual use of the measure, we are interested in knowing all settings, services, measure topics, and populations that this measure addresses. These categories are not exclusive of each other, so please indicate "Yes" to all that apply.

	[Yes/No]	
a. Care Setting – ambulatory	Yes	
b. Care Setting – inpatient	No	
c. Care Setting – other—please specify	No	[Add the following: home, school, other community and public health settings, long-term care, other]
d. Service – preventive health	Yes	
e. Service – care for acute conditions	No	
f. Service - care for children with special health care needs/chronic conditions	No	
g. Service – health promotion and services to promote healthy birth	Yes	
h. Service-other (please specify)	No	
i. Measure Topic -duration of enrollment	No	
j. Measure Topic – clinical quality	Yes	
k. Measure Topic – patient safety	No	
l. Measure Topic – family experience with care	No	

	[Yes/No]	
m. Measure Topic – care in the most integrated setting	No	
n. Measure Topic – other (please specify)	No	«Other_Topic»
o. Population – pregnant women	No	«Age_Range»
p. Population – neonates (28 days after birth) (specify ages)	No	«Age_Range»
q. Population – infants (29 days to 1 year) (specify ages)	No	«Age_Range»
r. Population – pre-school age children (1 through 5 years) (specify ages)	No	
s. Population – school-age children (6 through 10 years) (specify ages)	No	
t. Population – adolescents (11 through 20 years) (specify ages)	Yes	≥ 12 year and <21 years

V. Evidence for the Focus of the Measure

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

V.A. Research Evidence

Research evidence should include a brief description of the evidence base for the relationship between a structure or process of health care and outcomes or an outcome that is influenced by a structure or process of health care.

Describe the nature of the evidence, including study design, and provide relevant citations. Evidence may be systematic reviews of research literature, research studies, or published formal consensus procedures⁴.

The *Sexual Activity Status Among Adolescents* measure assesses whether health care providers documented their adolescent patients' sexual activity status. The American Academy of Pediatrics and Bright Futures, through evidence-informed, consensus-based clinical guidelines, advise health care providers to discuss sexuality education with their adolescent patients.

In addition, the measure builds the denominator for the *Chlamydia Screening in Women* measure, which requires knowledge of one's sexual activity status. While the measure could also build the denominator for other preventive services that must be administered based on sexual activity, our advisory panels recommended against specifying additional measures beyond chlamydia screening at this time due to lack of sufficient evidence base, feasibility concerns, or other issues. These reasons are summarized in Table 1 below.

In addition, our panels recommended specifying the current measure as sexual activity status documentation *only* rather than including a "high-intensity behavioral counseling" component (as recommended by the U.S. Preventive Services Task Force) due to the inherent problem of being able to define and properly specify what would count as "high-intensity behavioral counseling." It is possible such a component can be added later when EHRs and other systems improve (as explained in Testing Results and HIT sections of this form)

Table 1. Sexual Activity-Related Concepts Considered but Not Recommended Due to Weak Evidence, Lack of Performance Gap, Duplicate External Efforts, or Other More Appropriate Mechanisms for Improving/Monitoring Care

Measure Concept	Background and Advisory Panel Feedback
Gonorrhea Screening	Our advisory panels were concerned about the feasibility of specifying "high risk" in the context of gonorrhea infection. The U.S. Preventive Services Task Force recommends screening sexually active women "if they are at increased risk for infection (that is, if they are young or have other individual or population risk factors)." The Task Force recommends against routine screening in men and women

⁴ A systematic review of the research literature: In the space provided, indicate how the systematic review of evidence has been assessed, for example, according to the guidance of such organizations as:

- Cochrane Collaborative, including EPOC as appropriate (<http://www.cochrane.org/>).
- U.S. Preventive Services Task Force (<http://www.uspreventiveservicestaskforce.org/uspstf07/methods/currprocess.pdf>); (<http://www.effectivehealthcare.ahrq.gov/tools-and-resources/researcher-resources/>)
- Oxford Center for Evidence-Based Medicine (<http://www.cebm.net/index.aspx?o=1011>)
- Or other appropriate taxonomy (<http://www.equator-network.org/>)

Research studies: Published in a National Library of Medicine (NLM) indexed, peer-reviewed journal (specify study design and other critical features relevant to assessing the quality of the study).

Published formal consensus procedure: Involving experts in relevant clinical, methodological, public health, and organizational sciences.

Measure Concept	Background and Advisory Panel Feedback
	<p>who are at “low risk for infection”.</p> <p>The Task Force notes that individual risk depends on the local epidemiology of disease and refers to local public health authorities to provide guidance to clinicians to help identify populations who are at increased risk in their communities. Given the difficulty specifying these risk factors, the advisory panels recommended against moving forward with this measure concept for now.</p>
HIV Screening	<p>Our advisory panels were concerned about the feasibility of specifying “high risk” in the context of HIV. The U.S. Preventive Services Task Force recommends screening for HIV for adolescents “at increased risk for HIV infection.” The Task Force notes that those at increased risk include men who have had sex with men after 1975; men and women having unprotected sex with multiple partners; past or present injection drug users; men and women who exchange sex for money or drugs or have sex partners who do; individuals whose past or present sex partners were HIV-infected, bisexual, or injection drug users; persons being treated for sexually transmitted diseases (STDs); and persons with a history of blood transfusion between 1978 and 1985. Persons who request an HIV test despite reporting no individual risk factors may also be considered at increased risk, since this group is likely to include individuals not willing to disclose high risk behaviors. Due to the difficulty of specifying these risk factors, the advisory panels recommended against moving forward with this measure concept for now. It is possible we may re-visit this concept in the future if universal screening becomes recommended.</p>
Counseling to prevent STIs	<p>The U.S. Preventive Services Task Force and others recommend “high-intensity behavioral counseling” to prevent STIs for sexually active adolescents. However, our advisory panels recommended against specifying a measure based on this recommendation due to the feasibility of specifying “high-intensity behavioral counseling,” which is inconsistently defined in practice, and concerns with the limited availability of these services nationwide.</p>

Below are guidelines that apply to sexual activity documentation among adolescents. We have also included the Chlamydia screening guidelines for reference, as this measure was developed in the context of improving the denominator for the *Chlamydia Screening in Women* measure.

TYPE OF EVIDENCE	KEY FINDINGS	KEY CITATION(S)
Clinical Guideline	<p>U.S. Preventive Services Task Force (USPSTF) - 2007: <i>Screening for Chlamydia Infection</i></p> <p>The U.S. Preventive Services Task Force (USPSTF) recommends screening for chlamydial infection for all sexually active non-pregnant young women aged 24 and younger and for older non-pregnant women who are at increased risk. Grade: A Recommendation.</p> <p>The USPSTF recommends screening for chlamydial infection for all pregnant women aged 24 and younger and for older pregnant women who are at increased risk. Grade: B Recommendation.</p> <p>The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for chlamydial infection for men. Grade: I Statement.</p>	<p>Screening for Chlamydial Infection. June 2007. U.S. Preventive Services Task Force. http://www.uspreventiveservicestaskforce.org/uspstf/uspschlm.htm</p>
Clinical Guideline	<p>Centers for Disease Control and Prevention (CDC) – 2010: <i>Chlamydial infections: Sexually transmitted diseases treatment guidelines, 2010.</i></p> <p>Chlamydial Infections in Adolescents and Adults</p> <p>Chlamydial genital infection is the most frequently reported infectious disease in the United States, and the prevalence is highest in persons aged ≤25 years. Several important sequelae can result from Chlamydia trachomatis infection in women, the most serious of which include pelvic inflammatory disease (PID), ectopic pregnancy, and infertility. Some women who have uncomplicated cervical infection already have subclinical upper reproductive tract infection</p>	<p>Centers for Disease Control and Prevention. Chlamydial infections. In: Sexually transmitted diseases treatment guidelines, 2010. MMWR Recomm Rep 2010 Dec 17;59(RR-12):44-9.</p>

