Environmental Scan and Literature Review: Factors that Influence Preventive Service Utilization among Children Covered by Medicaid and CHIP

Improving Quality of Care in Medicaid and CHIP through Increased Access to Preventive Services

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Executive summary

Chronic health conditions such as heart disease, cancer and diabetes are responsible for 7 out of 10 deaths and approximately three-quarters of health care spending in the United States, despite the fact that many such diseases are preventable through a combination of screening and prophylaxis, treatment and management, and lifestyle change. Childhood obesity represents a significant risk factor for multiple chronic diseases in adulthood; although it is largely preventable, rates of obesity have increased significantly over the past several decades.

Increased utilization of preventive health services has the potential to improve the health of individuals and reduce health system costs. Pediatric preventive services are particularly important for promoting health in childhood and into adulthood. However, utilization rates of many preventive services remain lower than recommended across infant, child, and adolescent age groups. For example, vaccines for influenza and Human Papillomavirus (HPV) can prevent complications from the flu and certain types of cervical cancer, respectively, but uptake of these vaccines remains suboptimal. Additionally, utilization is uneven across racial, ethnic, socioeconomic, and other demographically defined groups. Barriers to preventive care access and utilization exist at the individual, health system, and policy levels, impeding the achievement of recommended targets.

Children in Medicaid and the Children’s Health Insurance Program (CHIP) have coverage for most medically necessary preventive services, and the 2009 reauthorization of CHIP called for increased attention to the quality of preventive services delivered to Medicaid and CHIP-insured children. In addition, the Affordable Care Act increases access to preventive services for adults—including many parents of Medicaid and CHIP-eligible children—by providing states the option to both expand Medicaid eligibility and to increase coverage of and eliminate cost sharing for certain preventive services. However, existing coverage and enhanced benefits for preventive services alone won’t guarantee utilization at recommended rates.

The purpose of this environmental scan and literature review is to summarize current preventive service utilization patterns and barriers, documented cost and health outcomes associated with prevention, and activities and efforts designed to improve preventive service rates and outcomes. Ultimately, this review is intended to help inform the development and dissemination of resources for states to use in their efforts to increase the utilization of quality preventive services by children covered by Medicaid and CHIP. A companion review focuses on utilization of preventive services by adults covered by Medicaid.

Findings

Utilization and outcomes

Of the articles that addressed utilization patterns, a majority focused on vaccinations (primarily HPV among adolescents and influenza among all children), sexually transmitted infection (STI) screenings, and well-child visits. Ethnic and racial differences in utilization were noted across a number of preventive services; these differences were attributed to both individual- and family-level factors (e.g., cultural values, patient knowledge) and to structural barriers (e.g., provider recommendation, spatial accessibility). The literature also indicated associations between type of health coverage (public vs. private vs. uninsured) and utilization of services, although this relationship is not static across services. For example, public coverage may be associated with lower uptake of certain preventive services and higher uptake of others, compared to private coverage.
There was evidence of a relationship between coverage, utilization, and positive health outcomes, but the literature on a similar relationship resulting in lower costs was sparse.

**Activities**

The literature identified a number of opportunities and efforts to improve the utilization rates and quality of preventive services. These activities are organized according to their target: state Medicaid/CHIP programs, providers and delivery systems, or patients.

Very few studies addressed state-level activities. However, gray resources identified a federal-state collaboration aimed at promoting best practices in preventive health care in Medicaid and CHIP, and noted that all states and the District of Columbia are currently reporting on 2 or more of the 22 initial core set of children’s health care quality measures, including measures of preventive services.

In contrast to a relatively sparse number of articles on activities targeted at the state level, a significant quantity of literature addressed activities targeting providers and delivery systems. These activities included provider education initiatives, increased reimbursement rates for preventive services, care coordination efforts, and alternate service delivery approaches (e.g., preventive service delivery at school-based health centers). A smaller number of studies described practice- or delivery-level efforts to improve quality of care of preventive services through measurement, reporting, and quality improvement (QI) activities.

Activities targeting consumers, designed to reduce barriers to individual uptake of preventive services, included patient education and outreach (to children and their parents), consumer payment incentives, and school entry requirements.

More studies documented the need or opportunity for activities to increase preventive service utilization rates than evaluated the activities themselves. While a number of articles described various activities or efforts, rigorous evaluations and evidence of effectiveness were sparse. Still, the discussions of opportunities for activities, and of those activities that are under way, provide useful examples for states to consider and a basis for future research.

**Conclusion**

Despite the potential individual and societal benefits of preventive services for children, utilization of recommended services is suboptimal. Utilization is also uneven across subpopulation groups, with ethnic minorities and adolescents especially underserved. Many barriers to care exist, even when financial obstacles are largely eliminated for children enrolled in Medicaid and CHIP. State, provider, community, and individual activities may help improve utilization and quality of preventive services for children. While some promising activities have been implemented, creation and dissemination of evidence-based initiatives is still needed.
Authors and acknowledgments

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I. Introduction and background

Introduction

In 2013, the Centers for Medicare and Medicaid Services (CMS) contracted with a team led by the Urban Institute to support, track, and evaluate efforts to increase access to and the quality of preventive health care services in Medicaid and the Children’s Health Insurance Program (CHIP). Among other tasks, this project includes the development and dissemination of resources for states to use in their efforts to increase consumers’ awareness and practices’ delivery of preventive health services available to Medicaid and CHIP beneficiaries, and to improve quality of those services.

This is one of two environmental scan reports produced to inform the development of these resources for states. This report compiles and assesses the available literature on preventive health care services for child beneficiaries in Medicaid and CHIP (including infants, children, and adolescents). The companion report does the same for adult beneficiaries in Medicaid.

As the focus of this report is on preventive services recommended for Medicaid and CHIP children, we address issues of access and quality for privately insured or uninsured children only as they relate to Medicaid/CHIP populations. For example, we discuss whether type of coverage is correlated with utilization of certain preventive services. In addition, we are unable to address every preventive service that is recommended for children covered by Medicaid or CHIP. For example, while we recognize the importance of pediatric oral health care, the topic is not a focus of this report.

Background

Importance of preventive health care for children and adolescents

Many of the most common—and most serious—health problems in the United States are largely preventable through screening and prophylaxis, treatment and management, and lifestyle change. Yet chronic conditions such as heart disease, cancer, and diabetes account for 75 percent of health care spending in the United States and 7 out of every 10 deaths. Childhood obesity is a serious risk factor for these and other chronic conditions (Centers for Disease Control and Prevention 2012a), and is also largely preventable, yet 17 percent of US children and adolescents are obese. Although obesity prevalence may be leveling off and has recently decreased slightly among some population groups, the rate is still almost three times higher than it was in 1980 (Centers for Disease Control and Prevention 2014a).

In addition, despite the fact that vaccines for both influenza and Human Papillomavirus (HPV) are available for children and adolescents, an average 20,000 children under age 5 are hospitalized with complications from the flu each year (Centers for Disease Control and Prevention 2013a), and HPV—a preventable cause of cervical and other cancers—is the most common sexually transmitted infection in the United States (Centers for Disease Control and Prevention 2014b).

The use of preventive health care services has potential benefits for both individuals and society. Prevention can help individuals avoid disease, disability and premature death, improve their health and well-being and be more productive at school and work. This translates into societal benefits including lower health care costs and a more productive workforce.
Considering the health benefits and the potential risks of a range of preventive services, several groups of experts have recommended those that should be provided to children at different ages and frequencies, and that should be among the measures of the quality of care provided. The United States Preventive Services Task Force (USPSTF), an independent panel of experts in preventive medicine convened by the Agency for Healthcare Research and Quality (AHRQ), recommends a number of preventive services for infants, children, and adolescents, including developmental and behavioral health screenings, height and weight measurements, nutrition counseling, sexually transmitted infection (STI) screening and counseling, and the wellness visits at which many of these services are intended to be provided. The Advisory Committee on Immunization Practices (ACIP), an independent panel convened by the Centers for Disease Control and Prevention (CDC), makes recommendations on pediatric vaccinations, such as those that protect against influenza and HPV. And CMS, in conjunction with AHRQ, has included a number of USPSTF and ACIP-recommended preventive services in its initial core set of health care quality measures for children in Medicaid and CHIP.

Two other relevant sets of recommendations are Bright Futures and Healthy People 2020. Bright Futures is a child health initiative, supported by the Health Resources and Services Administration (HRSA) and led by the American Academy of Pediatrics (AAP), which includes a set of preventive services recommendations. Many of these recommendations overlap with USPSTF and ACIP recommendations, and Bright Futures is considered by many to be the general guideline for pediatric clinical care (Blacschke et al. 2008). Healthy People 2020 is a set of national objectives for health and health care, developed by a federal interagency workgroup and an advisory committee convened by the Department of Health and Human Services (HHS). This includes objectives—and measurements of progress toward meeting those objectives—for pediatric health and health care.

**Recommendations not realized**

Unfortunately, as shown in tables 1 and 2 (infants/children and adolescents, respectively), utilization of many preventive services is low, relative to these recommendations and goals. For example, one of CMS' initial core quality measures for Medicaid and CHIP children is receipt of one well-care visit per year among adolescents age 12 to 21. Among states reporting in federal fiscal year (FFY) 2012, the median rate of such adolescents having received an annual well-care visit was 42 percent (Sebelius 2013). This can be roughly compared to Healthy People 2020's goal of 75.6 percent for all US adolescents age 10 to 17 (Healthypeople.gov 2013).¹

Following tables 1 and 2, the remaining background sections outline Medicaid and CHIP eligibility and enrollment, as well as preventive services coverage, before and after the enactment of health reform.

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¹ Several sources are used to provide the utilization rate estimates in tables 1 and 2, since no one source provides rates specific to Medicaid/CHIP populations for all services. For some services, multiple sources are cited for comparison. For example, infant and child well-care visit rates are cited from the Government Accountability Office’s (GAO) 2009 report outlining the need for preventive care for CHIP and Medicaid enrollees, and from HHS’ 2013 summary of states’ reports on the CMS initial core set of child health care quality measures. The HHS numbers are more recent, and are specific to Medicaid/CHIP populations, but are not available for all of the services listed in the table. The GAO numbers fill in some gaps, but are based on analysis of now relatively older surveys (1999-2006). These numbers may have shifted since then, and measurement errors from respondents’ recall or reporting are possible (Kenney and Coyer 2013). Finally, for some services, utilization rates reported by National Immunization Survey—Teen (NIS-Teen) or Healthy People 2020 are shown. While these are not specific to Medicaid/CHIP populations, they provide an indication of current nationwide child and adolescent utilization rates.
<table>
<thead>
<tr>
<th>Service</th>
<th>USPSTF(^2) or ACIP(^3) Recommendation</th>
<th>CMS Core Measure(^4)</th>
<th>Utilization Rates</th>
<th>Healthy People 2020 Goal(^5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well-care visit</td>
<td>No</td>
<td>Up to 6 visits (0-15 mos)</td>
<td>78% (2-4 yrs)(^{\text{GAO:6}}) 60% (5-7 yrs)(^{\text{GAO:6}}) 52% (8-10 yrs)(^{\text{GAO:6}}) 62% (median, 0-15 mos)(^{\text{HHS:7}}) 68% (median, 3-6 yrs)(^{\text{HHS:7}})</td>
<td>No</td>
</tr>
<tr>
<td>Vaccines</td>
<td>DTaP: 2 mos-6 yrs.(^{\text{ACIP}}) Varicella: 12 mos-6 yrs(^{\text{ACIP}}) Influenza: 6 mos-18 yrs(^{\text{ACIP}})</td>
<td>Combined measure, including these and other vaccines: DTaP: 4 doses by 2 yrs Varicella by 2 yrs Influenza by 2 yrs</td>
<td>DTaP, polio, MMR, Hepatitis B, varicella, and PCV: 84.6% (19-35 mos)(^{\text{HP2020}}) Influenza: 84.6% (6 mos-12 yrs) 12.8% (5-12 yrs)(^{\text{HP2020}}) Up to date: 68% (median, 2 yrs)(^{\text{HHS}})</td>
<td>DTaP, polio, MMR, Hepatitis B, varicella, and PCV: 90% (19-35 mos) Influenza: 90% (6 mos-12 yrs)</td>
</tr>
<tr>
<td>Body Mass Index (BMI) / nutrition / exercise screening and counseling</td>
<td>Obesity screening and counseling; offer or refer for behavioral interventions: 6 yrs and older(^{\text{USPSTF}})</td>
<td>3-17 yrs</td>
<td>BMI assessment (children and adolescents): 49.7%(^{\text{HP2020}}) Diet/exercise advice (children and adolescents): 12.2%(^{\text{HP2020}})</td>
<td>BMI assessment (children and adolescents): 54.7% Diet/exercise advice (children and adolescents): 15.2%</td>
</tr>
<tr>
<td>Developmental / behavioral screenings</td>
<td>No</td>
<td>1-3 yrs</td>
<td>48% (0-5 yrs)(^{\text{HP2020}})</td>
<td>52.8% (0-5 yrs)</td>
</tr>
</tbody>
</table>

Note: These tables do not contain all preventive services recommend for children and adolescents by USPSTF, ACIP, CMS, or Healthy People 2020. For complete lists of each, see sources listed here.

