

Preventing Early Childhood Tooth Decay: What States Can Do



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Despite being largely preventable, dental caries—the disease that causes tooth decay—remains the most prevalent chronic health condition among children and adolescents.¹ Preschool-age children are nearly three times more likely to have experienced tooth decay than to have asthma.²

Nearly one in four children ages 2-5 has had a cavity, and the prevalence of decay for kids ages 2-8 was distinctly higher for children of color.³ Early childhood caries (ECC) is especially pronounced among children living below the poverty level, which reflects that the current oral health care system is insufficient to address the needs of children with the highest risk for poor oral health.⁴

In addition to proven public health practices such as community water fluoridation, the use of risk assessment tools, improved clinical guidelines, and innovative care models like Caries Management by Risk Assessment (CAMBRA) aim to prevent and manage ECC by providing early and appropriate care to children at the highest risk for disease.⁵ Unfortunately, dental benefits and dental practice rarely reflect the clinical understanding that ECC prevention and management requires more than a twice-yearly trip to the dentist. Even in Medicaid, a program whose pediatric benefit package (EPSDT) is designed to meet the individual needs of high-risk children, the one-size-fits-all approach to dental care continues to prevail in practice.

With increased enrollment in children’s dental insurance, state and federal policymakers and insurance programs would be wise to invest more in prevention and disease management in order to reduce disease and, ultimately, treatment costs. Disease management encompasses a variety of strategies aimed at containing or reversing the early signs of “white spot” (figure 1) decay so caries does not progress and create a cavity.



Figure 1: White spot lesions are the first sign of tooth decay. Acidic bacteria is dissolving tooth enamel.

In addition, new research reinforces the need for early intervention and individualized care both for children and pregnant women, and this research suggests promising returns from non-clinical strategies like motivational interviewing and toothbrushing encouragement programs. In partnership with the Centers for Disease Control and Prevention (CDC), New York State Bureau of Dental Health, and the Health Foundation of Western and Central New York, the Children’s Dental Health Project worked with researchers to develop a simulation model to examine both the cost and impact of various strategies to reduce ECC among New York State’s Medicaid population over a 10-year period.

Based on a similar project for the Colorado Department of Public Health and Environment, the model examined the impact of prevention strategies on Medicaid-enrolled children under age 6. It estimates not only the potential reduction in cavities but also cost savings to New York State’s Medicaid program as a result of avoiding the need for fillings or other forms of restorative dental care. The model predicts

these results based on data from peer-reviewed literature, and it underscores the need for state Medicaid programs as well as the Centers for Medicaid Services (CMS) to incentivize oral health care that truly addresses the needs of children at highest risk for disease.

This research also demonstrates the need for exploring opportunities to craft more meaningful dental benefits for the Children's Health Insurance Program (CHIP) and private dental coverage offered through the new health insurance marketplaces.

This brief explains the implications of the New York State simulation model for prevention of ECC and policy opportunities to better align the oral health care delivery system with established science.

Opportunities for States

Cost-effective care delivery

The simulation model's findings make clear that state Medicaid programs should craft dental benefits in ways that achieve better oral health outcomes among enrolled children while potentially reducing per-capita costs.

Despite statutory language to ensure that oral health care is tailored to each child's individual needs, at the state level, both Medicaid and CHIP programs provide dental care according to outmoded care methodologies that fail to appropriately emphasize prevention and disease management. CHIP dental benefits mirror state-selected private dental insurance benchmarks and often include service and dollar limits that restrict access to necessary care for patients at high risk for disease.⁶ State Medicaid programs are required to identify a periodicity schedule that outlines what services should be provided to pediatric beneficiaries and at what intervals.⁷



However, a number of states utilize periodicity schedules that do not align with professional guidelines, effectively limiting the frequency of dental visits and preventive services like fluoride varnish to six-month intervals, despite a child's level of risk.⁸ While periodicity schedules are not necessarily meant to serve as a ceiling for treatment, they may serve as implied limits for insurers and providers despite such limits being at odds with current research.