TYPE OF EVIDENCE	KEY FINDINGS	KEY CITATION(S)
	<p>upon diagnosis.</p> <p>Asymptomatic infection is common among both men and women. To detect chlamydial infections health-care providers frequently rely on screening tests. Annual screening of all sexually active women aged ≤25 years is recommended, as is screening of older women with risk factors (e.g., those who have a new sex partner or multiple sex partners).</p> <p>Screening programs have been demonstrated to reduce both the prevalence of <i>C. trachomatis</i> infection and rates of PID in women. Although evidence is insufficient to recommend routine screening for <i>C. trachomatis</i> in sexually active young men, based on several factors (including feasibility, efficacy, and cost-effectiveness), the screening of sexually active young men should be considered in clinical settings with a high prevalence of chlamydia (e.g., adolescent clinics, correctional facilities, and STD clinics). Among women, the primary focus of chlamydia screening efforts should be to detect chlamydia and prevent complications, whereas targeted chlamydia screening in men should only be considered when resources permit and do not hinder chlamydia screening efforts in women. An appropriate sexual risk assessment should be conducted for all persons and might indicate more frequent screening for some women or certain men.</p>	
Clinical Guideline	<p>American Academy of Family Physicians (AAFP) – 2012: Summary of recommendations for clinical preventive services.</p> <p><u>Chlamydia</u></p> <p>The AAFP recommends screening for chlamydial infection for all sexually active non-pregnant young women aged 24 and younger and for older non-pregnant women who are at increased risk. (2007) Grade: A recommendation</p> <p>The AAFP recommends screening for chlamydial infection for all pregnant women aged 24 and younger and for older pregnant women who are at increased risk. (2007) Grade: B recommendation</p> <p>The AAFP recommends against routinely providing screening for chlamydial infection for women aged 25 and older whether or not they are pregnant, if they are not at increased risk. (2007) Grade: C recommendation</p> <p>The AAFP concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for chlamydial infection for men. (2007) Grade: I recommendation</p>	American Academy of Family Physicians. Summary of recommendations for clinical preventive services. Leawood (KS): American Academy of Family Physicians; 2012 May. 18 p.
Clinical Guideline	<p>Institute for Clinical Systems Improvement (ICSI) – 2011 Preventive services for children and adolescents. Screen all sexually active women age 25 years and younger for chlamydia.</p> <p>Level I preventive services: Providers and care systems must assess the need for and recommend these services to every patient. These have the highest value and are worthy of attention at every opportunity.</p>	Institute for Clinical Systems Improvement. Preventive services for children and adolescents. Bloomington (MN): Institute for Clinical Systems Improvement; 2011 Sep. 87 p.
Evidence-informed consensus based recommendations	<p>Bright Futures – 2008 Guidelines for Health Supervision of Infants, Children and Adolescents</p> <p>Role of the Health Care Professional</p> <p>Clinical care for adolescents and young adults is commonly related to concerns about sexual development, contraception, STIs, and pregnancy. Clinical encounters for acute care, health maintenance visits, or sports physicals all provide opportunities to teach adolescents and their families about healthy</p>	Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents, 3 rd Edition; 2008 http://brightfutures.aap.org

TYPE OF EVIDENCE	KEY FINDINGS	KEY CITATION(S)
	<p>sexuality. Health care professionals can discuss sexual maturation, family or cultural values, communication, monitoring and guidance patterns for the family, personal goals, informed sexual decision making, and safety.</p> <p>The American Academy of Pediatrics (AAP) policy statement, Sexuality Education for Children and Adolescents, advises health care professionals to integrate sexuality education into the longitudinal relationship they develop through their care experiences with the preadolescent child, the adolescent, and the family. Confidential, culturally sensitive, and nonjudgmental counseling and care are important to all youth, including youth with special health care needs and nonheterosexual youth. The American College of Obstetricians and Gynecologists has a similar statement that supports the same approach.</p> <p>To address this issue in ways that respect values and meet the adolescent's needs, health care professionals must learn about the family's values and attitudes. Parents and health care professionals should be partners with youth in supporting healthy adolescent development and decision making. The rewards are long-term. Health care professionals, however, cannot assume that the family's values are the adolescents' values. In addition, although parents of most adolescents are concerned and available, health care professionals also must offer the best care possible to adolescents whose parents are absent or disengaged.</p> <p>Counseling adolescents should include stating the advantages of delaying sexual involvement, suggesting skills for refusing sexual advances, providing information about drug and alcohol risks, and expressing encouragement for healthy decisions. Adolescents with and without sexual experience may welcome support for avoiding sex until later in their lives. Health care professionals also should support adolescents in how to have healthy relationships. In addition, health care professionals should screen for, as well as counsel against, coercive and abusive relationships for adolescents who are involved with intimate partners.</p> <p>Information about contraception, including emergency contraception and STIs, should be offered to all sexually active adolescents and those who plan to become sexually active. Each contraceptive method has instructions for correct use, effectiveness for preventing pregnancy, potential side effects, and long-term consequences (eg, potential bone density concerns with depot medroxyprogesterone acetate). Hormonal contraception does not protect against STIs. Emergency contraception is available to prevent pregnancy after intercourse. The latex condom is the only method available to prevent the spread of HIV and can reduce the risks of some other STIs, including Chlamydia, gonorrhea, and trichomoniasis. Condoms also can reduce the risk of genital herpes, syphilis, and HPV infection when the infected areas are covered or protected by the condom.</p> <p>Health care professionals who care for adolescents may encounter some adolescents who are gay, lesbian, bisexual, transgendered, unsure, or uncomfortable with their sexual orientation or gender identity. Many of these youth remain unidentified and secretive because they are not comfortable enough to identify themselves and their sexual concerns. They may fear rejection or stigmatization from disclosure of their sexual orientation or gender identity issues to health care professionals. The goals for these youth are the same as for all adolescents—to promote healthy development, social and emotional well-being, and optimal physical health.</p> <p>Supportive, quality health care for adolescents means that adolescents must feel welcomed as individuals, regardless of social status, gender, disability, religion, sexual orientation, ethnic background, or country of origin. The health care professional must create a clinical environment in which the adolescent believes that sensitive personal issues, including sexual orientation and</p>	<p>rg/3rd Edition Guidelines and Pocket Guide.html http://brightfutures.aap.org/pdfs/Guidelines_PDF/18-Adolescence.pdf</p>