\(^2\) USPSTF: National recommendations for preventive services made by an independent panel of experts convened by AHRQ (US Preventive Services Task Force 2014).
\(^3\) ACIP: National vaccine schedule recommendations made by a panel of experts convened by CDC (Centers for Disease Control and Prevention 2014c).
\(^4\) CMS: Initial set of child core quality measures for children in Medicaid and CHIP (Centers for Medicare and Medicaid Services 2013).
\(^5\) HP2020: Science-based, 10-year national objectives for improving the health of all Americans (Healthy People.gov 2013).
\(^7\) HHS: 2013 report of median service utilization rates among Medicaid and CHIP beneficiaries, based on state reports on performance on initial core quality measures, FFY 2012. Number of states per measure: 25 to 51 (Sebelius 2013).
Table 2: Medicaid and CHIP Utilization Rates of Selected Preventive Services: Adolescents

<table>
<thead>
<tr>
<th>Service</th>
<th>USPSTF or ACIP Recommendation</th>
<th>CMS Core Measure CMS</th>
<th>Utilization Rates</th>
<th>Healthy People 2020 Goal HP2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well-care visits</td>
<td>No</td>
<td>One visit per year (12-21 yrs)</td>
<td>68.7% (10-17 yrs)</td>
<td>75.6% (10-17 yrs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>60% (11-13 yrs)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>51% (14-16 yrs)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>46% (17-20 yrs)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>42% (median, 12-21 yrs)</td>
<td>HHS</td>
</tr>
<tr>
<td>HPV vaccine: Human Papillomavirus</td>
<td>Females (HPV2 or HPV4) and males (HPV2): 11-12 yrs ACIP</td>
<td>Females: 3 doses by 13 yrs</td>
<td>≥ 1 dose (females): 53.8% (13-17 yrs)</td>
<td>Females: 3 doses: 80% (13-15 yrs)</td>
</tr>
<tr>
<td>Other vaccines</td>
<td>Tdap: 11-12 yrs if DTaP not previously administered ACIP</td>
<td>Combined measure: Tdap: 13 yrs (if no previous DTaP) MCV4: 13 yrs (1st dose)</td>
<td>Tdap: 46.7% (13-15 yrs) HP2020</td>
<td>Tdap: 80% (13-15 yrs) MCV4: 80% (13-15 yrs) Influenza: 80% (12-17 yrs)</td>
</tr>
<tr>
<td>Abbreviations:</td>
<td>MCV4: 11-12 yrs (initial) and 16 yrs (booster) ACIP</td>
<td>Influenza: Annually (6 mos to 18 yrs) ACIP</td>
<td>MCV4: 43.9% (13-15 yrs) HP2020</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Influenza: annually (6 mos to 18 yrs) ACIP</td>
<td>Influenza: no</td>
<td>Influenza: 9.8% (13-17 yrs) HP2020</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Up to date: 60% (median, 16-20 yrs) HHS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Mass Index (BMI) / nutrition / exercise screening and counseling</td>
<td>Obesity screening and counseling; offer or refer for behavioral interventions: 6 yrs and older, USPSTF</td>
<td>3-17 yrs</td>
<td>BMI assessment (children and adolescents): 49.7% HP2020</td>
<td>BMI assessment (children and adolescents): 54.7%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Diet/exercise advice (children and adolescents): 12.2% HP2020</td>
<td>Diet/exercise advice (children and adolescents): 15.2%</td>
</tr>
<tr>
<td>Chlamydia screening</td>
<td>Females 24 yrs and younger USPSTF</td>
<td>Females 16-20 yrs</td>
<td>Females: 52.7% (16-20 yrs) HP2020</td>
<td>Females: 74.4% (16-20 yrs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Females: 60% (median, 16-20 yrs) HHS</td>
<td></td>
</tr>
<tr>
<td>Depression / mental health screening and counseling</td>
<td>12-18 yrs USPSTF</td>
<td>No</td>
<td>2.1% (12-18 yrs) HP2020</td>
<td>2.3% (12-18 yrs)</td>
</tr>
<tr>
<td>Alcohol, tobacco, and drug screening and counseling</td>
<td>Tobacco: School-aged children and adolescents USPSTF</td>
<td>No</td>
<td>Alcohol: 30.5% (12-17 yrs) HP2020</td>
<td>Alcohol: 27.7% (12-17 yrs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tobacco: 26% (12-18 yrs) HP2020</td>
<td>Tobacco: 21% (12-18 yrs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Drugs: 58.6% (12-17 yrs) HP2020</td>
<td>Drugs: 53.3% (12-17 yrs)</td>
</tr>
</tbody>
</table>

ACIP, USPSTF, CMS, HP 2020, GAO, and HHS: See notes on infant/child utilization rates table.
8 NIS-T: As reported in CDC’s Morbidity and Mortality Weekly Report (Centers for Disease Control and Prevention 2012b).
Medicaid and CHIP eligibility and enrollment: children (before and after the ACA)

About Medicaid and CHIP. Medicaid is the nation’s health insurance program for low-income individuals. Prior to the enactment of the Affordable Care Act (ACA), it was primarily a program for children, pregnant women, parents or caretakers of covered children, and certain elderly or disabled persons. CHIP was enacted in 1997 and covers additional children who don’t qualify for Medicaid but whose families can’t afford private coverage. States may operate CHIP as extensions of their Medicaid programs, as separate programs, or as a hybrid of these approaches. Both Medicaid and CHIP are funded jointly by the federal government and the states, and are administered by the states.

Current eligibility and enrollment. As of 2011, Medicaid and CHIP provided coverage for more than 48 million people in the United States, including more than 29 million children age 0 to 18 and nearly 19 million nonelderly adults (Kenney et al. 2013) and (Medicaid.gov A). See figure 1.

Even before the ACA’s coverage expansions, Medicaid and CHIP covered more than one-third of American children and half of all low-income children in the United States (Kaiser Commission on Medicaid and the Uninsured 2013) and (Medicaid.gov B). This is because states were already required to cover children age 0 to 5 with family incomes up to 133 percent of the federal poverty level (FPL), and children age 6 to 18 with family incomes up to 100 percent of FPL, and because all states had further expanded eligibility either through Medicaid or CHIP. Some states simply expanded Medicaid eligibility: for example, Minnesota’s threshold for children 0 to 18 was 275 percent of FPL as of January 2013. Other states set certain thresholds for Medicaid eligibility and higher thresholds for CHIP eligibility. For example, Georgia maintained the Medicaid thresholds noted above for children 0 to 5 and 6 to 18, but then allowed children 0 to 18 with family incomes up to 235 percent of FPL to enroll in its separate CHIP program. As of January 2013, the median Medicaid/CHIP eligibility threshold for children was 235 percent of FPL (see figure 2).

Together, Medicaid and CHIP cover more people in the United States than Medicare or any single private insurer (Kaiser Commission on Medicaid and the Uninsured 2013). These safety-net programs have the potential to promote access to and use of preventive services for a substantial portion of the US children and their families.

ACA coverage expansions. The ACA provides unprecedented support for increased access to health insurance coverage for US citizens, and the law’s Medicaid expansion represents a significant portion of that increase. The law initially called for all states to expand eligibility to nearly all non-disabled, non-elderly citizens not already eligible in their states, with incomes below 138 percent of FPL. Although the Supreme Court later ruled that this is effectively optional for states, 26 states (including the District of Columbia) have already committed to do so (as of January 28, 2014), and there is no deadline for other states to opt in.

Since pre-ACA eligibility thresholds for children in Medicaid and CHIP were already at or above 138 percent of FPL across all states (Heberlein et al. 2014), the ACA’s Medicaid expansion will not directly increase access for children. However, pre-ACA median eligibility thresholds for working parents and jobless parents were only 61 percent and 31 percent of FPL, respectively (see figure 2), so parents’

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9 “Affordable Care Act” refers to the Patient Protection and Affordable Care Act, P.L. 111-148, and the Health Care and Education Reconciliation Act, P.L. 111-152.

10 The ACA states that the new minimum eligibility threshold for this population is 133 percent of FPL, but also requires the use of a new income-calculation methodology, which involves an income disregard of 5 percent, making the effective eligibility threshold 138 percent of FPL.
access to coverage will substantially increase in states that choose to expand Medicaid. This is expected to increase coverage among children who are already eligible for Medicaid or CHIP but not yet enrolled (Gifford, Weech-Maldonado, and Short 2005). As stated by Kenney and colleagues (2011), “coverage for children and their overall health and well-being also depend on the extent to which the mental and physical health needs of their parents are met. Thus, children have a strong stake in whether the legislation improves coverage and access to care for their parents.” The Urban Institute estimated in 2013 that 87 percent of children eligible for Medicaid/CHIP were enrolled in 2011 (Kenney, Anderson, and Lynch 2013), but the remaining 13 percent, who were eligible but not enrolled, constituted more than half of the 7 million uninsured children in the United States (DeNavas-Walt, Proctor, and Smith 2012). An estimated 22 percent of new Medicaid and CHIP beneficiaries will be children (assuming all states expand Medicaid; see figure 1).

The Medicaid expansion will also affect certain children already enrolled in CHIP prior to the ACA. As stated above, the pre-ACA minimum Medicaid eligibility threshold for children ages 6 to 18 was 100 percent of FPL, but all states had already expanded eligibility through either their Medicaid or CHIP programs. The ACA’s Medicaid expansion affects children in states like Georgia that had maintained the minimum Medicaid eligibility threshold of 100 percent of FPL for children 6 to 18, while enrolling higher-income children in their separate CHIP programs. Under the ACA, those children between 100 percent and 138 percent of FPL must be moved into their state’s Medicaid program. This is true whether or not a state otherwise opts into the ACA Medicaid expansion. While this change won’t necessarily increase access to coverage overall, it may increase access to certain preventive services benefits for this so-called “stairstep” group of children (Prater and Alker 2014). This is further discussed in the next section.

Figure 1: Demographic Composition of Medicaid/CHIP Enrollees (0–64), Pre and Post Affordable Care Act Implementation with All States Expanding Medicaid

<table>
<thead>
<tr>
<th>Age</th>
<th>Pre-ACA Medicaid/ CHIP</th>
<th>Post-ACA Medicaid/ CHIP</th>
<th>New Medicaid/ CHIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 0 to 18</td>
<td>60.7%</td>
<td>50.2%</td>
<td>22.0%</td>
</tr>
<tr>
<td>Age 19 to 24</td>
<td>6.1%</td>
<td>10.8%</td>
<td>23.2%</td>
</tr>
<tr>
<td>Age 25 to 44</td>
<td>17.8%</td>
<td>21.9%</td>
<td>31.2%</td>
</tr>
<tr>
<td>Age 45 to 64</td>
<td>15.4%</td>
<td>17.6%</td>
<td>23.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Race</th>
<th>Pre-ACA Medicaid/ CHIP</th>
<th>Post-ACA Medicaid/ CHIP</th>
<th>New Medicaid/ CHIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>43.1%</td>
<td>46.3%</td>
<td>55.0%</td>
</tr>
<tr>
<td>Black</td>
<td>21.4%</td>
<td>20.2%</td>
<td>17.0%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>27.6%</td>
<td>25.7%</td>
<td>20.5%</td>
</tr>
<tr>
<td>Other Race</td>
<td>7.9%</td>
<td>7.8%</td>
<td>7.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>Pre-ACA Medicaid/ CHIP</th>
<th>Post-ACA Medicaid/ CHIP</th>
<th>New Medicaid/ CHIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>46.1%</td>
<td>47.5%</td>
<td>51.1%</td>
</tr>
<tr>
<td>Female</td>
<td>53.9%</td>
<td>52.5%</td>
<td>48.9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Language Spoken at Home</th>
<th>Pre-ACA Medicaid/ CHIP</th>
<th>Post-ACA Medicaid/ CHIP</th>
<th>New Medicaid/ CHIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only English Spoken at Home among Adult Household Members</td>
<td>66.0%</td>
<td>67.6%</td>
<td>71.8%</td>
</tr>
<tr>
<td>Only Spanish Spoken at Home among Adult Household Members</td>
<td>21.5%</td>
<td>19.6%</td>
<td>15.1%</td>
</tr>
<tr>
<td>English and Another Language Spoken at Home among Adult Household Members</td>
<td>5.2%</td>
<td>5.6%</td>
<td>6.5%</td>
</tr>
<tr>
<td>Other Languages Spoken at Home among Adult Household Members</td>
<td>7.4%</td>
<td>7.2%</td>
<td>6.8%</td>
</tr>
</tbody>
</table>

Source: The Urban Institute prepared report for the Henry J. Kaiser Family Foundation (Kenney et al. 2013).
**Figure 2: Median Medicaid/CHIP Eligibility Thresholds, January 2013**

![Figure 2: Median Medicaid/CHIP Eligibility Thresholds, January 2013](image)

**Source:** Based on the results of a national survey conducted by the Kaiser Commission on Medicaid and the Uninsured and the Georgetown University Center for Children and Families, 2013.

**Medicaid and CHIP preventive service benefits: children (before and after the ACA)**

**Existing benefits.** Before the enactment of the ACA, child and adolescent Medicaid and CHIP beneficiaries already had coverage for most medically necessary preventive services, and cost-sharing for children’s preventive services was prohibited in Medicaid and CHIP (Medicaid.gov C). In contrast, adult Medicaid beneficiaries’ pre-ACA access to preventive services varied by state, was generally more limited in scope than coverage for children, and could involve patient copayments. See the companion environmental scan report on adult populations for more information.

There are three preventive service benefit scenarios for child and adolescent Medicaid and CHIP beneficiaries:

- **Medicaid beneficiaries ages 0 to 20** are eligible for Early Periodic Screening, Diagnosis and Treatment (EPSDT) benefits, defined as “all Medicaid coverable, appropriate, and medically necessary services needed to correct and ameliorate health conditions, based on federal guidelines” (Medicaid.gov D). This includes preventive, dental, mental health, developmental, and specialty services, regardless of whether the state’s Medicaid program otherwise covers those services.

- States that operate their CHIP programs as expansions of their Medicaid programs must also offer EPSDT benefits, but to beneficiaries ages 0 to 18 instead of 0 to 20.

- States that operate their CHIP programs separately from their Medicaid programs may instead offer “benchmark, benchmark-equivalent, or other Secretary-approved coverage” to beneficiaries ages 0 to 18 (Medicaid.gov E). While these CHIP programs have some flexibility in designing their coverage plans, all states cover wellness visits, screenings and immunizations, and preventive dental care. However, coverage offered by these programs may not be as comprehensive as EPSDT coverage.
The Vaccines for Children program (VFC) is also an important source of coverage for children ages 0 to 18 enrolled in Medicaid, and in CHIP programs operated as Medicaid expansions. VFC covers all ACIP-recommended vaccines without patient cost-sharing. VFC is not just a Medicaid benefit, though: it also covers vaccines for children who are uninsured, "underinsured" (those whose private insurance offers no or limited vaccine coverage), or American Indian or Alaskan Native (Centers for Disease Control and Prevention 2013b). However, children enrolled in a stand-alone CHIP program are not VFC eligible (Centers for Disease Control and Prevention 2013c). VFC is further discussed in Sections IV and V.