The simulation model conducted in New York State suggests that the application of fluoride varnish for children aged six months to 5 years for the prevention of tooth decay could reduce the prevalence of cavities by more than 30 percent. Fluoride varnish is likely to be most cost-effective when targeted to the highest-risk children aged 2-5 years, generating a return of 65 cents for every dollar spent.⁹ While the model assumes that fluoride varnish is applied by a dental professional, nearly all state

Medicaid programs allow medical professionals to provide this service. The importance of fluoride varnish treatments was reflected by the American Academy of Pediatrics' recent decision to update its *Recommendations for Preventive Pediatric Health Care* by urging medical or dental professionals to apply fluoride varnish 2–4 times a year, starting at 6 months and continuing through age 5.¹⁰ In 2014, the U.S. Preventive Services Task Force—whose recommendations are considered “the gold standard” for clinical prevention—recommended that primary care providers apply fluoride varnish to the primary teeth of all infants and children, starting when teeth first appear.¹¹

The model also underscores the benefits of risk-based care protocols like CAMBRA. This approach shows that aggressive preventive treatment of the earliest stages of tooth decay (such as white spots on teeth), along with intensive follow-up care for children who have already had cavities, can reduce

the prevalence of cavities by 27 percent and return between 76 and 88 cents for every dollar spent.¹²

Aggressive preventive treatment of the earliest stages of tooth decay can reduce the prevalence of cavities by 27 percent.

The simulation model's findings come at a time of growing momentum for risk-based treatment, including the application of fluoride varnish.

The clinical guidelines developed

by the American Academy of Pediatric Dentistry recommend not only that a caries risk assessment be utilized for young children, but also notes that children at high risk for tooth decay should receive topical fluoride treatments more frequently than twice a year.¹³

In addition, the Dental Quality Alliance, managed by the American Dental Association (ADA), last year released a set of pediatric oral health quality measures that includes a measure of topical fluoride intensity according to risk level. While these measures have yet to be adopted by state Medicaid programs, states like Iowa and Texas do incentivize caries risk assessment protocols that allow for care to be tailored for individual patients. Moreover, the ADA recently issued three treatment codes allowing Medicaid and private insurers to reimburse for a caries risk assessment. This is a major step toward incentivizing providers to treat patients according to their risk for tooth decay.^{14,15}

In addition to expanding dental coverage, the Affordable Care Act (ACA) emphasizes proven prevention strategies. Among the services that must now be covered at no cost by all health plans are oral health risk assessments by a pediatrician and the application of fluoride varnish for children up to age 5.^{16,17} The ACA also provides state Medicaid programs with the option of receiving a 1 percent increase in federal matching funds for states that provide all ACA preventive services at no cost to beneficiaries.¹⁸ Ten states had taken this option as of June 2014.¹⁹ By following their lead, other states can take an important step to strengthen ECC prevention efforts in Medicaid.

State policies should be aligned with the evidence that providing care according to risk for disease can produce a greater return on investment and significantly improve the oral health of the Medicaid population. States should seize policy opportunities to improve the delivery of dental benefits:

- Identify and adopt a dental periodicity schedule that requires caries risk assessment and treatment plans based on a child's level or risk for disease.
- Submit a state plan amendment to take advantage of the 1 percent increase in federal matching funds and provide ACA preventive services at no cost to Medicaid beneficiaries.
- Encourage and incentivize the use of oral health risk assessments and fluoride varnish by pediatricians.

Reducing risk for disease

Mothers and caretakers are often a source of *Streptococcus mutans* (*S. Mutans*), the primary bacteria that causes tooth decay.²⁰ However, research indicates that the risk of transmitting the bacteria from mother to child can be significantly reduced by chewing Xylitol gum, which lowers the concentration of *S. Mutans* in the mouth and prevents the development of cavities.^{21,22} The New York simulation model suggests that the use of Xylitol gum by mothers and caretakers can reduce the prevalence of decayed and filled teeth in children over a 10-year period by 34 percent.