TYPE OF EVIDENCE	KEY FINDINGS	KEY CITATION(S)
	<p>expression, can be discussed. According to an AAP clinical report on sexual orientation and adolescents, "Sexual orientation refers to an individual's pattern of physical and emotional arousal toward other persons." The health care professional must help the adolescent understand that same-sex interest and behaviors can occur at this age and that they do not define sexual orientation. Clinic and practice materials, as well as personnel, can convey a nonjudgmental and safe environment for care and confidentiality for adolescents who may be experiencing same-sex attractions. Non-heterosexual adolescents are sensitive to jokes, attitudes, and comments regarding their sexual orientation, and they may not feel comfortable discussing significant health history or concerns. If the health care professional cannot ensure a safe environment for these adolescents because of personal feelings or other barriers, the adolescent should be referred to another practice or clinic with appropriate services.</p> <p>As with all other patients, the adolescent should be assured that confidentiality will be protected and also should be told of the conditions under which it can be broken. In those situations of serious concern, the health care professional should help the adolescent discuss the issue with her parents or family and, if necessary, obtain additional services with mental health professionals or other health care professionals. The health care professional also should offer advice to guide these adolescents in avoiding sexual and other health risk behaviors.</p> <p>Adolescents with special health care needs and their families can benefit from knowledgeable, personalized anticipatory guidance. Education about normal puberty and sexuality can be augmented with information that is germane to adolescents with physical differences, especially those that directly affect sexual functioning, as well as youth with cognitive delays. The risk of sexual exploitation and the protection of youth are always critical. A focus on youth access to accurate and complete information and support for healthy decision making is key for all youth who are transitioning to adulthood.</p>	
Clinical Guideline	<p>U.S. Preventive Services Task Force – 2008: Behavioral Counseling to Prevent Sexually Transmitted Infections</p> <p>The USPSTF recommends high-intensity behavioral counseling to prevent sexually transmitted infections (STIs) for all sexually active adolescents and for adults at increased risk for STIs. Grade: B Recommendation.</p> <p>The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of behavioral counseling to prevent STIs in non-sexually-active adolescents and in adults not at increased risk for STIs. Grade: I Statement.</p>	Behavioral Counseling to Prevent Sexually Transmitted Infections. U.S. Preventive Services Task Force. http://www.uspreventiveservicestaskforce.org/uspstf/uspstids.htm
Clinical Guideline	<p>American Academy of Family Physicians (AAFP) – 2012: Summary of recommendations for clinical preventive services.</p> <p><u>Sexually Transmitted Infections (STIs)</u></p> <p>The AAFP recommends high-intensity behavioral counseling to prevent STIs for all sexually active adolescents and for adults at increased risk for STIs. (2008) Grade: B recommendation</p> <p>The AAFP concludes that the current evidence is insufficient to assess the balance of benefits and harms of behavioral counseling to prevent STIs in non-sexually active adolescents and in adults not at increased risk for STIs. (2008) Grade: I recommendation</p>	

U.S. Preventive Services Task Force - Grading Key

Grade	Definition	Suggestions for Practice
A	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.	Offer or provide this service.
B	The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.	Offer or provide this service.
C	<i>Note: The following statement is undergoing revision.</i> Clinicians may provide this service to selected patients depending on individual circumstances. However, for most individuals without signs or symptoms there is likely to be only a small benefit from this service.	Offer or provide this service only if other considerations support the offering or providing the service in an individual patient.
D	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.	Discourage the use of this service.
I Statement	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.	Read the clinical considerations section of USPSTF Recommendation Statement. If the service is offered, patients should understand the uncertainty about the balance of benefits and harms.

American Academy of Family Physicians - Grading Key

A Recommendation: The AAFP recommends the service. There is high certainty that the net benefit is substantial.

B Recommendation: The AAFP recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.

C Recommendation: The AAFP recommends against routinely providing the service. There may be considerations that support providing the service in an individual patient. There is at least moderate certainty that the net benefit is small.

D Recommendation: The AAFP recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.

I Recommendation: The AAFP concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.

V.B. Clinical or other rationale supporting the focus of the measure (optional)

Provide documentation of the clinical or other rationale for the focus of this measure. Include one or a few key citations to support your rationale, if available.

The proposed *Sexual Activity Status Among Adolescents* measure identifies adolescents at risk for contracting STIs, like chlamydia, or other negative sexual and reproductive health outcomes by inquiring about and documenting their sexual activity status. While the measure serves the immediate purpose of improving on the denominator of the chlamydia screening measure, it also can be used by providers to tailor the health care visit for both males and females.

Scientific Soundness of the Measure

Please explain the methods used to determine the scientific soundness of the measure itself. Also, include results of all tests of validity and reliability, including description(s) of the study sample(s) and methods used to arrive at the results. Note how characteristics of the data system/data sources may impact reliability and validity. The glossary contains terms related to reliability and validity is included.

NCINQ conducted field tests to assess the feasibility of the measure for EHR systems as well as validity and reliability of the measure itself. Specific research aims included:

- 1) To assess the availability of key data elements and logic required for calculating well care measures in diverse EHR implementations.
- 2) To compare measure results based on manual reviews of the electronic medical records to automated extracts from the EHR.
- 3) To examine the reliability and validity of the measures, including inter-rater reliability among manual reviewers and known-groups validity.
- 4) To explore differences in performance based on patient characteristics including race/ethnicity, presence/absence of chronic conditions, socioeconomic status, and preferred language spoken at home.

To address these aims, our study included two components: 1) collection of information on care for a sample of 597 adolescents in three sites using manual EHR review (i.e., trained reviewers recording data based on viewing the electronic record) paired with automated EHR extracts; and 2) collection of information on 68,409 adolescents in five sites based on automated EHR extracts.

Key Findings

- Based on manual EHR review, a total of 79.9% of adolescents had documentation of their sexual activity status and 45.6 percent were identified as sexually active. Rates of documentation and sexual activity varied by site (61.5% to 95.9% for documentation; 32.5% to 56.4% of adolescents were sexually active).
- We found high inter-rater reliability in the manual EHR reviews. However, agreement between the manual EHR reviews and automated EHR extracts was only fair. Currently, manual reviews provide more reliable and complete information about sexual activity documentation than automated EHR extracts.
- Stakeholder reviews of the specifications and field test results indicate the measure has face validity. We also found that the known-groups validity, defined as the ability of the measure to meaningfully differentiate distinct groups, was good: documentation of sexual activity status was much higher among adolescents with a designated well-care visit.
- Documentation of sexual activity status varied by race/ethnicity and health insurance coverage, a proxy measure for household socioeconomic status; however, these differences are confounded by site variations in performance on the measures.

Methods

This section describes the methods for the two field test studies designed to evaluate the scientific soundness of the measure. NCINQ obtained data from five pediatric centers located in diverse geographic regions of the U.S.; sites were selected to represent a variety of specialties (family practice, general pediatrics, and adolescent medicine), practice settings (children's hospitals, private practices, and clinics serving vulnerable youth), locations (Ohio, Missouri, Pennsylvania and New York), EHR systems (EPIC, eClinicalWorks, and Allscripts), and patient populations (described below). The study relied on existing medical records.

Because of concerns about the completeness of data that could be obtained through automated EHR extracts, the findings reported here focus on the manual EHR review data unless otherwise noted.

Study Group 1: Sample of Eligible Adolescents at 3 sites

NCINQ conducted manual EHR reviews and obtained an automated EHR extract for a sample of approximately 200 adolescents in three sites. The participating sites included pediatric clinics affiliated with a children's hospital (this sample was selected from adolescents enrolled in Medicaid); a network of clinics serving homeless and vulnerable adolescents, and an adolescent medicine clinic affiliated with a children's hospital (which primarily provides behavioral health and gynecology care to young women). The participating sites were in different states and used different EHR vendors. Potentially eligible adolescents were 12 to 19 years old as of December 31, 2010 (which produces a sample of adolescents age 12 to age 20, the measure denominator requirement) and had at least one visit to the same primary care office or adolescent medicine clinic in both 2010 and 2011. A total of 597 adolescents comprised the final study group for both the manual EHR review data as well as the automated EHR extract data. Site personnel assigned site-specific identification numbers to protect the confidentiality of the adolescents' records and maintained a crosswalk with the patient identifiers.

NCINQ's trained reviewers collected information on current/past sexual activity status, use of non-hormone based methods of birth control, number of sexual partners, past/current pregnancy and sexually transmitted infections as well as other quality measures, visit history and socio-demographic characteristics. The review focused on care that occurred from October 1, 2010 to December 31, 2011 (a 15-month observation period).