**ACA prevention provisions.** In addition to expanding access to general Medicaid coverage, the ACA places greater emphasis on prevention and wellness for Medicaid and CHIP beneficiaries. A number of provisions in the health reform law increase coverage of preventive services, call for education and/or incentives to promote utilization of preventive services, or support the infrastructure and systems through which preventive services may be offered.

However, certain of these ACA provisions are more relevant for adults than for children. For example, Medicaid's EPSDT program already covered pediatric preventive benefits while Section 4106 of the ACA gives states the option to provide similar coverage for adults. Similarly, the Children's Health Insurance Program Reauthorization Act of 2009 (CHIPRA) already required the creation of a core set of children's health care quality measures (see tables 1 and 2) while Section 2701 of the ACA created a similar requirement for adults. CHIPRA also authorized CMS to award 10 Quality Demonstration grants, funding 18 states, to improve health care quality and delivery systems for Medicaid and CHIP-enrolled children. The Urban Institute is one of several organizations partnering to conduct a national evaluation of these demonstration projects.

Still, several ACA provisions have the potential to increase access to and quality of preventive services for both adults and children. These include Sections 5601, 4101, 4002, 4201, and 5313, which provide funding for community clinics, school-based health centers, local health departments, and other entities, in part to expand and support the infrastructure through which safety net preventive and other health care services are offered. This also includes Section 4001, which required the creation of a National Prevention Council, which in turn was tasked with creating and implementing a National Prevention Strategy applicable to both children and adults.

And, as noted above, the ACA's Medicaid expansion will directly affect access to preventive services for certain existing CHIP beneficiaries. Those children in families with incomes between 100 and 138 percent of FPL who are being transferred from their state's stand-alone CHIP program to its Medicaid program may be moving from a less comprehensive set of prevention benefits to the EPSDT program.

Despite pre-existing and new benefits, recommendations, and quality measurement and improvement efforts, Medicaid and CHIP children's utilization of many preventive services is less than optimal. This implies that there may be other barriers at the individual, health system, or policy levels preventing children and adolescents from getting recommended preventive care services. These may include barriers to access, such as being eligible but not enrolled in Medicaid/CHIP; being enrolled but not knowing about the recommended service; or facing racial, ethnic, or other demographic disparities.

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11. These and other ACA provisions emphasizing prevention in Medicaid that are more relevant to adults are further discussed in the companion report on adult populations.
There may also be barriers to quality, such that even when children are seen by a provider, they are not getting the full package of recommended preventive services (Kenney and Pelletier 2010) and (Mangione-Smith et al. 2007). Addressing these barriers—and increasing preventive service utilization rates—is an important public health goal, and further consumer education, provider change, and systems change efforts may be necessary for increasing access to and quality of children’s preventive services.

II. Framework and methods

Report overview and framework

This report aims to explore the influence of a variety of potential levers, targeted at different actors, intended to affect the utilization of preventive services among Medicaid and CHIP children, or improve the quality of those services. We modified existing conceptual frameworks reflecting the use of multiple levers to guide this environmental scan of published and gray literature (Stone et al. 2002 and Anderson 1995). Ultimately, our framework is meant to suggest that while policies such as CHIPRA and the ACA provide great opportunity, a number of actors and steps are involved before these potential benefits reach Medicaid and CHIP beneficiaries to affect their utilization of preventive services and ultimately their health and cost outcomes. For example, the enhanced federal funding offered by CMS under ACA Section 4106 may incentivize states to increase coverage of preventive services for adults, which could both encourage providers to increase access to these services and provide additional financial resources for patients to utilize these services. Where parents are incentivized to increase their own preventive service utilization, they may also be more likely to increase their children’s utilization. However, education and outreach may be required to inform providers and patients of these new Medicaid benefits, and even beyond providing information, additional resources may be required to promote actual utilization of the newly covered preventive services (as well as those that are already covered). Although these steps each may present potential barriers, they are also opportunities for activity.

The framework in figure 3 displays how activities may be targeted at certain actors to increase utilization and ultimately improve outcomes. This environmental scan looks at activities—and opportunities for activities—targeting each of these actors: state Medicaid/CHIP programs (and Medicaid/CHIP managed care organizations or MCOs), providers and delivery systems, and patients.
The remaining sections of this report are organized around this framework—starting with barriers to utilization identified by the literature (Section III), followed by the evidence around health and cost outcomes associated with preventive service coverage and utilization (Section IV). Section V examines the activities aimed at increasing access to Medicaid and CHIP preventive services that are displayed in the framework, organized by the actor they target: state Medicaid/CHIP agencies, delivery systems and providers, and patients (and their parents). This section identifies opportunities and promising efforts aimed at improving access and quality. The report concludes (in Section VI) by critiquing the state of the available literature, highlighting areas in which there is consensus, and describing where gaps in knowledge exist.

**Methods**

We used a systematic approach to identify and synthesize available information on the above topics from both peer-reviewed and gray literature.

**Peer-reviewed literature**

First, we defined search terms reflecting specific preventive services and immunizations either recommended by USPSTF or included by CMS as an initial core quality measure for adults or children. Entities and activities described in our framework were also included in our list of search terms. We then searched PubMed and the Cumulative Index to Nursing and Allied Health Literature (CINAHL) to identify, retrieve, and compile citations of peer-reviewed articles, and selected from these citations those materials that warranted detailed abstraction and review. For all topics, we generated targeted search protocols and a set of inclusion and exclusion criteria that emphasized the retrieval of articles reporting empirical research that were published in the last five years. Keywords and Medical Subject Headings (MeSH terms) used, inclusion and exclusion criteria for abstract review, and our abstract review decision tree are provided as appendices A, B, and C respectively.
The number of abstracts initially identified and those ultimately selected for review is discussed below.

**Gray literature**

We reviewed a limited number of websites of major non-partisan research or advocacy organizations that are specifically focused on preventive services. We examined these websites for research reports or white papers related to preventive services; these were subject to the inclusion/exclusion criteria applied to peer-reviewed literature. A list of websites reviewed is provided in appendix D.

**Additional resources**

Our initial search was limited to peer-reviewed and gray literature published in the past five years. This allowed us to focus primarily on the most up to date findings. However, to avoid having too narrow a scope, we supplemented our scan with additional seminal literature, including several articles published outside of our five year scope, as suggested by Urban Institute senior researchers. These resources are cited throughout, but are not included in the extraction results below.

**Literature search and extraction results**

Based on the search term criteria, the research team identified 3,351 citations for review. We then reviewed the abstract for each citation based on the criteria in appendices B and C to identify articles that warranted full text review. Ultimately, 280 peer-reviewed articles were identified for full text review. Information from these articles was abstracted on the key findings, implications, study design and generalizability, preventive service type, and focus of article based on the categories identified in our framework (utilization, cost/outcomes, and/or activities). For articles focused on activities, type and target of activity was also recorded. Upon full-text review, 52 articles were excluded as not relevant, leaving us with 228 peer-reviewed studies that are included in either or both the adult and child reports. Twenty-one articles from the gray literature were also selected for full review. Additionally, we included information from seven other sources (toolkits from provider association websites, fact sheets from federal agency websites, etc.) that were suggested to us by team members or project consultants immediately after our initial extraction. These documents went through the same abstraction process as the peer-reviewed articles. In total, information was extracted from 256 sources. A diagram is provided in appendix E.

For clarity, the included peer-reviewed studies and gray literature are collectively referred to as “articles” in the tables below.

**Categorization of articles**

To divide articles between the adult and child reports, we categorized the final 256 documents by population. Overall, 158 articles focused on the adult and pregnant women populations were included in the adult report, 93 that focused on the adolescent, child, and infant populations were included in the child report, and 22 articles that were not focused on a specific population were included in both reports. We categorized the included articles by population, insurance type, study design, scope, preventive service focus, outcome, and activity target. Included articles were often classified in multiple categories in all of these areas, with the exception of study design. For example, some articles addressed both child and adult populations, or activities targeted at both providers and patients. Thus, the article counts by table do not add up to the total number of articles reviewed.
Of the 115 total articles included in the child report, 58 focused on adolescents, 53 on children, and 22 on infants (table 3). Many of the articles focused on multiple age groups. In terms of insurance type, most were about patients with Medicaid (76), while 36 articles focused on CHIP (either instead of, or in addition to, Medicaid). There were 39 articles that discussed private insurance and 29 categorized as "other." Finally, 25 articles also addressed public or private managed care.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Number of Articles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population</strong></td>
<td></td>
</tr>
<tr>
<td>Adolescent</td>
<td>58</td>
</tr>
<tr>
<td>Child</td>
<td>53</td>
</tr>
<tr>
<td>Infant</td>
<td>22</td>
</tr>
<tr>
<td>Not specific</td>
<td>22</td>
</tr>
<tr>
<td><strong>Insurance Type</strong></td>
<td></td>
</tr>
<tr>
<td>Medicaid</td>
<td>76</td>
</tr>
<tr>
<td>Private</td>
<td>39</td>
</tr>
<tr>
<td>CHIP</td>
<td>36</td>
</tr>
<tr>
<td>Other</td>
<td>29</td>
</tr>
<tr>
<td>MCO/HMO*</td>
<td>25</td>
</tr>
</tbody>
</table>

*Can mean either Medicaid or private managed care

In table 4, we categorized articles by five types of study design: experimental, quasi-experimental, non-experimental, non-research, and other. Most (75) had a non-experimental study design. These included articles that used quantitative cross-sectional methods, such as descriptive analyses. In addition, 17 articles in this report used a quasi-experimental study design, 9 articles used an experimental study design, and 10 were non-research articles. Two articles that were included were categorized as having another study design.

Table 4 also shows how we categorized articles by their scope. The majority of articles was either national in scope (38 articles) or focused on one state (35). Another 15 were applicable to one organization or locality, while 11 addressed multiple sites, and 5 addressed multiple states.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Number of Articles</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Study Design</strong></td>
<td></td>
</tr>
<tr>
<td>Non-experimental</td>
<td>75</td>
</tr>
<tr>
<td>Quasi-experimental</td>
<td>17</td>
</tr>
<tr>
<td>Non-research</td>
<td>10</td>
</tr>
<tr>
<td>Experimental</td>
<td>9</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
</tr>
<tr>
<td><strong>Scope</strong></td>
<td></td>
</tr>
<tr>
<td>National</td>
<td>38</td>
</tr>
<tr>
<td>One state</td>
<td>35</td>
</tr>
<tr>
<td>One organization/locality</td>
<td>15</td>
</tr>
<tr>
<td>Some organizations/localities</td>
<td>11</td>
</tr>
<tr>
<td>Some states</td>
<td>5</td>
</tr>
</tbody>
</table>
We included articles that discussed primary or secondary preventive services recommended by the USPSTF or selected as CMS core measures. Some articles discussed more than one preventive service, and we categorized these additional services in each appropriate category. Table 5 shows the number of articles addressing each service. In the articles included in this report, those focusing on vaccines were the most prevalent (43), and well-care visits and screenings (29) were also commonly discussed. Sexually transmitted infections were a focus of 14 articles. Less commonly discussed were diabetes screening and Hb1C testing (6), prenatal care and screenings (3), mental or behavioral health related services (3), or preventive dental services (2). Finally, 17 articles were categorized as focusing on “other” preventive services, of which many dealt with preventive services as a general subject rather than focusing on a specific one. These articles were mainly from the gray literature and non-peer reviewed documents.

Table 5: Classification of Articles by Preventive Service, Child Report

<table>
<thead>
<tr>
<th>Preventive Service</th>
<th>Number of Articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccines</td>
<td>43</td>
</tr>
<tr>
<td>Well-care visits/screenings</td>
<td>29</td>
</tr>
<tr>
<td>Other</td>
<td>17</td>
</tr>
<tr>
<td>STI screening/counseling</td>
<td>14</td>
</tr>
<tr>
<td>Diabetes/obesity</td>
<td>6</td>
</tr>
<tr>
<td>Prenatal care/screenings</td>
<td>3</td>
</tr>
<tr>
<td>Mental or behavioral health</td>
<td>3</td>
</tr>
<tr>
<td>Dental</td>
<td>2</td>
</tr>
<tr>
<td>Substance abuse</td>
<td>2</td>
</tr>
<tr>
<td>Cancer: breast/cervical</td>
<td>1</td>
</tr>
<tr>
<td>Cancer: colorectal</td>
<td>1</td>
</tr>
<tr>
<td>Cancer: other or multiple</td>
<td>1</td>
</tr>
<tr>
<td>Blood pressure, cholesterol, CVD</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: Eight articles reviewed were not classified with a specific preventive service.
Note: Numbers may double-count articles that addressed multiple services; see explanation in text.

Table 6 shows the outcomes and activity targets categorized in our included articles. In terms of outcomes, most articles in the child report were focused on utilization of or access to certain preventive services (87), while 22 discussed the health or cost outcomes associated with the specific services. The activity targets of the surveyed articles was more varied, with 47 focusing on providers, 31 on patients, and 30 on states or managed care organizations.

Table 6: Outcomes and Activity Targets, Child Report

<table>
<thead>
<tr>
<th>Classification</th>
<th>Number of Articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome</td>
<td></td>
</tr>
<tr>
<td>Utilization/access</td>
<td>87</td>
</tr>
<tr>
<td>Health/cost</td>
<td>22</td>
</tr>
<tr>
<td>Target of Activity</td>
<td></td>
</tr>
<tr>
<td>Provider</td>
<td>47</td>
</tr>
<tr>
<td>Patient</td>
<td>31</td>
</tr>
<tr>
<td>State/MCO</td>
<td>30</td>
</tr>
</tbody>
</table>

Overall, the literature covered a wide range of topics in terms of services and activities, but did not provide a depth of evidence for any particular topic, likely due to the initial five year scope of our search.
The following sections summarize findings from the articles and their implications for promoting preventive services among Medicaid and CHIP children.

III. Utilization patterns and barriers

As noted above, the vast majority of articles included in this environmental scan were coded as addressing utilization or access issues. However, many of these also addressed other topics more specifically (e.g., activities intended to increase utilization), and are discussed later in this report. Here, we discuss the studies that described utilization rate deficits, significant racial and ethnic differences in preventive service access and utilization rates, and other potential barriers to access.

Generally low rates

Some deficits in utilization rates were common across child age groups. In a large study of the quality of pediatric health care (not specific to Medicaid/CHIP children), Mangione-Smith and colleagues (2007) found that US children get recommended health care services less than half the time, and specifically only receive 41 percent of recommended preventive services. Several other studies concluded that rates of well-child visits were sub-optimal among all adolescents, particularly adolescent boys. Dempsey and Freed (2010) investigated outpatient claims data from the years 2001–05 for Medicaid-enrolled adolescents in Michigan and found that the majority of the study population did not receive annual well-child visits, although problem-focused visits were relatively common. Further, Dempsey concluded that adolescent boys had the lowest uptake of well-child visits. Dempsey also drew a link between receipt of well-child care and vaccines, suggesting that missing well-child visits is associated with under-vaccination.

Racial and ethnic differences

Some differences in access and utilization may be related to race or ethnicity. Such differences are important because Medicaid and CHIP coverage has increased among ethnic minorities, with more than half of Hispanic and black children covered by one of the programs in 2010, according to research by Coyer and Kenney (2013). In another study, Kenney, Coyer, and Anderson (2013) analyzed household surveys and concluded that although general access to care is comparable across ethnicities, publicly insured black and Hispanic children are substantially less likely to receive mental health or specialty care, compared to white children. This finding indicates that there are systematic differences in access to care for certain subpopulations of children insured by Medicaid and CHIP, and the importance of this finding is emphasized by the disproportionately high number of ethnic minority children who receive public coverage.

Of the other studies that addressed racial and ethnic differences in access, most focused on vaccinations or STI screening, while a handful discussed other services.

HPV vaccine

Several studies examined differences in vaccination rates (particularly HPV vaccination rates) according to ethnicity or race. Authors’ specific conclusions varied, but all of their findings pointed to differences in access according to race/ethnicity.
One multivariate analysis of Medicaid claims and other administrative data in Florida found that although Hispanic female Medicaid beneficiaries ages 11 to 18 were more likely than either their white or black counterparts to initiate the HPV vaccine, white beneficiaries were the most likely to complete the three-vaccine series. Further, black females in the study population were almost half as likely as Hispanics to initiate the vaccine series, and only half as likely as whites to complete the three-vaccine HPV series once initiated (Cook et al. 2010). This study was conducted between 2006 and 2008, in the first two years the vaccine was approved by the Food and Drug Administration (FDA).

An analysis of immunization and patient records from 19 school-based health centers in Oregon (Gold et al. 2011) confirmed the finding that white females were more likely to complete the HPV vaccine series, compared to females of other ethnicities. On the other hand, data from the CDC, as cited by the Kaiser Family Foundation, show the highest rates of vaccine completion among Hispanics and girls whose families live below the poverty line, compared to whites and girls whose families live above the poverty line (Henry J. Kaiser Family Foundation 2012).

Staras and colleagues (2010) assessed HPV vaccine claims among Medicaid-insured girls ages 9 to 17 in Florida, focusing on HPV vaccine initiation instead of completion. The authors suggested that the factors associated with HPV vaccine initiation are likely different from those associated with HPV vaccine completion. Among the Medicaid beneficiaries included in the study, the findings indicated that HPV vaccine initiation did vary significantly by ethnicity, with Hispanics more likely than non-Hispanic black or non-Hispanic white girls to receive the vaccine. Further, length of enrollment in a Medicaid program was positively associated with vaccine initiation. The finding about length of enrollment in the Medicaid program indicated that a number of factors outside of race/ethnicity are likely to be important predictors of HPV vaccine initiation.

Some of the racial differences in HPV vaccination rates may be driven by provider recommendation patterns: multiple studies found that HPV vaccination uptake was strongly associated with provider recommendation (see later section on provider education), and an analysis of the National Immunization Survey (NIS) by Ylitalo and colleagues (2013) indicated that the HPV vaccine was recommended significantly less frequently to black and Hispanic adolescents, compared to whites of the same age. The study indicated that individuals who receive a vaccination recommendation from a health care provider are significantly more likely to obtain the vaccination, and that this relationship holds true across racial/ethnic groups, further emphasizing the importance of provider recommendation. However, Ylitalo’s finding that Hispanic individuals were less likely to receive a provider recommendation (and, according to his findings, less likely to obtain the vaccination) is at odds with findings by Cook and data reported by KFF that at least some Hispanic populations are more likely than other ethnicities to obtain the vaccination.

**Chlamydia screenings**

Provider recommendations and racial/ethnic differences in access also factored into the literature on chlamydia screening rates, but manifested differently from in the HPV literature. An analysis of Medicaid child claims data for females ages 15 to 21 in eight states indicated that providers differentially screened young women for chlamydia (Christiansen-Lindquist et al. 2009). Specifically, the authors found chlamydia screening rates were higher among Medicaid-insured black women than white women covered by Medicaid, even when stratified by age. Wiehe and colleagues (2011) performed a retrospective cohort study using electronic medical record and billing data for women ages 14 to 25 in

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13 The NIS is not specific to Medicaid/CHIP; it includes all insurance types.
Indianapolis, Indiana. The authors’ findings echoed Christiansen-Lindquist’s—particularly that white female adolescents were less likely to receive chlamydia screening than black and Hispanic female adolescents—and found that the differential rates were at least partially due to providers' tendency to recommend screenings more often to black and Hispanic women. Wiehe hypothesized that providers may perceive ethnic minority teens to be at greater risk for chlamydia, while failing to consider white teens to be associated with chlamydia, due to its stigma.

**Other services**

Screening and vaccination differences according to race and ethnicity were not uniform across preventive service type. For example, a multivariate analysis of NIS data by Schuller and colleagues (2013) found that Hispanic children were more likely than any other ethnic group to receive the influenza vaccine. A cross-sectional analysis of the Medical Expenditure Panel Survey (MEPS) found pre-school-age Hispanic children to be less likely than other ethnic groups of the same age to receive vision testing (Kemper et al. 2011). Both were national studies that investigated all insurance types.

Peart and Crawford (2012) studied the relationship between obesity counseling for adolescents, insurance status, and ethnicity. The study was based on the results of California Health Interview Survey for individuals ages 12 to 17. A major conclusion of the study was that while nutrition, exercise, and obesity counseling is necessary for all racial/ethnic populations and insurance groups, there was the greatest unmet need among African Americans, American Indian/Alaskan Natives, and the uninsured. Additionally, type of counseling varied across ethnic groups, with Hispanic and African Americans most frequently reporting nutrition counseling, while whites generally reported higher levels of exercise counseling.

**Other notable patterns**

Across all topics, the literature suggested a range of potential barriers to access and utilization of preventive services, including both patient-level and provider- or community-level barriers.

**Patient-level barriers**

Several studies indicated that infant and child wellness visit rates were sub-optimal, and may be related to socio-demographic factors. Van Berckelaer, Mitra, and Pati (2011) performed a secondary analysis of a longitudinal prospective cohort of Medicaid-eligible mothers and their infants in Philadelphia. The study found that well-child visits dropped significantly after six months of age, and multivariate regression analysis indicated that certain socio-demographic characteristics and prior health care utilization patterns were associated with uptake of well-child care. Cogan and colleagues (2012) analyzed data from managed care plans and vital statistics birth files for children ages 0 to 15 months born to Medicaid managed care beneficiaries in New York state. Multivariate regression analysis was used to examine relationships between receipt of well-child visits and a number of independent variables. Cogan concluded that receipt of well-child care was strongly associated with higher rates of prenatal care, even after adjusting for maternal and infant risk factors. Abdus and Selden’s (2013) multivariate analysis of MEPS data covering 13 years yielded the conclusion that although population-level adherence to well-child care recommendations has improved over the past decade, significant disparities among socioeconomic groups remain. The authors concluded that expansions in public coverage over this time period were responsible for some of the gains in uptake of well-child care.
A qualitative study using a literature review and semi-structured interviews by Shortridge and colleagues (2011) acknowledged that prohibitive costs have been a barrier to vaccination in the past, and that reduced cost-sharing as part of the ACA should alleviate some of these barriers—however, the study indicated that a number of structural barriers remain. Cost sharing for vaccinations (and the ACA provisions that eliminate it for some people) are technically more relevant to the privately insured population than they should be for Medicaid and CHIP children (for whom vaccines have been covered without cost sharing since before the ACA); however, cost can be a barrier for Medicaid/CHIP beneficiaries (or those eligible if they don’t know about their benefits). An analysis of the 2009 NIS by Lindley, Smith, and Rodewald (2011) indicated that patients’ lack of awareness of their eligibility for benefits—specifically, for the Vaccines for Children program—may prevent them from accessing services. Lindley also found that lack of transportation may be a barrier to vaccination for some (e.g., for poor mothers of young children in North Carolina, but not for adolescents in upstate New York).

Several studies have investigated relationships between maternal education/literacy and receipt of well-care visits and immunizations. A multivariate analysis of the NIS by Schuller and colleagues (2013) found that higher maternal education was a strong predictor of immunization status, and Pati and colleagues’ (2011) multivariate analysis of data from a longitudinal prospective cohort study of Medicaid-eligible mothers in Philadelphia found the same (although Pati found no association between maternal health literacy and immunization status in this cohort).

Patients’ knowledge and intentions about the services themselves (not just about their eligibility for coverage) may present particular barriers in the cases of vaccinations, especially the HPV vaccine, as well as STI screenings. Just as Wiehe discussed the issue of providers’ perception of their patients’ STI risk, Liddon, Hood, and Leichliter’s (2012) analysis of the National Survey of Family Growth (NSFG) found that female patients’ (ages 15 to 24)—or their parents’—perception of whether they were at risk of contracting HPV predicted their likelihood of receiving the vaccine. This echoes Zimet and colleagues’ (2010) findings from a survey of insured women ages 19 to 26 regarding their awareness, attitudes, and intentions about the HPV vaccine. Zimet found that many women who participated in the study believed they did not have enough information about the vaccine, or that their monogamous relationship status precluded them from being at risk. Lastly, a qualitative study by Atherly and Blake (2013) acknowledged that cultural norms and values related to sexuality may represent barriers to adolescent STI screening.

Provider- or community-level barriers

Other studies discussed provider- or community-level barriers (Atherly and Blake 2013, McGrath et al. 2011, and Ogbuanu et al. 2012, respectively). For example, according to Atherly and Blake, “health plans identified several barriers to improving [chlamydia] screening rates in the commercially insured population. These include difficulties in identifying sexually active members for screening, limited health plan resources to target the problem, concerns about contacting minors, and cultural barriers to discussing STDs.” Atherly’s study was based on findings from a qualitative study of commercial insurance plans, but it is likely that similar concerns and barriers are present in Medicaid populations and systems.

Lack of transportation may be a patient-level barrier, but geographic access is also a community-level barrier. An adjusted logistic regression analysis of 2007 immunization data for Medicaid-insured children in Washington, DC, by Fu and colleagues (2009) indicated that children with higher spatial accessibility to pediatric vaccination providers were more likely to be up to date on vaccinations.
Summary: Utilization patterns and barriers

As seen in this section, racial and ethnic differences in utilization were identified in the literature, as were other potential barriers to access such as patient knowledge or geographic access, as well as generally low utilization rates, particularly in the case of well-care visits. However, the results on racial and ethnic differences were not consistent across the articles, and the literature was somewhat narrow in scope. The articles focused primarily on adolescents, on only a few races and ethnicities, and on a handful of services. There appear to be gaps in the literature on disparities among children and infants as opposed to adolescents; on differences among racial and ethnic groups other than white, black, and to a certain extent, Hispanic children; and on barriers to accessing services other than vaccinations or STI testing.

IV. Impacts and outcomes

This section explores several hypothesized relationships:
- insurance coverage and preventive service utilization;
- coverage, utilization, and health outcomes; and
- coverage, utilization, and cost savings.

Understanding these relationships is important for states and other stakeholders considering policy decisions related to preventive services coverage and access. However, we present the following information with three important caveats: (1) our literature review largely only includes information published within the past five years, whereas much of the body of work that exists on the health and cost impacts of preventive services was published earlier than that; (2) most of the health impacts that may result from preventive service utilization are long term and particularly difficult to measure for children; and (3) as none of the available findings are derived from a randomized controlled experiment, causal links are difficult to establish.

However, this report focuses on preventive screenings, counseling, and other services recommended by USPSTF or included as CMS initial core quality measures; as well as immunizations included as CMS initial core quality measures, which include many vaccines recommended by ACIP. These panels only recommend services they have deemed have a strong enough evidence base of being effective and beneficial. While the literature within our scope presented limited evidence on positive health outcomes associated with preventive services utilization, the fact that the services are recommended by USPSTF or ACIP can serve as evidence itself.

USPSTF and ACIP recommendations do not consider cost outcomes, though. A small number of studies have investigated the cost-effectiveness of USPSTF recommended services, but these studies are relatively rare and extremely sensitive to the methods utilized. As such, an in-depth analysis of the cost-effectiveness of preventive services would be outside the scope of this project, and severely limited by the five-year time frame of our literature review. However, we do describe the small number of studies addressing cost-effectiveness that were present in our literature review below.
Coverage and utilization

Public versus private coverage

The literature presented contradictory evidence regarding the association between type of insurance coverage and preventive service utilization. Different studies found that Medicaid/CHIP coverage was associated with lower, higher, or equivalent utilization of certain preventive services, when compared to commercial coverage.

For example, Schuller and Probst’s multivariate logistic regression analysis of 2008 NIS data (2013) found that privately insured children ages 19 to 35 months were more than twice as likely to receive an influenza vaccine compared to publicly insured children of the same age.