At each site, two reviewers independently collected data for the same 75 adolescent records across three sites in order to assess inter-rater reliability. NCINQ provided a detailed data layout and instructions on required data for the automated EHR extract and trained personnel at the field site on the data collection and submission

procedures.

The mean age of the sample at the start of the measurement period was 15.5 years (Range: 12 to 19 years). Slightly more than two-thirds of the sample was female (68.2%) (almost all adolescents at one site were female). African-American adolescents represented the largest proportion of the overall sample (44.4%) followed by non-Hispanic Whites (30%). Approximately 93% of adolescents lived in households where English was the preferred language spoken at home.

Study Group 2: Automated EHR Extracts for All Eligible Adolescents at 5 Sites

NCINQ requested an automated EHR extract of data for all eligible adolescents at the three sites that participated in study group #1 as well as two additional sites. The eligibility criteria and look-back period were altered slightly to allow for alignment with measure specification conventions used in federally funded efforts to specify measures for electronic reporting. Eligible adolescents were 12 to 19 years old as of December 31, 2010 (thus including adolescents ages 12 to 20) and had at least one visit to a primary care office or adolescent medicine clinic in 2011. The period of review was 18 months instead of 15 months. The automated EHR extract instructions were similar, though some data elements were eliminated to avoid collection of protected health information.

The mean age of this study group was 14.7 years (Range: 11 to 19 years). Just over half of the sample was female (51.8%). Non-Hispanic White adolescents represented the largest proportion of the overall sample (51.8%) followed by non-Hispanic African-Americans (32.1%).

VI.A. Reliability

Reliability of the measure is the extent to which the measure results are reproducible when conditions remain the same. The method for establishing the reliability of a measure will depend on the type of measure, data source, and other factors. Please explain your rationale for selecting the methods you have chosen, show how you used the methods chosen, and provide information on the results (e.g., the Kappa statistic).

NCINQ assessed reliability by examining 1) inter-rater reliability among manual EHR reviewers and 2) comparisons between manual EHR reviews and automated EHR extracts. We found high inter-rater reliability in manual EHR reviews, but only fair agreement between manual EHR reviews and automated EHR extracts. Currently, manual EHR reviews provide more reliable and complete information about sexual activity documentation than automated EHR extracts.

Inter-Rater Reliability

To assess inter-rater reliability, two reviewers independently collected data on 75 patients. The agreement between the two reviewers was high for a large proportion of data elements (approximately 200). These variables included aspects of care related to demographics, sexual activity, chlamydia screening, depression screening, tobacco and drug use, vaccinations, and other common well-care visit items. Variables for which Kappa scores were high (between 0.8 and 1.0) were approximately 4 times as common as variables with low agreement. As shown in Table 1, Kappa scores for the agreement between manual reviewers were high for all but one data element used to document sexual activity.

Table 1. Inter-Rater Reliability of Manual EHR Reviews for Sexual Activity Status Data Elements¹

Data Elements	TOTAL	
	Kappa Coefficient	95% Confidence Interval
Current sexual activity status	0.98	0.94, 1.00
Past sexual activity status	0.96	0.88, 1.00
Number of sexual partners	1	1.00, 1.00
Order for birth control/contraception	1	1.00, 1.00
Non-hormone based methods of birth control	1	1.00, 1.00
Current pregnancy	1	1.00, 1.00
Past pregnancy	1	1.00, 1.00
Current STI	1	1.00, 1.00

Past STI	0.66	0.00, 1.00
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¹Based on n=75 repeated ratings by two manual reviewers.

Comparison between Manual EHR Review and Automated EHR Extract

Table 2 shows fair agreement observed between sexual activity status documentation as calculated by manual EHR review versus the automated EHR extract for the same sample of adolescents. Through manual review, which included searching and recording data found in unstructured fields, a much higher rate of sexual activity status documentation was recorded than through the automated EHR extract (79.9% vs. 49.4%, respectively). These data show that information about sexual activity status is documented at a high rate in the EHR but is not recorded in a *structured* way that allows automated extraction.

The proportion of adolescents identified as sexually active was 45.6% in the manual EHR reviews versus 41.7% in the automated EHR extracts. The Kappa coefficient was higher for this variable than for the variable assessing percentage of adolescent with documentation of sexual activity status (0.53 versus 0.36).

Table 2. Agreement between Manual EHR Review and Automated EHR Extract: Percentage of Adolescents with Documentation of Sexual Activity Status and Percentage of Adolescents Who Are Sexually Active (n=597)

	Manual EHR Review	Automated EHR Extract	Kappa Coefficient	95% Confidence Interval
Percentage of Adolescents with Documentation of Sexual Activity Status	477 (79.9%)	295 (49.4 %)	0.36	0.30, 0.42
Percentage of Adolescents who are Sexually Active	272 (45.6%)	249 (41.7%)	0.53	0.46, 0.60

VI.B. Validity

Validity of the measure is the extent to which the measure meaningfully represents the concept being evaluated and its relationship to measuring quality. The method for establishing the validity of a measure will depend on the type of measure, data source, and other factors. Please explain your rationale for selecting the methods you have chosen, show how you used the methods chosen, and provide information on the results (e.g., R² for concurrent validity).

We assessed validity by 1) obtaining multi-stakeholder feedback on the face validity of measure specifications and study results; and 2) exploring the known-groups validity of the proposed measure among adolescents with and without a designated well-care visit during the study period. Stakeholder reviews of the specifications and field test results show that the measure has face validity. We also found that the known-groups validity was good: documentation of sexual activity status was much higher among adolescents with a designated well-care visit. Details are described below.

Face Validity

Validity refers to whether the measure represents the concept being evaluated. To assess different perspectives on the measure's validity, NCINQ reviewed the specifications and field test results with our advisory panels, which included experts in measures development, adolescent medicine and quality improvement (i.e. individuals well positioned to speak to a measure's face validity). We reviewed measure results based on the different data element options for defining sexual activity. We also reviewed findings that showed our field-test rates of those who are sexually active were comparable to the prevalence rates found in the 2011 CDC Youth Risk Behavior Survey (45.6% in our field test compared to 47.4% of high school students who reported having had sex at least once in the CDC Survey).

Our advisory panels concluded the measure is a valid way to assess sexual activity status in adolescents, despite some concerns about potential adolescent reluctance to report on sexual activity or provider reluctance to document information in the medical record.

Known Groups Validity

While any clinical encounter with adolescents, including sports physicals or acute care visits, represents an opportunity to discuss sexuality-related issues and concerns, designated well-care visits provide an important opportunity for these conversations. For this reason, NCINQ chose to evaluate the known-groups validity, defined as the ability of the measure to meaningfully differentiate distinct groups, by comparing the performance rates of adolescents who did not have any well-care visits in the measurement period to those who had one or more well-care visits. The manual reviewers abstracted the total number of well-care visits that were completed from October 1, 2010 to December 31, 2011. We defined well-care visits based on diagnosis or procedure codes or a visit that included documentation of health and developmental history, a physical exam, and health education/anticipatory guidance. The total number of well-care visits was transformed into a dichotomous variable to indicate whether the adolescent had any well-care visits (yes/no). We excluded Site 2 from the known groups validity analysis; this site is an adolescent medicine clinic that served primarily female adolescents for behavioral health and gynecology care.

As shown in Table 3, documentation of sexual activity status was significantly higher among adolescents who had at least one well-care visit in the measurement period compared to adolescents who had none (p-values <.0001, Sites 1 and 3 and data from these two sites).

Table 3. Known Groups Validation: Documentation of Sexual Activity Status Among Adolescents With and Without A Designated Well-Care Visit ¹

Percentage of Adolescents with Documentation of Sexual Activity Status	Had 1 or More Well-Care Visits in Measurement Period		p-value
	Yes	No	
Site 1	91.9%	58.5%	<.0001
Site 3	85.7%	45.7%	<.0001
Sites 1 and 3 (combined)	89.5 %	50.3%	<.0001

¹Data from manual EHR review (N=400).

VII. Identification of Disparities

CHIPRA requires that quality measures be able to identify disparities by race, ethnicity, socioeconomic status, and special health care needs. Thus, we strongly encourage nominators to have tested measures in diverse populations. Such testing provides evidence for assessing measures' performance for disparities identification.

Due to limitations of the automated EHR extracts, we present results stratified by key patient characteristics for the 597 adolescents included in the manual EHR review study group only. Documentation of sexual activity status varied by race/ethnicity and health insurance coverage, a proxy measure for household socioeconomic status; however, these differences are confounded by site variations in performance on the measures. There were no difference in the measure rate based on presence of a chronic condition.

VII.A. Race/Ethnicity

Recognizing that children with differing races and ethnicities make up a diverse population of individuals with needs of varying complexity, please describe the results of any efforts to demonstrate the capacity of this measure to produce results that stratify by race and ethnicity.

Prior to implementation of the field test, sites confirmed that fields for patient-reported race and ethnicity data were available in the EHR and used at their institutions. We used the Office of Management and Budget race/ethnicity categories and grouped adolescents into one of the following seven categories: 1) White, non-Hispanic; 2) African-American, non-Hispanic; 3) Latino/Hispanic; 4) Asian; 5) American Indian/Alaska Native; 6) Native Hawaiian and Other Pacific Islander; and 7) Other (includes multi-racial adolescents).

Table 4 shows that the study group was racially and ethnically diverse, but varied substantially by site. Of note, the percentage of adolescents with missing race/ethnicity data ranged from 3.0 percent (Site 1) to 5.1 percent (Site 2).

Table 4. Race/Ethnicity Breakdown of Adolescents in Manual EHR Review, Total and by Site¹

Race/Ethnicity	Total	Site 1	Site 2	Site 3
White, non-Hispanic	30.0%	28.0%	52.3%	10.0%
African-American, non-Hispanic	44.4%	57.5%	40.6%	35.0%
Latino/Hispanic	7.0%	1.0%	0.5%	19.5%
Asian, Native American, or Pacific Islander	1.3%	1.0%	0.0%	3.0%
Other/Multiple	12.9%	9.5%	1.5%	27.5%
Missing	4.4%	3.0%	5.1%	5.0%

¹Based on manual EHR review data (n=571).

Table 5 presents the documentation of sexual activity status among adolescents from the manual EHR review sample stratified by race/ethnicity. The rate of sexual activity status documentation is lower (52.4%) among the Latino/Hispanic group compared to other race/ethnic groups. This disparity may be attributable to the fact that the greatest number of Latino/Hispanic adolescents was from the site with the lowest rate of sexual activity documentation.

Table 5. Race/Ethnicity Differences in Documentation of Sexual Activity Status¹

	Total (n=597)	White, non-Hispanic (n=179)	African-American, non-Hispanic (n=265)	Latino /Hispanic (n=42)	Asian, Native American, or Pacific Islander (n=8)	Other/ Multi-racial (n=77)
Percentage of Adolescents with Documentation of Sexual Activity Status	79.9%	87.7%	81.1%	52.4%	100%	75.3%

¹Data from manual EHR review (n=597). 26 subjects were missing race/ethnicity.

VII.B. Special health care needs

Recognizing that children with special health needs comprise a diverse population of individuals with needs of varying complexity, please describe the results of any efforts to demonstrate the capacity of this measure to produce results that stratify by special health care needs.

In the absence of a standardized definition for “special health care needs,” NCINQ explored the relationship between the presence of one or more chronic conditions and documentation of sexual activity status. We obtained data on the top 20 diagnoses in 2011 (as indicated by ICD-9 codes) in the automated EHR extract. We compared these diagnoses to an existing list of chronic and severe conditions for case identification in research (Perrin List) and calculated the number and type of chronic conditions for which the adolescent received treatment.

Approximately 40 percent of adolescents had received treatment for at least one chronic condition in 2011 (Site 1: 37.0%; Site 2: 40.1%; Site 3: 39.5%). The most prevalent chronic conditions across the sites were: 1) asthma; 2) depression; 3) attention deficient hyperactivity disorder; 4) psychoses; 5) epilepsy; and 6) inborn errors of metabolism.

As shown in Table 6, documentation of sexual activity status was similar among adolescents with one or more chronic conditions compared to those without chronic conditions.

Table 6. Documentation of Sexual Activity Status among Adolescents with and without Chronic Conditions¹

	Presence of 1 or More Chronic Conditions	
	Yes (n=233)	No (n=357)
Percentage of Adolescents with Documentation of Sexual Activity Status	79.4%	80.4%

¹Data from EHR manual review (N=590). 7 subjects were missing chronic condition data.

VII.C. Socioeconomic status

Recognizing that children of different socioeconomic statuses make up a diverse population of individuals with needs of varying complexity, please describe the results of any efforts to demonstrate the capacity of this measure to produce results that stratify by socioeconomic status.

The adolescent's health insurance coverage was used as a proxy measure of family socioeconomic status (SES). The type of coverage varied substantially by site: in site 1, we used Medicaid insurance plan data to select the sample (Table 7). As shown in Table 8, documentation of sexual activity status varies by type of insurance with higher rates of documentation for adolescents with commercial insurance (96.0%) compared to Medicaid-insured or uninsured teens (79.7% and 59.5%, respectively). However, this finding appears to be related to differences in performance across sites rather than differences by insurance status.

Table 7. Insurance Coverage Breakdown of Adolescents in Manual EHR Review, by Site¹

Insurance Coverage	Site 1	Site 2	Site 3
Commercial	0.0%	50.3%	0.5%
Medicaid	100.0%	42.1%	60.5%
Self Pay/Other	0.0%	2.0%	37.5%
Missing	0.0%	5.6%	1.5%

¹Based on manual EHR review data (n=597).

Table 8. Socioeconomic Differences in Sexual Activity Status Documentation¹

	Insurance Coverage		
	Medicaid (n=404)	Commercial (n=100)	Self-Pay/Other (n=79)
Percentage of Adolescents with Documentation of Sexual Activity Status	79.7%	96.0%	59.5%

¹Data from manual EHR review (N=583). 14 subjects were missing insurance data.

VII.D. Rurality/Urbanicity

Recognizing that children living in areas with differing levels of rurality/urbanicity make up a diverse population of individuals with needs of varying complexity, please describe the results of any efforts to demonstrate the capacity of this measure to produce results that stratify by levels of rurality/urbanicity.

We did not collect data to capture whether the adolescent's household residence was in a rural or urban area. However, the sites involved in the study served adolescents in a range of communities.

VII.E. Limited English Proficiency (LEP) Populations

Recognizing that children living in families with differing primary languages at home and differing levels of parental English proficiency make up a diverse population of individuals with needs of varying complexity, please describe the results of any efforts to demonstrate the capacity of this measure to produce results that stratify by primary language spoken at home and parental English proficiency.

Initial analyses of the manual EHR review data showed that at least 90% of adolescents within this sample lived within households where English was the preferred language spoken at home (Site 1: 92.5%; Site 2: 95.4%; Site 3: 90.5%). In light of this lack of variation, we did not explore the association of primary language spoken at home and the performance of this measure.