Conversely, a pre-post observational study of patients in a family medicine center in Ohio found higher influenza vaccination rates among Medicaid-insured children compared to commercially insured children (Logue et al. 2011). The Ylitalo and colleagues (2013) study described earlier found the same among adolescents. Similarly, the Wiehe and colleagues (2011) study described earlier found that chlamydia screening among sexually active adolescent girls was positively associated with public insurance compared to private insurance. Kenney and Coyer (2012) also found that children enrolled in Medicaid/CHIP have better access than those commercially insured. To consider the issue from another angle, Yu and colleagues (2011) performed bivariate analyses using 1995–2005 Medical Expenditure Panel Survey (MEPS) data to examine the impacts of dis-enrolling from Medicaid/CHIP on health care utilization and expenditures. Yu found that loss of Medicaid/CHIP coverage was associated with decreased utilization of preventive services, even if the child was subsequently enrolled in a private health insurance plan.

Finally, Dempsey and Freed’s investigation of Medicaid-enrolled adolescents in Michigan (2010) showed that sub-optimal rates of Medicaid adolescent well-care visits and vaccinations were comparable to low rates among privately insured teens reported by other studies.

There are no apparent consistencies here, such as children or adolescents faring better or worse in one coverage type, or that one service is more utilized under one insurance type. It is promising that Medicaid beneficiaries sometimes fare as well or better than their privately insured counterparts, but clear that there is work to do in both public and private settings to better translate coverage into utilization.

Coverage variations

Rather than comparing Medicaid/CHIP and commercial insurance, some studies examined the role of the Vaccines for Children (VFC) program. As noted earlier, this program covers vaccinations for Medicaid and many CHIP beneficiaries as well as the uninsured and underinsured. Thus, while it is a public coverage program, its beneficiary population cannot strictly be compared to populations otherwise privately insured or uninsured, since some of those individuals are covered by VFC.

Several articles discussed the VFC program as an important source of access to immunization services for covered populations (for example, Smith et al. 2011 and Rees-Clayton et al. 2012). However Lindley and colleagues (2011) only found higher rates of HPV vaccination among VFC-eligible adolescents, as opposed to significantly higher rates of Tdap (tetanus, diphtheria, and pertussis) and MCV4 (meningitis) vaccination among non-VFC eligible adolescents (those with full private insurance coverage of vaccinations).
Any coverage versus none

A few studies explored the impact of having any coverage on preventive service utilization patterns. Not surprisingly, the evidence was weighted toward the existence of such a relationship. Howell and colleagues (2010) concluded that an expansion of public insurance in multiple California counties to children who were ineligible for (or eligible but not enrolled in) the state’s Medicaid/CHIP programs resulted in increased access to and use of preventive medical and dental care. It should be noted that this expansion was accompanied by a consumer outreach effort, so the observed effects are not due to the coverage alone. Schillaci (2008) found statistically significant correlations between child immunization rates and Medicaid enrollment rates in New Mexico. And one article found that “churn”—characterized by a patient losing, gaining or changing insurance coverage—was associated with decreased utilization of preventive services, especially for infants (Pittard, Laditka, and Laditka 2009).

Coverage, utilization, and health outcomes

There were some mixed findings on the relationship between coverage, utilization, and health outcomes. Li and colleagues’ (2011) analysis of data from the National Survey of America’s Families (NSAF) illustrated a link between a child being covered by CHIP and increased utilization of medical services. However, Li did not find an association between CHIP coverage and improved health outcomes. Li demonstrated that while expanded CHIP coverage was associated with increased uptake of well-child visits (and presumably vaccinations), there was no evidence that the expanded coverage was associated with improved health outcomes. On the other hand, Howell and colleagues’ (2010) study of a public insurance coverage expansion in California found reduced unmet need and improved health status, including fewer missed school days due to poor health.

However, Howell and Kenney (2012) conducted a review of 38 peer-reviewed studies that addressed the impact of Medicaid/CHIP expansions on children, focusing on access to care and health outcomes. The authors concluded unequivocally that coverage expansions were associated with improved access, and found mixed results on health status impacts. The authors emphasized the challenges associated with measuring changes in health outcomes among children, but nevertheless described evidence from several studies related to positive health outcomes, especially in avoidable hospitalization and mortality.

There was also strong evidence of the relationship between vaccination and health status. For example, Lindley and colleagues’ (2009) review of the US vaccination financing system estimates that routine vaccination of children and adolescents recommended before 1999 has prevented more than 14 million cases of disease and 33,000 deaths over the lifetime of each birth cohort. Additionally, evidence from the Kaiser Family Foundation indicates that HPV prevalence has decreased significantly since the introduction of the HPV vaccine (Henry J. Kaiser Family Foundation 2012).

There was also some evidence of improved health status as a result of increased developmental screenings in the primary care setting. A study by Klein and colleagues (2009) on the impacts of the Assuring Better Child Health and Development (ABCD) program in North Carolina found that the increased provision of developmental screenings during well-child visits was associated with increased rates of early detection and intervention, and, thus, fewer cases of children entering school with unidentified developmental disabilities or delays.
Coverage, utilization, and cost outcomes

Very few articles addressed cost outcomes associated with preventive services coverage and utilization among children. One study (Pittard 2013) found that healthy late preterm children (born at 34 to 36 weeks) who received the recommended number of EPSDT visits in infancy were more likely than those who did not to access care in the office setting, as opposed to the emergency room—indicating potential cost savings for the Medicaid program.

Several studies indicated that changes in certain service delivery processes have potential to improve utilization rates, and one, a 2011 literature review by Shih and colleagues, noted that home-based STI screenings could be associated with lower costs. These studies are discussed in greater depth in the section below on activities targeting providers.

Summary: Impacts and outcomes

The findings were mixed on patterns of utilization rates for public versus private coverage, but clearer about the benefits associated with having any coverage versus none. In part due to the Vaccines for Children program, immunizations are one service area where Medicaid/CHIP and even uninsured children may fare better than privately insured children, but this is not universally the case. There were also some mixed findings on health outcomes, but several studies underscored the existence of positive health outcomes associated with preventive services coverage and utilization. The literature on cost outcomes was sparse, and further research on health and cost outcomes attributable to coverage and utilization of preventive services by Medicaid and CHIP children is warranted.

V. Activities

The previous two sections have discussed preventive services utilization rates and associated health and cost outcomes to date; this section addresses the range of levers, activities, initiatives, and efforts (“activities”) aimed at improving those rates and outcomes. These activities are organized into three groups, according to their target (as indicated by this report’s framework):

- **Activities targeting state Medicaid/CHIP programs or Medicaid/CHIP MCOs** (initiated by CMS or by the states themselves);
- **Activities targeting providers and delivery systems** (initiated by states or MCOs, or by providers or delivery systems themselves); and
- **Activities targeting patients** (initiated by states or MCOs, by providers or delivery systems, or by other stakeholders).

Activities targeting state Medicaid/CHIP programs or Medicaid/CHIP MCOs

While a number of studies discussed states’ actions aimed at providers or patients, very few addressed either CMS activities targeted at state Medicaid or CHIP programs, or states' own activities aimed at their Medicaid or CHIP programs, intended to increase primary and secondary access to children's preventive services in those programs. However, a few peer-reviewed studies and gray resources addressed state-level activity around ACA prevention provisions, pre-existing coverage programs, or quality initiatives.
**Uptake of ACA provisions related to access and utilization**

No peer-reviewed articles discussed states’ uptake of or experience with ACA Section 4106 or other ACA prevention provisions. It is not surprising that the child literature does not address these topics, since, as explained earlier, Section 4106 and most other ACA Medicaid prevention provisions are more directly relevant for adults. Neither would a lack of studies on these provisions in the adult literature be too surprising, given the recency of their implementation.

One gray resource relevant to this topic is Medicaid.gov's series of webpages on prevention and the ACA (e.g., see "Prevention" [Medicaid.gov F], "Prevention of Chronic Disease" [Medicaid.gov G], and "Reducing Obesity" [Medicaid.gov H]). For example, the Prevention page describes a new initiative led by CMS, the Medicaid Prevention Learning Network. As stated on the website, this is an opportunity for state Medicaid programs to engage in state-to-state learning and receive enhanced technical assistance to promote best practices in preventive health care in Medicaid and CHIP. As of March 15, 2014, six states are participating in the Learning Network.

**Promotion of pre-existing coverage programs and efforts**

As noted earlier, Medicaid and CHIP enrolled children enjoyed broad coverage of preventive services even before the enactment of the ACA (primarily through Medicaid's EPSDT program). The vaccine coverage program VFC is another important resource. Medicaid.gov's Prevention webpage cited above offers more information on EPSDT and VFC.

Two peer-reviewed articles discussed states’ experience with pre-ACA coverage of Medicaid and CHIP pediatric preventive services; both focused on obesity prevention and treatment benefits. Based on a review of the literature and a series of semi-structured key informant interviews, Simpson and Cooper (2009) noted a need for CMS to increase states’ awareness that obesity prevention services are covered under EPSDT. And Lee and colleagues (2010), in a state-by-state document review of Medicaid manuscripts and private insurance laws and regulations, found that states were more likely to take a “sickness” than “wellness” approach to obesity.

**State-level quality initiatives**

Our environmental scan resulted in several provider-level quality measurement or reporting articles (discussed in the following subsection), but only one scholarly article on state or MCO activities related to measurement or reporting of the initial core set of child health care quality measures. This case study (O’Connor et al. 2010) reported on a Michigan managed care organization’s successful effort to connect with and use the state Immunization Information System (IIS) (instead of its own claims data) for Healthcare Effectiveness Data and Information Set (HEDIS) compliance, quality measurement, and a provider incentive program. This study found that the data interchange partnership is replicable for other IIS and health plans.

Several gray articles also addressed state-level quality issues. The Secretary’s Annual Report on the Quality of Care for Children in Medicaid and CHIP (Sebelius 2013), the previous version of which was a key document informing this project, includes state data derived from the core measures. These results indicate solid progress toward all states reporting on all or nearly all measures.

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14 The “HHS” utilization rates reported in tables 1 and 2 above are drawn from this document.
• All 50 states and the District of Columbia voluntarily reported two or more of the initial core set of children’s health care quality measures for FFY 2012 for Medicaid and/or CHIP children.

• The median number of measures reported by states for FFY 2012 was 14, up from 12 for FFY 2011 and 7 for FFY 2010. Altogether, 34 states and DC reported at least half (11 of 22) of the children’s quality measures.

• Two states, Florida and Tennessee, reported data on all 22 measures for FFY 2012. Four more states reported on all but one of the measures.

• The most frequently-reported measures assess children’s access to primary care, well-child visits, and dental services.

In addition, there is a series of resources summarizing interim findings from the national evaluation of states’ activities under the CHIPRA Quality Demonstration Grant Program mentioned earlier (Agency for Healthcare Research and Quality 2014). “Evaluation Highlight No. 6” (Peterson et al. 2014) discusses early lessons learned by the state grantees that are partnering with other states to execute one or more of their quality improvement projects. For example, two separate groups of three states have formed “learning collaboratives” to facilitate their respective efforts to define and implement medical homes or to enhance statewide care management entities. Another evaluation document (Devers, Foster, and Brach 2013) offers further suggestions for states considering creating their own learning collaboratives. While these documents are not specific to the utilization or quality of preventive services, the state-level approaches to quality improvement they describe can certainly be applied to preventive service-related efforts. Other resources from this project that address provider-level activities are discussed later in this report.

Activities targeting providers and delivery systems

Activities targeting providers (physicians, nurses, and others) or delivery systems (hospital and primary care networks, accountable care organizations, and others) may be initiated by states or managed care organizations, or by the providers or delivery systems themselves. A number of studies extracted during our environmental scan were categorized as addressing such activities. However, most of these studies only discussed apparent needs for such interventions (e.g., the need for provider education or change). Relatively few studies also suggested or evaluated specific approaches to meeting such needs.

There were two main categories of studies on provider-focused efforts: those on activities or issues related to improving access and utilization, and those on activities or issues related to improving the quality of preventive services delivered. The majority of articles focused on access and utilization as opposed to quality, and on individual providers or settings as opposed to entire delivery systems.

In this section, in addition to summarizing and assessing the literature, we highlight two studies in greater detail, as examples of particularly innovative or promising activities.

Activities intended to improve access or utilization

The literature primarily covered four types of activities aimed at increasing access and utilization: provider education, increased reimbursement rates, care coordination efforts, and alternate service delivery approaches.
Provider education. Multiple studies addressed needs or opportunities for provider education aimed at improving frequency or appropriateness of service recommendations. These studies primarily discussed vaccines and chlamydia screenings.

There was consensus on the importance of provider recommendations in improving vaccination rates, and the need for provider education in this area. A literature review and brief series of expert interviews (Shortridge et al. 2011) identified provider knowledge as one of four barriers to increasing utilization rates of vaccinations recommended by ACIP. Although the primary focus of the study was cost barriers, the authors noted the substantial importance of providers in patients’ decision-making on immunizations, and that education efforts could be a key strategy to increase demand and coverage of vaccines. Similarly, in a study using electronic health record (EHR) data and chart abstraction to examine correlates of HPV vaccine series initiation and completion among 7,702 low-income, minority adolescents, Perkins and colleagues (2012) acknowledged the critical role of provider recommendation in HPV vaccine uptake and suggested additional research on interventions designed to facilitate providers’ discussions of HPV vaccines with their patients. As noted earlier in this report (Section III), provider education to correct differential rates of HPV vaccine recommendation according to patient race or ethnicity is a particular need.

Two studies indicated other opportunities for provider education in the area of vaccinations. The first, a retrospective cohort analysis of 1997-2002 vaccination data, measured age-specific up-to-date infant immunization rates among Southern California health maintenance organization (HMO) enrollees. It found that some providers may be incorrectly assuming that lower birth weight infants should be immunized on a different schedule than those of normal birth weight (Batra et al. 2009). The second used 2006 National Health Interview Survey data to examine influenza vaccination rates among children ages 1 to 17 and had implications for both children and adults. Chi and colleagues (2010) suggested that clinicians caring for older or at-risk adults should recommend the flu vaccine not just for them, but for their "eligible household contacts," particularly young children in their households. While the ultimate focus of this article was the health outcomes of older and at-risk adults, not of children, one takeaway was that provider education efforts related to child health care should not necessarily be limited to physicians and others who care for children.