VIII. Feasibility

Feasibility is the extent to which the data required for the measure are readily available, retrievable without undue burden, and can be implemented for performance measurement⁵. Please explain the methods used to determine the feasibility of implementing the measure in the following sections.

⁵ Adapted from: CMS-Centers for Medicare & Medicaid Services Quality Measurement and Health Assessment Group glossary http://www.cms.gov/MMS/19_MeasuresManagementSystemBlueprint.asp#TopOfPage Accessed February 6, 2012.

VIII.A. Opportunities/Issues in Implementation

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

Data needed for calculating the *Sexual Activity Status Among Adolescents* measure are available in the EHR; however, the data are not consistently recorded in structured fields that would allow automated calculation of the measure. Data needed for calculating this measure are not available in claims.

Table 9 presents information from the five sites that participated in the field test on the availability in the EHR of data elements needed for constructing the *Sexual Activity Status Among Adolescents* measure. Only Site 5 had structured fields for all nine data elements used to construct this measure; Site 2 had the fewest with four data elements. We also found that the rate of positive sexual activity varied depending on which data elements are allowed to contribute to the numerator. Given the variation in documentation at this time, we allow multiple data elements to provide information for calculating this measure.

Table 9. Availability of Sexual Activity Status Data Elements in Existing EHR Data Systems

Data Element	SITE					Total number of sites that can currently extract as programmed data
	Site 1	Site 2	Site 3	Site 4	Site 5	
	EPIC	Allscripts	eClinical-Works	EPIC	EPIC	
Current sexual activity status	x	x	x	x	x	5
Past sexual activity status	x				x	2
Non-hormone based methods of birth control	x		x	x	x	4
Order for birth control/ contraception	x	x	x	x	x	5
Number of sexual partners			x		x	2
Current pregnancy	x	x	x	x	x	5
Past pregnancy	x	x	x	x	x	5
Current STI	x		x	x	x	4
Past STI	x		x	x	x	4

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

The primary feasibility issues relate to the use of the EHR. Issues about implementation in that setting are discussed below in Section XI.

c. *Describe the extent to which the measure has been used or is in use, including the diversity of settings in which it has been used. If the measure has been used or is in use, what methods, if any, have already been used to collect data for this measure? What lessons are available from its prior or current use?*

This is a new measure and is not currently in use.

VIII.B. Eligible Population and Performance Rates

Please describe the following for this measure:

a. *Describe the eligible populations and results of testing in the eligible populations.*

Performance rates for the *Sexual Activity Status Among Adolescents* measure based on manual EHR review is presented by site and for the total sample in Table 10. The overall rate was 79.9%. Rates vary from a low of 62.5 percent documentation to a high of 96.5 percent. Site-to-site variation can be explained, in part, by differences in the availability of sexual activity data elements, content of free-text notes, and site characteristics (e.g., Site 2 is an adolescent medicine clinic and may be more likely to assess sexual activity as part of standard care).

Table 10. Sexual Activity Status Among Adolescents in Manual EHR Review, by Site

	Total (n=597)	Site 1 (n=200)	Site 2 (n=197)	Site 3 (n=200)
Sexual Activity Status Among Adolescents, (%)	79.9%	81.0%	96.5%	62.5%

In data provided by the five participating sites, the number of eligible adolescents varied from 401 to 53,625. There was wide variability in performance rates across sites (23.3 to 53.7%); we do not present detailed data because of concerns about the reliability of the automated EHR extracts.

b. Provide an estimate of the required sample size to gain adequate numbers of observations for sufficiently precise comparisons of stratifications by race, ethnicity, special health care needs, and socioeconomic status.

We are unable to provide an estimate of required sample size for making comparisons across these patient characteristics or provider groups due to the limited data available from the manual review sample.

IX. Levels of Aggregation

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

Sexual Activity Status Among Adolescents is proposed here as a provider-level measure and was tested at the practice site. However, we have prepared measure specifications for reporting at the provider level as well as population level (e.g. state or health plan). Because the measure relies on detailed clinical data that at this point cannot be extracted automatically from the EHR, we do not recommend use of this measure for state-level reporting at this time.

Level of aggregation	Is measure <i>intended to apply</i> at this level? [Drop-down box, Yes/No and field to SPECIFY if needed]	Has this <i>measure been calculated</i> at this level? [Drop-down box, Yes/No and field to SPECIFY which level if needed]
a. Non-state geographic area (e.g. Metropolitan Statistical Area, county, Hospital Referral Region) (if yes, specify which type of area)		
b. More than one State (if yes, specify which)		
c. State: All children covered by Medicaid, CHIP, or both in one State (if yes, specify which State, and which program(s))		
d. State: all children in the State regardless of payer (if yes, specify which State and which payers)		
e. Payment model (e.g., managed care, primary care case management, fee-for-service, other, or all) (if yes, specify which)		
f. Health plan		
g. Hospital or residential facility (e.g., residential treatment center, nursing home, rehab center) (if yes, specify which type of facility)		
h. Individual health care provider (if yes, specify which type of health care provider)	Yes	No
i. Practice site	Yes	Yes
j. Other groupings of providers (if yes, specify which)	Yes [Provider Organization]	Yes [Provider Organization]
k. Other levels of aggregation (if yes, specify which)		

An [Aggregation worksheet](#) may also be completed (optional).

+ Opportunity to upload attachment with aggregation worksheet.

X. Understandability

CHIPRA states that the core set should allow purchasers, families, and health care providers to understand the quality of care for children. Please describe the usefulness of this measure to purchasers, families, and health care providers. If any efforts have been made to assess the understandability of this measure, please describe.

NCINQ convened a multi-stakeholder advisory panel with representation from a wide range of stakeholders, including consumers, pediatricians, family physicians, adolescent medicine physicians, health plans, state Medicaid agencies and researchers. In addition, we convened three targeted panels of stakeholders with particular relevance to the measures: we partnered with the National Partnership for Women and Families to convene a panel of consumer and family advocates; we partnered with the American Academy of Pediatrics to convene a panel of pediatricians, including adolescent medicine physicians; and we convened a panel of state Medicaid and CHIP representatives. Throughout the measure development process, we presented the measure to these panels and solicited feedback on importance, understandability, and usability.

In addition, we posted the measures for public comment to obtain feedback from an even wider audience of stakeholders. We specifically sought feedback on the following:

- Importance of topic area;
- Usability;
- Feasibility of implementation; and
- Whether the measure concepts provide an opportunity to influence quality improvement in the health care system.

On balance, this measure garnered widespread support from our stakeholder groups and those who commented during public comment. Stakeholders noted the measure topic is of particular importance for the adolescent population. Consumers expressed that the measure as specified is understandable and sensible to obtain the information we are seeking.

There were concerns about public reporting, particularly among representatives of state agencies. State representatives noted that public reporting of a sexual activity status measure may not be useful at a state level. However, they noted such a measure would be useful as a means for improving the *Chlamydia Screening in Women* measure. Given this feedback, as noted, we are recommending the measure at the health care provider level at this time.

Section XI. Health Information Technology (Health IT)

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

The *Sexual Activity Status Among Adolescents* measure is relevant for implementation in EHRs. The use of health IT will allow for less burdensome data collection, help identify adolescents at risk for STIs, and enable clinical decision support to promote appropriate preventive services. While health IT represents great potential, our field test results suggest some cultivation is still needed. NCINQ found that fields required to calculate this measure exist in many systems, but they are not standardized nor consistently used. Thus, automated reporting from EHRs at this time is not reliable. Incorporating data fields addressing sexual activity status into EHR technical standards, increasing the use of these fields in EHR systems, and encouraging providers to use structured fields rather than free-text fields to document sexual activity status would improve the feasibility and reliability of reporting this measure from EHRs.

XI. A. Health IT Enhancement

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

Implementation within health IT will decrease the level of effort needed to calculate and report paper-based measures, which can be highly burdensome. Collecting these data items using paper or non-electronic formats can be a difficult and time-intensive task. For Sexual Activity Status, health IT can also help link the results of

documentation of risk status with clinical actions to manage STIs or other relevant subsequent health outcomes among adolescents. The results of the measure can also be fed back to the provider via the EHR system to support quality improvement efforts.

XI.B. Health IT Testing

Has the measure been tested as part of an electronic health record (EHR) or other health IT system? If so, in what health IT system was it tested and what were the results of testing?

Yes: please refer to *Section VI. Scientific Soundness of the Measure* for EHR testing results.

XI.C. Health IT Workflow

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

As EHR systems become more widely adopted, it is important to highlight how changes in workflow can inform changes in EHR systems and vice versa. Currently, automated extract of EHR data for calculating quality measures such as *Sexual Activity Status Among Adolescents* is limited by the degree of data completeness (see *Section VI. Scientific Soundness of the Measure*). Our testing shows that changes in the implementation of EHR capabilities (e.g., such as documentation of the indication for hormonal contraceptive prescriptions), improved methods for searching text fields, and changes in clinical workflow (such as encouraging documentation in structured fields rather than text-based notes), would improve the feasibility of calculating this measure from electronic data.

XI.D. Health IT Standards

Are the data elements in this measure supported explicitly by the Office of the National Coordinator for Health IT Standards and Certification criteria (http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov_standards_ifr/1195) If so, please describe.

Almost half of the data elements in the *Sexual Activity Status Among Adolescents* measure are supported by the latest version of the ONC certification standards for Stages 1 and 2 Meaningful Use Objectives for an ambulatory-care setting. This information is summarized below. While most data elements were not supported at this time, known capabilities exist within most commercial EHR vendor systems and can be enhanced as EHR systems are widely adopted by practices.

Data Element	Supported by ONC	Comments
Current sexual activity status reported by patient	No	
Past sexual activity status reported by patient	No	
Number of sexual partners reported by patient	No	
Unprotected sex (e.g. any type of sex without condom)	No	
Order for medication for birth control/ contraception and whether indicated for contraception	Yes*	One of the criteria is "Generate and transmit permissible prescriptions electronically (eRx)." Providers are also required to "maintain active medication list" and "maintain active medication allergy list" Computerized physician Order Entry is included in Meaningful Use. *EHR systems do have the capability to capture indication.
Use of non-pharmaceutical methods of birth control (e.g. rhythm method, condoms) for birth control/contraception	No	Social history not part of ONC standards

Sex for money or drugs (also called sex work)	No	
Sex with partners who have had STIs, who are bisexual or injection drug users	No	
Other or unspecified “high risk sexual behavior” (please specify)	No	
Diagnosis of pregnancy during measurement period	Yes	
Past diagnosis of pregnancy	Yes	
Diagnosis of one or more sexually transmitted infections during measurement period	Yes	
Past diagnosis of one or more sexually transmitted infections	Yes	

XI.E. Health IT Calculation

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

If the clinical and administrative workflows for capturing this information are inconsistent, missing or ambiguous information may result. This is true of all eMeasures that rely on data being documented in specific locations. Thus variation in where relevant information is recorded in an EHR limits the ability to compare providers in a standardized manner, in addition to affecting the degree of data completeness. NCINQ’s testing showed that data obtained through manual EHR review had a higher degree of data completeness (see *Section VI. Scientific Soundness of the Measure* for more details).

XI.F. Health IT Other Functions

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

Data information exchange between the different components of an EHR system (e.g., decision support, reminders) may improve the calculation of the measure and the data that can be reported. Also, once sexual activity status is documented, the EHR can help set up reminders about follow-up services (e.g., annual chlamydia screenings).

Implementation of HIT functions such as computerized decision support could enhance performance on measures assessing services that rely on knowledge of sexual activity status (e.g., STI screening). Such HIT functions include ones that flag needed services for providers; that promote provider-patient communication (e.g., reminders for follow-up); and care coordination across care settings (e.g., if an adolescent patient transitions into adult primary care).

XII. Limitations of the Measure

Please describe any limitations of the measure.

Our measures development process, including feedback from advisory panels, public comment and field testing, helps us to identify potential limitations of proposed measures. For *Sexual Activity Status Among Adolescents*, some limitations include confidentiality concerns and issues with lack of standardization of data elements. However, on balance, our advisory panels concluded the benefits of such a measure outweigh the concerns and have recommended the measure be finalized and submitted.

Confidentiality

Stakeholders noted that adolescents may be unwilling to share information about this topic in the presence of a parent/caregiver or if they are not certain their privacy will be maintained. However, EHRs may potentially promote confidentiality of data records, as reports pulled from EHRs can be customized to print out only specified fields and therefore protect adolescent confidentiality. In addition, NCINQ is in the process of developing an adolescent self-report survey to gain more information about how confidentiality impacts an adolescent’s health care experience. In the meantime, our advisory panels concluded the issue of confidentiality

does not argue against implementation of a measure to encourage providers to ask about sexual activity.

EHR Limitations

Field testing revealed that EHRs still inconsistently capture sexual activity status documentation in a single standard field, such as the data element “current sexual activity status.” Thus, in order to capture a “truer” picture of status, many other fields must still be used (e.g. current/past pregnancy, current/past sexually transmitted infection, contraceptive medications). The specifications for the *Sexual Activity Status Among Adolescents* measure specify all relevant data elements. A limitation of this measure structure is that it will not encourage movement towards a standardized approach for documenting sexual activity status. However, if the measure is to be used for determining who is sexually active and should therefore receive follow-up services (such as screening for chlamydia), then we concluded the measure should be as inclusive as possible. It is possible we could refine the data elements used to construct the measure once EHR functionality and workflows using that functionality become more standardized.

XIII. Summary Statement

Provide a summary rationale for why the measure should be selected for use, taking into account a balance among desirable attributes of the measure. Highlight specific advantages this measure has over alternative measures on the same topic that were considered by the developer or specific advantages that this measure has over existing measures.

The *Sexual Activity Status Among Adolescents* measure addresses an area of significant importance to adolescent health, particularly for those enrolled in Medicaid and CHIP. Currently, over a third of adolescents report they are sexually active (CDC, 2011). Understanding an adolescent’s sexual activity status allows providers to tailor health care services, including offering chlamydia screening when identified as sexually active. Chlamydia is a widespread disease among adolescents, in particular racial/ethnic minorities, who are a large part of the Medicaid/CHIP population. Untreated chlamydia can lead to severe and long-term adverse health outcomes, such as pelvic inflammatory disease and infertility.

The measure was presented to a wide range of stakeholders and was found to be valid and reliable. Based on manual review of the EHR, a total of 79.9% of adolescents had documentation of their sexual activity status, and 45.6% were identified as sexually active. We found high inter-rater reliability in the manual reviews. Stakeholder reviews of the specifications and field test results indicate the measure has face validity, and we found that the known-groups validity was good. Because agreement between the manual reviews of the EHR and automated EHR extracts was only fair, manual reviews provide more reliable and complete information about sexual activity documentation than electronic reports from the EHR. Thus, we recommend this measure for provider-level reporting and suggest that manual reviews may be needed until reporting from the EHR improves.