Another preventive service highlighted in the literature on provider education was chlamydia screenings for adolescents. Pourat and colleagues (2011) surveyed Medicaid HMOs and primary care physicians regarding frequency of chlamydia screenings and analyzed the results using regression modelling. The team found that physicians’ chlamydia screening rates were associated in part with having received training in the past, receiving recommendations or feedback from their contracted HMOs, or having access to national chlamydia screening guidelines. And just as with the HPV vaccine, the earlier section on utilization barriers highlighted a particular need for provider education to correct differential chlamydia screening recommendations according to patient race or ethnicity.

Other services discussed were obesity counseling and depression screenings. Two studies (Simpson and Cooper 2009) and (Peart and Crawford 2012) listed lack of provider training and materials among barriers to providing obesity, nutrition, and exercise counseling. Simpson interviewed key informants and Peart performed a trend analysis of 2003–09 California Health Interview Survey data on adolescents ages 12 to 17. Another study (Oyeku et al. 2010) was a randomized educational intervention trial at 15 community health sites that compared strategies to educate providers on newborn screening for hemoglobin disorders, and found that both strategies (mailed educational materials and interactive
seminars) led to modest improvements in knowledge about the screenings (although subsequent links to increases in screening rates or improvements in patient outcomes were not assessed).

**Increased reimbursements.** Inadequate reimbursement rates were also cited as a provider-side barrier to increasing utilization of preventive services. For example, although Medicaid and CHIP cover recommended vaccines for pediatric beneficiaries, the programs do not mandate a specific rate of reimbursement from states to the providers who deliver the covered vaccines. In 2007, state-level Medicaid reimbursement rates for vaccine administration ranged from $8 in Delaware to nearly $18 in New York, with a median rate of $9.23 (Yoo et al. 2010). However, while it would seem to follow that increasing reimbursement rates would be associated with improved service delivery rates, the evidence on this was inconsistent.

Yoo and colleagues (2010), analyzing three consecutive National Immunization Surveys (2006–08), found Medicaid reimbursement rates to be strongly and positively associated with infant (6 to 23 months) influenza vaccination rates. White (2012), using CHIP as a natural experiment, concluded that raising provider reimbursement rates was more effective than expanding coverage, in terms of increasing well-child visit rates. In a cross-sectional analysis of state-level associations between Medicaid reimbursement policies and 2009 NIS-Teen vaccination rates, however, Gowda and Dempsey (2012) found that "contrary to what has been shown for childhood vaccines, raising Medicaid reimbursement rates may not improve adolescent vaccine utilization." Thus, the impact of raising reimbursement rates may differ according to patient age.

However, patient age does not reliably predict the effect of raising providers' reimbursement rates. Simpson and Cooper (2009) cited reimbursement rates as a factor affecting obesity screening and counseling for children; Peart and Crawford (2012) noted the same for adolescents. In a study analyzing claims and enrollment data in two states that adopted policies aimed at promoting greater preventive care receipt in Medicaid participants, Kenney and colleagues (2011) found that increased reimbursement rates were associated with inconsistent improvements in well-child visit and preventive dental service rates among Medicaid and CHIP children.

A related topic is provider incentive payments. Chien and colleagues (2010) performed a case comparison of plan-level data from New York State’s Quality Assurance Reporting Requirement and claims data from Hudson Health Plan for 2003–07 and found that that provider incentives increased childhood immunization rates. Specifically, these were "piece rate" incentives—payments tied to each immunization, as opposed to rewards for meeting benchmarks—and they included administrative coordination payments. Chien and coauthors concluded that compared to no such programs, pay-for-performance programs like this one are effective but not sufficient. Immunization rates increased at the intervention site, but authors noted that the site now also offer consumer incentives.

**Care coordination efforts.** Patient Centered Medical Homes (PCMHs), case management programs, and other care coordination efforts were consistently found to have a positive influence on preventive services access and utilization. Five articles suggested such an association; no articles offered contradictory findings on access and utilization although one of the five specifically found no connection to improved health outcomes.

Three of the five studies focused on the HPV vaccine. Staras and colleagues (2010) compared HPV vaccine initiation rates among adolescent enrollees of different kinds of Medicaid programs in Florida, and found higher rates in the programs with care coordination components. The authors even
suggested that disparities seemingly related to race or ethnicity may be more of a reflection of having or not having a primary care provider or medical home, but noted that further research on this is warranted. Perkins and colleagues (2012) compared HPV vaccination rates and found that rates were the highest at the site with a designated nurse to track vaccinations, follow up with patients, and update EHR records. Findings in a descriptive and multivariable logistic regression analyses for the relationship between receiving care in a medical home and initiation of the HPV vaccination by Test, Caskey, and Rankin (2013) also point to the importance of medical home care for improving HPV vaccination rates among low-income teens.

A randomized, controlled clinical trial with 800+ infants born in urban safety net hospitals addressed whether infant immunizations and well-baby visit rates were impacted by case management efforts such as postcard and telephone reminders, and, if further indicated, by home visits (Hambidge et al. 2009). Another compared data on Medicaid-insured children who participated in asthma case management to those not participating in case management (Brandt, Gale, and Tager 2010). Both found that case management improved service utilization rates, but Brandt did not subsequently find improved health outcomes.

Nothing was found on whether or how providers use Medicaid or CHIP reimbursements for support or coordination functions for preventive services. This was a topic of interest indicated by CMS; it is unclear if the lack of results is due to our search parameters or if this indicates a gap in the literature.

Alternate service delivery approaches. A number of studies discussed unique approaches to making preventive services more accessible.

Several studies concluded that providers should offer vaccinations and other preventive services at non-preventive (urgent) visits, since too few children—particularly adolescents—come in for well-care visits as often as needed to provide recommended preventive services (Lindley et al. 2011, Dempsey and Freed 2010, Tebb et al. 2009, Patterson et al. 2012). Lindley analyzed data from the 2009 NIS-Teen, Dempsey analyzed outpatient claims data from 2001-05 for Medicaid-enrolled 11- to 18-year-olds in Michigan, Tebb performed an intervention in 5 of 10 clinics in a northern California HMO and compared intervention outcomes to the control, and Patterson developed a three-level intervention for pediatric practices and analyzed changes within the practices after a year of participation. Rather than focusing on convincing parents to bring their children in for well-care visits, these studies suggest “meeting patients where they are.” For example, Tebb described the effort by several clinics within an HMO to confidentially offer and provide chlamydia screenings to adolescents when they came into urgent care for other problems. The research team implemented a PDSA cycle (plan-do-study-act) in participating pediatric clinics to refine their process, and the effort has proven successful. See Highlight 1.

Other articles described additional ways of meeting patients where they are, including making services available in school-based health centers (SBHCS), mobile vans, and even at patients' homes. Looking at persons 0-17 who initiated the HPV vaccination series at a school-based health center in 2007, Gold and colleagues (2011) discussed Oregon's policy of offering the HPV vaccine at no cost to any teen (not just those who qualify for the Vaccines for Children program) at SBHCS, and concluded that SBHCS—in conjunction with coverage programs like VFC—are "important and effective providers of vaccinations to vulnerable, hard-to-reach adolescents." Another study (O’Connell et al. 2010) found a mobile van to be an effective method of delivering prenatal care and improving birth outcomes. O’Connell used birth data from the Florida Department of Health Office of Vital Statistics and from mobile clinics’ HMS database to
compare mothers who utilized the mobile van at least once and delivered between August 2007 and September 2008 to those who hadn’t.  

**Highlight 1: California clinics offer preventive screenings at urgent care visits**

Chlamydia Trachomatis is the most common sexually transmitted infection among adolescents and young women. Because it is asymptomatic, the only way to detect chlamydia is through routine screenings, usually performed during well-care visits. However, many adolescents forgo well-care visits and instead rely heavily on urgent care for their health care needs, especially those most likely to be at-risk for chlamydia. With this in mind, Tebb and colleagues developed a model for testing adolescents for chlamydia during urgent care visits, in order to reach a chlamydia-vulnerable population where they were already most likely to engage with the health care system.

The largest HMO in northern California participated in the study, which took place between April 2005 and September 2006. Of the 10 participating clinics, half were randomly assigned as the control group, and in the other half, Adolescent Care Teams (ACTeams) were established. The ACTeams were tasked with meeting monthly to develop and improve the system of identifying sexually active teens, carrying out the tests, confidentially reporting the results to teens, and setting follow-up treatments, all during adolescent urgent care visits (visits for other issues). Clinic ACTeams who made the greatest improvements gave adolescents confidential time with a provider, provided teens with a brief handout with sexual history questions and information about chlamydia and testing, and developed a protocol for confidentially collecting samples and following up on positive tests.

Though teens were able to opt out of testing, very few did. The intervention group significantly outperformed the control group: the predicted proportion screened for chlamydia in the final period was 42.19 percent in the intervention group, compared to 29.82 percent in the control. According to the authors, one of the main reasons the intervention succeeded, even in the challenging urgent care setting, is that the ACTeams prioritized chlamydia screening and held trainings, changed policies, and designated a chlamydia screening “champion” to educate urgent care workers and promote screening. This study suggests that meeting patients where they already are engaging with the health care system, in this case adolescents in urgent care, is one potentially promising approach to improving rates of preventive care utilization.

Source: Tebb et al. (2009).

Two studies found that internet and/or home based screening methods can help improve STI screening rates (Shih et al. 2011; Chai et al. 2010). Shih and colleagues conducted a review of literature published from January 2007 to August 2010 on home based screening methods, defined as those using self-collected, mail-in specimens, and found them to be a feasible approach for a variety of populations. One of the reviewed studies focused on young women ages 15 to 24, and found that compared to women in a “clinic testing group,” the women in the “home testing group” completed more tests overall, and importantly, more tests when asymptomatic. Chai and colleagues surveyed males ages 14 and older who requested an online STI screening kit about the acceptability of internet-based screening and similarly concluded that internet and home-based screenings were acceptable among and effective at reaching

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15 Although pregnancy care topics are largely only discussed in the adult report, this study is included here because the study population specifically included pregnant adolescents.
high-risk males in that age group. In their study, a website encouraged participants to request a home screening kit and questionnaire and to mail in their samples.

In addition, three studies found that internet and/or home based methods may also be effective in the areas of childhood developmental screenings and wellness visits. Two journal articles and one gray report found that developmental screenings completed ahead of well-child visits, or an online portal accessible to patients ahead of time, can improve the quality of care from both the patient’s and provider’s perspective, and potentially increase preventive care utilization (Bergman, Beck, and Rahm 2009; Nagykaldi et al. 2012; Hostetter 2011). Bergman developed an Internet-based pre-visit developmental and behavioral health screening that allowed parents and providers to better plan for visits. Nagykaldi and colleagues developed and tested a web-based, patient-focused “Wellness Portal” over the course of three years, including a 12-month cluster randomized controlled trial in eight clinician practices. And Hostetter reported on one practice’s pilot of a standardized screening tool (the Ages and Stages Questionnaire, or ASQ) which was mailed to families two weeks ahead of a child’s wellness visit. It should be noted that while these articles reported positive results with these approaches, it is not clear that they included, let alone focused on, Medicaid/CHIP populations. In addition, the results may not be generalizable.

Activities intended to improve quality

Compared to studies on provider-level activities aimed at increasing access and utilization, fewer studies addressed activities aimed at improving quality of preventive services for children. One study specifically addressed a quality improvement (QI) effort; a couple peripherally discussed quality measurement and/or reporting efforts. In addition, some resources from the CHIPRA Quality Demonstration National Evaluation focus on provider-level quality measurement and reporting.

Quality improvement. Smith and colleagues (2010) analyzed a one-year quality improvement initiative implemented in sixteen pediatric and family practices in Oklahoma, and concluded that QI interventions can be effective in improving rates and quality of EPSDT visits for Medicaid-insured children. While levels of improvement varied across practices, and visit rates increased more among younger age groups (0–2), there was an overall increase in well-child visit rates and a “significant improvement in quality of visits (measured by documentation of vital signs, health history, assessment of developmental and behavior, physical exam and anticipatory guidance).” This effort is further discussed in Highlight 2.

Other studies initially coded in the literature extraction process as relevant to QI were found to be more relevant as efforts to improve access and utilization. For example, see “alternate service delivery approaches” above. These can be thought of as efforts to improve the quality of service delivery to best meet the needs of various populations.

Quality measurement and reporting. Two studies mentioned elsewhere in this report have implications for provider-level quality measurement and reporting. Both addressed chlamydia screening. First, Pourat and colleagues’ 2011 finding—that physicians have higher odds of reporting frequent chlamydia screening rates if they had received training in the past, received recommendations or feedback from their contracted HMOs, or had access to national chlamydia screening guidelines—indicated the importance of provider education (discussed above) and is also relevant to provider reporting on quality measures. Second, the intervention described by Tebb and colleagues (2009) (see Highlight 1) was successful enough to contribute to policy change within the implementing HMO.
Chlamydia screening was added as a quality goal, and providers' measurement and reporting on it became linked to financial incentives and sanctions.

Other resources addressing provider-level quality efforts are the issue briefs and other documents created by the CHIPRA Quality Demonstration National Evaluation Team, summarizing the interim findings on the demonstration grant projects in progress. For example, "Evaluation Highlight No. 5" (Foster 2013) outlines several different approaches by the demonstration states to encourage providers to report and use the CMS initial core set of child quality measures. The first Evaluation Highlight (Ferry et al. 2013) also addresses practice-level quality measurement issues.