Sexual Activity Status Among Adolescents contributes to a comprehensive quality improvement strategy that is relevant and important for the adolescent population. First, the measure will encourage health care providers to standardize their documentation procedures to allow for information that is useful for tailoring health care interventions and services. Second, it will provide an opportunity to improve the specificity of the *Chlamydia Screening in Women* measure; and third, complements existing measures in the Children’s Core Set that assess adolescent well care (*Adolescent Well Care Visit*, *Weight Assessment and Counseling for Nutrition and Physical Activity for Children/ Adolescents: Body Mass Index Assessment for Children/Adolescents* and *Immunization for Adolescents*, in addition to *Chlamydia Screening in Women*).

Section XIV: Additional Information

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Glossary of Terms

	TERM	DEFINITION	SOURCES
1.	DENOMINATOR	The number or population representing the total universe in which an event might happen: the number at risk used to calculate a rate, proportion, or percentage.	Cohn, 2001
2.	NUMERATOR	A subset of those in the denominator who have experienced the event of interest (e.g. death, morbidity, screening) used to calculate a rate, proportion, or percentage.	RTI
3.	OUTCOME	A particular state of health, often defined for purposes of quality measurement as a result of the performance (or nonperformance) of functions or processes of care.	Adapted from CMS
4.	OUTCOME MEASURE	Measure that indicates the results of the performance (or nonperformance) of functions or processes. A measure that focuses on achieving a particular state of health.	CMS
5.	PROCESS MEASURE	Measure that focuses on a healthcare process that leads to a certain outcome. For a process measure to be valid, a scientific basis exists for believing that the process, when executed well, will increase the probability of achieving a desired outcome.	Adapted from CMS
6.	PROCESS (of care)	Process of care denotes what is actually done to the patient in the giving and receiving of care. As examples: the provider could immunize the patient against a communicable disease; the provider could prescribe a medication for the patient; the provider could screen an asymptomatic patient for developmental disorders.	Adapted from IOM, 2006, Appendix E
7.	QUALITY (in health care)	Health care quality has been defined in several ways. In 1990, the Institute of Medicine (IOM) defined quality as the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge (IOM, 1990). Eisenberg defined quality as the right care for the right person at the right time in the right way. In 2001, the IOM defined quality as having six aims: Safety, Timeliness, Effectiveness, Equity, Efficiency, and Patient-Centeredness. The Affordable Care Act defines quality of care as a measure of performance on IOM's six aims for health care. CHIPRA defines a clinical quality measure as "a measurement of clinical care that is capable of being examined through the collection and analysis of relevant information, that is developed in order to assess one or more aspects of pediatric health care quality in various institutional and ambulatory health care settings, including the structure of the clinical care system, the process of care, the outcome of care, or patient experiences in care."	IOM, 2001 IOM, 1990, Eisenberg, CHIPRA; Patient Protection and Affordable Care Act
8.	QUALITY MEASURE	A quality measure is in effect a rule (or the result of a rule) that assigns numeric values to a specific quality indicator. Quality measures generally consist of a descriptive statement or indicator, a list of data elements necessary to construct and/or report the measure, detailed specifications that direct how the data elements are to be collected (including the source of data), the population on whom the measure is constructed, the timing of data collection and reporting, the analytic models used to construct the measure, and the format in which the results will be presented.	Adapted from IOM, 2006, Appendix E; NQMC Glossary
9.	RELIABILITY	Measure reliability: The results of the measure are reproducible a high proportion of the time when assessed in the same population (e.g., the measure has high inter-rater reliability, no calculation errors). Internal consistency reliability assesses the consistency of results across items within a test, where "test" refers to a series of questions, ratings, or other items designed to determine knowledge, ability or health status. Inter-rater reliability is a measure of the variation in measurements when taken by different individuals but with the same method or instruments. Test-retest is a statistical method used to determine a test's reliability . The test is performed twice; in the case of a questionnaire, this would mean giving a group of participants the same questionnaire on two different occasions. If the correlation between separate administrations of the test is high (~.7 or higher), then it has good test-retest reliability. It is important to consider the time interval between testing and retesting and the nature of the measurement. Quality measures optimally would show improvement in scores over time.	CMS, Wikipedia, Farlex
10.	STRUCTURE	Structure refers traditionally to the attributes of settings in which providers deliver health care, including material resources (e.g., electronic health records), human resources (e.g., staff expertise), and organizational structure (adapted from IOM, Performance Measurement, 2006; Appendix E). Some have suggested that structural attributes should include organizational characteristics such as leadership and culture (Kunkel, 2007) and system attributes beyond individual health care delivery settings.	Adapted from IOM, 2006, Appendix E
11.	STRUCTURAL MEASURE	Measures of structure assess the capacity of health care professionals and organizations to provide safe, timely, effective, equitable, efficient and patient-centered processes of care and positive health outcomes.	Adapted from AHRQ
12.	STRUCTURE-PROCESS-OUTCOMES MODEL	As identified by Donabedian (1988), the classic paradigm for assessing quality of care based on a three-component approach. Donabedian's model proposes that each component has a direct influence on the next, as represented by the arrows in this schematic (Donabedian, 1980): Structure → Process → Outcomes.	IOM, 2006, Appendix E
13.	VALIDITY	Measure accurately represents the concept being evaluated and achieves the purpose for which it	CMS,

TERM	DEFINITION	SOURCES
	<p>is intended (to measure quality). In science and statistics, validity has no single, agreed upon definition but generally refers to the extent to which a concept, conclusion or measurement is well-founded and corresponds accurately to the real world. The word "valid" is derived from the Latin <i>validus</i>, meaning strong.</p> <p>Concurrent validity refers to the degree to which the measure correlates with other measures of the same construct that are measured at the same time. Using a testing example, a test administered to current employees and then correlated with their scores on current performance reviews would have good concurrent validity if those who scored well on the test also did well on performance reviews.</p> <p>Construct validity is the extent to which a measure measures the concept or construct that it is intended to measure. For example, a measure that measures the quality of diabetes care by whether a provider conducted an HbA1c test on a patient with diabetes has relatively good construct validity because high HbA1c levels are associated with diabetes crises.</p> <p>Content validity. In psychometrics, content validity refers to the extent to which a measure represents all facets of a given construct. For example, a depression scale may lack content validity if it only assesses the affective dimension of depression but fails to take into account the behavioral dimension. Using the diabetes care example, a combination of three different measures (HbA1c testing, foot examinations, and eye examinations) would have better content validity than a single measure of HbA1c testing.</p> <p>Criterion validity involves the correlation between a measure and a criterion variable (or variables) taken as representative of the construct. In other words, it compares the test with other measures or outcomes (the criteria) already held to be valid. For example, IQ tests are often validated against measures of academic performance (the criterion). If the test data and criterion data are collected at the same time, this is referred to as <i>concurrent validity</i> evidence. If the test data are collected first in order to predict criterion data collected at a later point in time, then this is referred to as <i>predictive validity</i> evidence.</p> <p>Face validity is the validity of a measure at face value. Generally face validity means that the measure "looks like" it will work, as opposed to "has been shown to work."</p> <p>Predictive validity refers to the degree to which the measure can predict (or correlate with) other measures of the same construct that are measured at some time in the future. In job selection, for example, this would mean that tests are administered to applicants, all applicants are hired, their performance is reviewed at a later time, and then their scores on the two measures are correlated. If there is a strong correlation between test scores and future performance, the test would be said to have good predictive validity.</p> <p><i>Measures should be assessed against all relevant criteria at all intended levels of aggregation.</i></p>	Wikipedia

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