Highlight 2: Oklahoma’s intervention improves quality in primary care

The Early and Periodic Screening, Diagnostic and Testing (EPSDT) benefit for Medicaid pediatric patients covers recommended preventive tests, immunizations and screenings to detect and treat health problems before they become serious. Medicaid provides physicians with incentives to provide recommended services, but, in spite of these incentives, evidence shows that a significant number of Medicaid-insured children are not receiving the recommended well-child care and the quality of the visits varies greatly. In Oklahoma, Smith and colleagues developed an intervention that involved practice education, performance feedback through random chart audits, and trained facilitator support. Additional staff were brought in to support the practices: community case managers to call overdue and no-show parents; IT support to operate a preventive services reminder system; and practice enhancement assistants to reorganize staff duties, develop regular meetings, send monthly emails, and implement the ages and stages questionnaire. These measures were intended to improve both quality and preventive service utilization. The research team invited and selected 16 Oklahoma practices in three counties to participate in the year-long intervention.

The research team evaluated performance on quality improvement measures by assessing completion of a number of exams including physical exams, vital signs, and mental health evaluations. EPSDT improvement was measured by comparing against an updated periodicity table, which took into account clinical recommendations. All participating practices experienced substantial gains in improving quality, with overall quality increasing from 66 percent at the baseline to 76 percent after the intervention. The rate of well-care visits also increased from 57 percent at the baseline to 65 percent after the intervention, with younger age groups experiencing greater gains. The researchers caution that the improvements yielded are usually seen after several months, and that the intervention itself was rather resource and labor intensive. Still, they also suggest that a similar intervention on a statewide level may yield even greater improvements.

Sources: Smith et al. (2010).

Activities targeting patients

Activities targeting Medicaid or CHIP pediatric patients may be initiated by states or Medicaid MCOs, by providers and delivery systems, or by other stakeholders. As with studies on provider-focused activities, the literature on these patient activities mainly addressed education and outreach needs and gaps, but a few studies also discussed promising practices for public outreach. Other topics addressed were consumer incentives and school entry requirements. Note: where we refer to activities targeted at child or adolescent patients, this includes their parents as appropriate.
In this section, as in the section on provider-focused activities, we highlight two studies as examples of particularly innovative or promising activities.

**Activities intended to improve adolescent (and parent) awareness and utilization of preventive services**

**Patient education and outreach needs.** The utilization trends and barriers section of this report offered some considerations for patient outreach. For adolescents, topics discussed include vaccinations, particularly the HPV vaccine; chlamydia testing; and wellness visits.

Two studies discussed earlier (Liddon et al. 2012 and Zimet et al. 2010) highlighted the need for improved communication and increased outreach on the HPV vaccine. Specifically, they suggest addressing the following topics: lifetime risk of HPV, vaccine safety and efficacy, and insurance coverage. They state that messages to younger teens and their parents should include the importance of receiving the vaccine prior to sexual initiation and that messages to older teens and young women should address the value of the vaccination even for women in monogamous relationships.

However, as noted, providers play an important role in patient education and outreach (e.g., Kramer 2012; Perkins et al. 2012), and where disparities or low utilization rates are present, a question to consider is whether direct patient outreach, provider education, or both is indicated. For adolescents, this is particularly true in the case of the HPV and other vaccinations, as well as STI screenings. Ylitalo and colleagues’ 2013 findings on this topic, using the 2009 NIS-Teen to assess provider verified HPV vaccination and participant reports of provider recommendations, suggest that provider education to address disparate frequencies of HPV vaccine recommendations based on patient race or ethnicity may be more impactful than patient outreach on the HPV vaccine. On the other hand, Christiansen-Lindquist, using Medicaid child claims data from the Marketscan database, suggests targeted interventions aimed at patients as well as providers to help reduce disparities in chlamydia screenings. This would mean reaching white females, since providers are currently less likely to recommend the screening to them than they are to black and Hispanic patients (Christiansen-Lindquist et al. 2009; Wiehe et al. 2011).

Low rates of well-care visits among adolescents have also been addressed in this report, and as with the HPV vaccine and chlamydia screenings, patient outreach implications are not clear. In the "alternate service delivery approaches" discussion in the provider activities section above, it was suggested that providers wanting to improve rates of other recommended services focus less on getting adolescents in for wellness visits, and more on providing the services whenever adolescents do come in for urgent care. A similar choice exists for patient outreach: should it aim to increase wellness visits, or focus on the services themselves? This was not addressed in the literature, with one exception. Dempsey and Freed (2010) analyzed outpatient claims from 2001 to 2005 for 11- to 18-year-old Medicaid-enrolled adolescents living in Michigan and noted that the idea of offering preventive services to adolescents at urgent visits may work better for girls than for boys, as girls attend more problem-focused visits as they progress through adolescence. Additional outreach would likely be indicated for boys, whose utility of all visits decreases with age.

**Potential outreach strategies.** Unfortunately, while numerous studies articulate opportunities for outreach, few of the studies are specific about types of outreach that might or might not be successful. One exception is Rees-Clayton and colleagues’ 2012 examination of rates of HPV, MCV4 and Tdap vaccination among adolescents in Michigan in 2006–08, using data obtained from the Michigan Care Improvement Registry. This study described both failures and potential successes in outreach methods. According to the author, vaccination coverage was low despite a national preadolescent vaccination
campaign and adolescent vaccination-specific webpages by health departments. States and other stakeholders considering their own vaccination campaigns and websites may want to learn more about what didn't work in this case. On the other hand, the author suggested that given that completion of early childhood vaccinations was predictive of early adolescent immunization rates, social marketing promoting childhood vaccines could lead to improvements both in child coverage and in increased acceptance of vaccines in young adolescents.

**Activities intended to improve child/infant (parent) awareness and utilization of preventive services**

**Patient education and outreach needs.** As with adolescents, studies addressed earlier in this report offer implications for education and outreach to the parents of infants and children. Well-child visits and immunizations are the topics most commonly addressed.

One study, using data representing the 45,768 people enrolled in Medicaid in South Carolina in 2000–02 (Pittard et al. 2009), addressed the effects of "churning" between different managed care and fee for service plans within Medicaid on utilization of preventive services in South Carolina. Compared to infants ages 0–2 without plan changes, those with changes averaged 40 percent fewer preventive health visits. Pittard suggests educating mothers of infants who changed health plans to adhere to regular schedules of preventive health care, and provide them with incentives to do so. (Incentives are further discussed below.) In a secondary analysis of a Medicaid eligible cohort of children followed from birth to 2 years between 2005 and 2008 with structured phone surveys, Van Berckelaer and colleagues (2011) also suggest maternal education to address the problem of lower adherence with infant preventive care after 6 months of age. The authors recommend emphasizing the importance of well child care (not just infant care), especially for mothers of more than one child, in order to improve utilization rates for older children too.

**Potential outreach strategies.** In contrast to the adolescent literature, there were several studies suggesting specific outreach strategies for children and infant patients and their parents. Ahlers-Schmidt and colleagues (2011) surveyed 200 English-speaking parents of children under six on the use of text messaging for sending vaccination reminders and on variations in reminder language, and concluded that "text messaging may be an optimal vehicle for provider–patient communication, however cultural differences should be considered when developing messages." Findley and colleagues (2008) compared a New York City community-based outreach program, Start Right, to New York City Immunization Registration records, and found that Start Right was successful in increasing on-time immunizations in children age 19 to 35 months. See Highlight 3. And a 2011 evaluation of a vaccination recall letter system for Medicaid enrollees age 19 to 23 months, published in the CDC's Morbidity and Mortality Weekly Report (Centers for Disease Control and Prevention 2012b), found that a reminder and recall system can be effective in increasing vaccination coverage rates. "Reminders" alert parents when immunizations are due; "recalls" alert them again of overdue vaccinations. The study did not suggest one particular system but noted that "state and local health departments should use the reminder and recall system(s) most likely to improve vaccination coverage in their population."
Highlight 3: New York City's community-based coalition empowers parents

Childhood vaccination rates in low-income Latino communities of New York City are far below community and national standards. As a result, Findley and colleagues developed Start Right, a coalition of 23 partners in one NYC community, to create culturally and linguistically appropriate immunization-promotion materials, train and implement peer health educators, perform community outreach, and provide support to parents. The intervention developed best practices using input from community organizations. They also integrated the program into existing services, provided staff training, and tracked progress by consolidating EHRs and parent cards. Perhaps most importantly, the intervention empowered parents through frequent contact via calls and letter reminders for both prospective and missed appointments.

The team compared Start Right participant immunization rates to those of NYC children outside of Start Right’s jurisdiction in a quasi-experimental retrospective analysis of 10,857 children born between April 1999 and September 2003, using New York’s Citywide Immunization Registry (CIR). The two groups were ethnically and socioeconomically similar and were composed of people of approximately similar ages. The participants of Start Right, however, were disproportionately likely to receive Medicaid.

Controlling for Medicaid and ethnicity, the research team found that participants were 53 percent more likely to be up to date with immunizations than the control group. Further, Start Right participants completed their required immunizations an average of 11 days earlier than those not in Start Right. Although the authors did not discuss specific post-intervention immunization rates for the Start Right or comparison groups, their discussion of this community-based program, including a list of its specific elements, offers an example of a promising effort to increase preventive service utilization, aimed at patients.

Source: Findley et al. (2008).

Activities relevant to all child age groups

Consumer payment incentives. Beyond education and outreach, several studies mentioned consumer incentives as a potential strategy for increasing utilization rates. As stated above, Pittard and colleagues (2009) recommend outreach plus incentives to encourage parents to adhere to their child’s recommended preventive care schedule when “churning” between plans. Simpson and Cooper (2009) also noted consumer incentives as one of several potential strategies for increasing rates of obesity and nutrition screening and counseling, as did Kenney and colleagues (2011) for well-child visits. Greene’s 2011 quasi-experimental study examining the impact of Idaho’s wellness incentive program for CHIP enrollees demonstrated that consumer incentives increased the percentage of children up to date with well child visits, compared those ineligible for incentives. Highlight 4 further discusses this effort.

Incentives were primarily mentioned in relation to children as opposed to adolescents, but Nyman, Abraham, and Riley (2013) found that an incentive program using Target gift cards significantly increased the likelihood that Medicaid managed care children (ages 3–20) in Minnesota would have a wellness visit.
Highlight 4: Consumer incentive program in Idaho yields results

Many believe that the only way to address rising health care costs in the long term is to help individuals get and stay healthy. To this end, an incentive program was implemented in Idaho to encourage children to be up-to-date with recommended well-child physician visits. The Preventative Health Assistance (PHA) program rewarded CHIP-participating families with credits, varying according to income, which could be applied toward premiums or used to purchase vouchers for healthy behavior-related equipment. To determine who was eligible for the credits, the Medicaid agency compared claims data to recommendations by the American Academy of Pediatrics. Those compliant were awarded $30 in PHA credits. Those out of compliance were mailed a letter explaining that they could have earned a credit had their child been up-to-date on well-child visits. The premium credits could be applied two ways. For those that were overdue on paying premiums, the points were automatically applied to their premium account. For those current, the option to obtain vouchers was made available, at least initially.

In a quasi-experimental study performed between July 2005 and January 2009, the research team compared well-child visit rates of children on Medicaid, whose parents did not have the opportunity to receive the incentive payments, to CHIP parents at two different premium levels ($10 and $15) over a two year period using claims data. There were 81,666 children in the baseline year that met the eligibility criteria and 88,344 in the final year of analysis. Approximately 88 percent were Medicaid eligible; the rest were CHIP-insured. At the baseline year of the study, approximately 28.2 percent of Medicaid children were up-to-date with their well-child visits, compared to 21.6 percent of the CHIP $10 premium group children, and 28.2 percent of the CHIP $15 premium group children. At the close of the study, well-child visits in the CHIP $10 premium group had increased by 118 percent, and by 75 percent in the CHIP $15 premium group. Rates for Medicaid-insured children rose only 13 percent from the initial year, although they were still higher than the rates in the CHIP $10 group.

The research team identified two elements integral to success. The first was automatic operation of the program. In the first year of the program parents were given the opportunity to apply for vouchers for equipment, but because the process of obtaining vouchers was complicated, the vast majority of parents did not use them. Premium support, on the other hand, was automatic and yielded results. The second key component was frequent, clear, and easy to understand communication to recipients. Consistent letters containing non-technical language, or other outreach methods, should be used to ensure that participants are aware of the program.

Source: Greene (2011).

School entry requirements. States differ in terms of which (if any) vaccines they mandate for entry into which grade levels, and what exceptions or alternatives they allow (e.g., an exception for religious objections, or a "parent education" alternative). A few studies examined the impact of such policies on vaccination rates.

In a review of school-entry requirements for all 50 states and DC, Bugenske (2012) assessed coverage levels for adolescents ages 13–17 by state requirement status and change in coverage between 2008 and 2009, and found school requirements for any or all of the three adolescent vaccines (Tdap, MCV4, and HPV) to lead to higher rates of coverage of the required vaccine(s) only. Bugenske and colleagues did not find "parent education" alternatives to have the same effect, and did not find that a requirement
for one vaccination had any impact on other vaccination rates. Rees-Clayton and colleagues (2012) had similar findings for teens in Michigan. Gowda and Dempsey (2012) more generally endorsed school requirements as a potentially effective approach.

These studies agree that school entry requirements may improve vaccination rates, but a requirement for one vaccine does not necessarily raise other vaccination rates. While these requirements may help get pediatric patients into providers' offices (for at least one required vaccine), it is thus up to providers to take that opportunity to offer the full set of recommended vaccines (and other preventive services).

Summary: Activities

There was almost no literature on ACA-related or pre-existing activities targeting state Medicaid/CHIP programs (initiated by CMS or by the states themselves). However, several gray resources provided useful background on state-level efforts, such as the Medicaid Prevention Learning Network and states' progress in collecting and reporting on the initial child core measures.

Much more of the literature addressed activities targeting providers and delivery systems. More accurately, the literature focused on potential needs for provider-focused activities, like provider education, rather than describing or evaluating specific approaches to meeting those needs. However, there was some discussion of care coordination efforts, alternate service delivery approaches, and increasing reimbursement rates as potential avenues for increasing utilization rates. The literature on provider-targeted activities also addressed activities intended to improve the quality of preventive services.

Activities targeting patients were also the topic of a number of studies. The literature identified particular areas of need in terms of patient education, and suggested that education and outreach, consumer incentives, or school requirements might be effective approaches. However, further research is needed on these activities (and all in this section) to establish a stronger evidence base.

Four studies addressing different approaches to provider or patient outreach were "highlighted" for those states and other stakeholders particularly interested in implementing their own activities.

VI. Conclusion

Medicaid and CHIP provide broad coverage of preventive services for millions of children in the United States, and CHIPRA and the ACA have provided additional opportunities for children enrolled in Medicaid and CHIP to access quality preventive services.

However, the literature identified through this environmental scan shows that coverage does not necessarily amount to utilization. Utilization rates of many preventive services are low among Medicaid and CHIP pediatric populations (especially adolescents), and there are barriers to accessing services even when they are covered without cost sharing. Utilization rates of these services are also suboptimal among children with private coverage. A number of activities may be needed to promote the delivery of high-quality recommended preventive services by providers, and the utilization of these services by consumers. Ultimately, the goal is to improve the health of the population while potentially reducing system costs.
The literature suggested a wide range of activities that may help promote utilization of preventive services by targeting providers or patients. Gray resources also covered state-level activities related to both coverage and quality. Following is a summary of key activities discussed in this report.

Table 7: Examples of Activities to Promote Preventive Services Targeted at Various Actors

<table>
<thead>
<tr>
<th>State Medicaid and CHIP Programs and MCOs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Uptake of ACA provisions related to access and utilization</td>
</tr>
<tr>
<td>• Promotion of pre-existing coverage programs and efforts</td>
</tr>
<tr>
<td>• State-level quality initiatives</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Providers and Delivery Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Activities intended to increase access and utilization</td>
</tr>
<tr>
<td>o Provider education</td>
</tr>
<tr>
<td>o Increased reimbursements</td>
</tr>
<tr>
<td>o Care coordination efforts</td>
</tr>
<tr>
<td>o Alternate service delivery approaches</td>
</tr>
<tr>
<td>• Activities intended to improve quality</td>
</tr>
<tr>
<td>o Quality improvement</td>
</tr>
<tr>
<td>o Quality measurement and reporting</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Education to increase adolescent (and parent) awareness and utilization of preventive services</td>
</tr>
<tr>
<td>• Education to increase child/infant (and parent) awareness and utilization of preventive services</td>
</tr>
<tr>
<td>• Activities relevant to all child groups</td>
</tr>
<tr>
<td>o Consumer payment incentives</td>
</tr>
<tr>
<td>o School entry requirements</td>
</tr>
</tbody>
</table>

While our environmental scan yielded a number of examples that could inform efforts to promote preventive service use among pediatric Medicaid and CHIP populations, several gaps remain. In particular, there is a lack of a strong evidence base around any one activity having an impact on specific populations or preventive services. In addition, there was an emphasis in the literature within our scope on adolescents as opposed to children and infants, and on only a few specific services (e.g., HPV and chlamydia). Further research—or updates to research that may have been published outside of the five year scope of this search—may be needed to develop a stronger evidence base on potential activities, to better address impacts on children and infants, and to consider a wider range of services.

There are several potential limitations of this report. First, as noted earlier, we selected a five-year lookback period to allow a focus on the most recent data, but this likely excluded some important earlier findings. At the suggestion of senior Urban Institute researchers, we addressed this limitation by including additional seminal works, but it is possible that there are other relevant works not included. Similarly, despite our systematic approach to our initial scan and extraction of articles, it is possible that we missed some within our primary five year window.

Another potential limitation is that articles were retrieved from the five year period before many of the ACA provisions went into effect on January 1, 2014. This restricts our ability to comment on the potential impact of the health reform law on our issues of interest—for example, the movement of
children with family incomes between 100 and 138 percent of FPL from state CHIP programs to state Medicaid programs. In addition, the Affordable Care Act includes many other provisions aimed at improving health care quality not discussed in this report but that may have had some effect on preventive services. However, we believe this is a minor limitation since, as noted in the introduction and background, pre-ACA policies and programs (e.g., CHIPRA) are generally more relevant for children’s access to Medicaid and CHIP preventive services than is the ACA.

Conversely, it is possible that the changes occurring in recent years may have influenced the findings in these studies, rather than or in addition to the specifically studied efforts to increase the use of preventive services, particularly as many of the studies used non-experimental designs.

The US health care system is currently undergoing major changes, with large changes expected in how care is financed and delivered under the ACA. It remains to be seen how applicable the findings from this report will be to children who will be covered under public programs in the coming years.
### Appendix A: Keywords and MeSH Terms Used in Initial Search

<table>
<thead>
<tr>
<th>Concept</th>
<th>Keywords (title/abstract)</th>
<th>MeSH terms</th>
<th>EBSCO terms (CINAHL, Academic Premier, PsycInfo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preventive services</td>
<td>clinical preventive services, preventive health services, preventive care, primary care intervention, screening, immunization, section 4106, Medicaid expansion, access to care, core measures, prevention, well-child visits, preventive counseling, EPSDT, CHIPRA quality demonstration, health education</td>
<td>preventive health services (term explodes to include early intervention, health education, immunization, primary prevention, health promotion, etc.), child health services, delivery of health care/organization and administration</td>
<td>Medical screening, preventive health services, primary health care, preventive medicine, health promotion</td>
</tr>
<tr>
<td>Specific preventive services recommended by USPSTF or required by CMS Core measures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NB: USPSTF terms will be searched with AND (screening or counseling or preventive medication) to avoid retrieving large numbers of sources about medical conditions (e.g., hypertension) that do not discuss preventive issue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USPSTF Adult: Aspirin/NSAIDs for Prevention of Colorectal Cancer, Bladder Cancer, Breast Cancer BRCA Testing (Ovarian Cancer, Breast Cancer, Cervical Cancer, Colorectal Cancer, Lung Cancer, Oral Cancer, Ovarian Cancer, Pancreatic Cancer, Prostate Cancer, Skin Cancer, Testicular Cancer, Thyroid Cancer, Tobacco Cessation (Smoking), Vitamin Supplementation to Prevent Cancer and Coronary Heart</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concept</td>
<td>Keywords (title/abstract)</td>
<td>MeSH terms</td>
<td>EBSCO terms (CINAHL, Academic Premier, PsycInfo)</td>
</tr>
<tr>
<td>---------</td>
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</tr>
<tr>
<td>The Core Measures are specific measure names</td>
<td>Disease, Abdominal Aortic Aneurysm, Additional Risk Factors for Intermediate CHD Risk, Aspirin for Primary Prevention of Cardiovascular Disease, Blood Pressure in Adults (Hypertension), Carotid Artery Stenosis, Coronary Heart Disease, Lipid Disorders in Adults (Cholesterol Abnormalities, Dyslipidemia), Peripheral Artery Disease and Cardiovascular Risk Assessment, Tobacco Cessation (Smoking), Bacteriuria, Chlamydial Infection, Gonorrhea, Hepatitis B Virus Infection, Hepatitis B Virus Infection (Pregnant Women), Hepatitis C Virus Infection, Herpes Simplex Genital, Human Immunodeficiency Virus (HIV) Infection, Rubella, Sexually Transmitted Infections, Syphilis, Tuberculosis Infection, Falls Prevention in Older Adults, Family Violence, Intimate Partner Violence and Elderly Abuse, Motor Vehicle Occupant Restraints, Alcohol Misuse, Dementia (Alzheimer’s Disease), Depression Adult, Drug Use Illicit, Tobacco Cessation (Smoking), Diabetes Mellitus, Healthy Diet and Physical Activity to Prevent Cardiovascular Disease, Hemochromatosis, Iron Deficiency Anemia (Anemia), Menopausal Hormone Therapy, Nutrition (Diet), Obesity in Adults, Thyroid Disease, Vitamin D and Calcium Supplementation to Prevent Fractures, Vitamin D Deficiency, Back Pain Low (Low Back Pain), Osteoporosis, Aspirin Prophylaxis in Pregnancy, Bacterial Vaginosis in Pregnancy, Breastfeeding, Down Syndrome, Folic Acid Supplementation, Gestational Diabetes, Preeclampsia, Rh Incompatibility, Rubella, Glaucoma, Hearing Loss, Older Adults, Impaired Visual Acuity in Older Adults, Visual Acuity in Older Adults Impaired, Chronic Obstructive Pulmonary Disease, Kidney Disease (Chronic) CMS Core Measures, Adult: use of imaging studies for low back pain, screening for clinical depression and follow-up plan, documentation of current medication in the medical record, body mass index (BMI) screening and follow-up, closing the referral loop receipt of specialist report, functional status assessment for complex chronic conditions</td>
<td>Core Measures, Child: appropriate testing for children with pharyngitis, weight assessment and counseling for nutrition and physical activity for</td>
<td></td>
</tr>
<tr>
<td>Concept</td>
<td>Keywords (title/abstract)</td>
<td>MeSH terms</td>
<td>EBSCO terms (CINAHL, Academic Premier, PsycInfo)</td>
</tr>
<tr>
<td>---------</td>
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<td>-----------------------------------------------</td>
</tr>
<tr>
<td>and will be phrase-searched as given</td>
<td>children and adolescents, chlamydia screening for women, use of appropriate medications for asthma, childhood immunization status, appropriate treatment for children with upper respiratory infection (URI)</td>
<td>Medicaid, insurance coverage, “insurance, health” (term explodes to include many relevant subterms such as health benefit plans, managed care programs, prepaid health plans, etc.), state health plans</td>
<td>“Insurance, health”, health insurance, state children’s health insurance program (US), insurance coverage, medicaid</td>
</tr>
<tr>
<td>2. Insurance</td>
<td>insurance, health coverage, Medicaid, children’s health insurance programs, CHIP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Population*</td>
<td>N/A</td>
<td>Adult (19+) or Child (ages 0-19) applied as a search limit (these limiters explode to include all sublimits)</td>
<td>Adult/Child/Adolescent applied as a search limit when possible; not all of the included databases use this limiter</td>
</tr>
</tbody>
</table>

* Did not apply these at the search level, as there was a desire to include non-empirical articles, which would not have these designations.

**Strategy:** Concept terms will be searched with OR to create large sets of related items. The concepts will be combined with AND.

| N/A | N/A | N/A | N/A |
## Appendix B: Inclusion/Exclusion Criteria for Abstract Review

<table>
<thead>
<tr>
<th>Inclusion</th>
<th>Exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Search Strategy document</td>
<td></td>
</tr>
<tr>
<td>• 5 years</td>
<td>• No abstract provided</td>
</tr>
<tr>
<td>• English</td>
<td>• Presentations</td>
</tr>
<tr>
<td>• Human subjects only</td>
<td>• Conference proceedings</td>
</tr>
<tr>
<td>• United States</td>
<td>• Conceptual and theoretical papers (unless they appear extremely relevant/helpful)</td>
</tr>
<tr>
<td>• Empirical studies and research reports (prioritizing literature reviews)</td>
<td>• Opinion, commentary that is not substantive</td>
</tr>
<tr>
<td>• <em>Ebsco only</em>: scholarly (peer reviewed) journals, exclude Medline (PubMed) records</td>
<td></td>
</tr>
<tr>
<td>Outcomes</td>
<td></td>
</tr>
<tr>
<td>• Literature review articles that examine research around health outcomes or cost outcomes associated with preventive health services use</td>
<td>• Individual studies around outcomes from specific preventive services captured in existing reviews</td>
</tr>
<tr>
<td>• Recent studies not captured in existing reviews if they provide new information</td>
<td></td>
</tr>
<tr>
<td>Utilization</td>
<td></td>
</tr>
<tr>
<td>• Latest numbers for Medicaid/CHIP and private health insurance (year will differ depending on data source—claims, survey, etc.)</td>
<td></td>
</tr>
<tr>
<td>• Articles on effect of coverage on utilization (priority given to review articles)</td>
<td></td>
</tr>
<tr>
<td>Activities (e.g., enhanced FMAP, quality measurement/reporting, payment, quality improvement, education/outreach, coverage, etc.)</td>
<td></td>
</tr>
<tr>
<td>• Literature reviews and individual articles</td>
<td>• Articles on activities not relevant to state Medicaid/CHIP agencies (e.g., employers, Medicare, etc.)</td>
</tr>
<tr>
<td>• Articles on state participation in CMS initiatives targeting state Medicaid/CHIP, including enhanced FMAP and quality measurement/reporting</td>
<td>• Articles not primarily focused on Medicaid/CHIP patients</td>
</tr>
<tr>
<td>• Articles on activities conducted by state Medicaid/CHIP agencies (and Medicaid MCOs) targeting delivery systems or patients, aimed at increasing preventive service access/utilization</td>
<td>• Articles not focused on preventive services (e.g., non-prevention focused quality measures)</td>
</tr>
<tr>
<td>• Articles on facilitators or barriers to the use of preventive services by Medicaid/CHIP populations</td>
<td>• Commentary on politics around the Affordable Care Act</td>
</tr>
<tr>
<td>• Commentary with relevant information on issues that may affect implementation of state activities</td>
<td></td>
</tr>
</tbody>
</table>
Appendix C: Decision Tree

Appendix D: Websites Reviewed (Gray Literature Search)

Organization
American Cancer Society
American Health Care Quality Association
Centers for Disease Control and Prevention
Commonwealth Fund
Institute for Healthcare Improvement
Kaiser Family Foundation
March of Dimes
Medicaid.gov
National Association of Medicaid Directors
Office of the Surgeon General
Public Health Institute
Robert Wood Johnson Foundation
Urban Institute
Appendix E: Extraction Results

Extraction Results from Literature Search for Environmental Scan

3,351 citations identified through initial search strategy

3,071 excluded based on abstract review

280 citations identified for full text article review

52 citations excluded based on article review

21 gray literature articles included for review

7 other sources included for review

Information extracted from 256 articles*
- 129 Adult
- 31 Pregnant women
- 58 Adolescent
- 53 Child
- 22 Infant

*Does not add up to 256 because some articles covered more than one of these categories and some articles were not specific by age