Targeting the mothers of children who are most at risk for dental caries shows the highest rate of return for the Medicaid program—\$1.76 for every dollar spent—and is one of the most cost-effective strategies examined in the study.²³ States that provide dental coverage to pregnant women in Medicaid could realize marked reduction in tooth decay among high-risk children by reimbursing for the prescription of Xylitol gum and potentially reduce dental treatment costs in the child Medicaid population.

Strategies to change personal behavior in order to achieve oral health are among the most promising investments examined by the simulation model in terms of cost savings. Motivational interviewing (MI) is an engagement strategy that encourages parents to choose good health practices at home by showing these practices reflect their personal values. If parents engaged in oral health-focused MI by the time a child reaches the age of two, Medicaid programs could see up to \$2.02 in annual savings for every dollar spent. Programs that successfully encourage consistent toothbrushing by children with fluoridated toothpaste show an even greater return on investment for Medicaid programs, saving as much as \$3.21 for every dollar spent. For toothbrushing programs, placing emphasis on young children at the highest risk for disease is by far the most cost-effective approach.²⁴

State Medicaid programs may be able to seek behavior change by allowing the delivery of preventive services by non-traditional providers such as community health workers at the recommendation of licensed practitioners like dentists and pediatricians. This option is supported by the ACA preventive services regulations.²⁵ A new national survey sponsored by the Children's Dental Health Project²⁶ underscores the pivotal need for oral health counseling and behavior change. Although caries is a preventable disease, fewer than six in 10 adults said they had significant control over whether they got a cavity.

Community water fluoridation is widely recognized as one of the most successful public health interventions of the last century. It is therefore not surprising that the simulation model showed

Community health workers and other non-traditional providers can support ECC prevention through education and outreach.

enormous returns on investment for Medicaid programs by reducing the rate of tooth decay. In communities where all children aged 0-5 have access to fluoridated water, Medicaid stands to save more than \$6 for every dollar spent on community water fluoridation efforts²⁷ (*Medicaid savings would be considerably*

higher if the model assessed treatment costs for children of all ages.) Despite more than 70 years of safe and well-researched usage, there are efforts in numerous communities to eliminate the practice of water fluoridation.²⁸ In addition, there are seven states in which most people served by community water systems receive drinking water that lacks sufficient fluoride to prevent decay.²⁹ State-level data sometimes can mask inequities in access to fluoridated water.

In New York State, for example, 72 percent of residents have access to this proven form of prevention, but, outside of New York City, most people do not receive fluoridated water.³⁰ Using New York Medicaid data, the simulation model shows that ending New York City's fluoridation policy would significantly increase the prevalence of tooth decay among young children, increasing costs to the Medicaid program by nearly \$56 million over 10 years.³¹

Noting the overwhelming benefits of water fluoridation for the Medicaid population, oral health policy advocates have called for allowing Medicaid administrative dollars to be used to support community water fluoridation efforts, which could serve to upgrade aging equipment and provide additional training for water treatment personnel.^{32,33} New York's 2015 state budget included a provision making grants available to local water systems that need to upgrade fluoridation-related equipment.

In addition to innovative methods for oral health care delivery, state Medicaid programs should pursue public health interventions with great potential both for reducing children's risk for ECC and producing significant cost savings to the programs themselves:

- Include coverage of Xylitol gum in adult and pregnancy-related Medicaid benefits.
- Pursue opportunities to provide oral health-specific motivational interviewing through non-traditional providers such as community health workers, dieticians, and home visiting programs. This objective may be achieved by taking advantage of the options in the ACA preventive services regulations.
- Explore new ways to invest in toothbrushing encouragement programs through early childhood education programs, Head Start, and WIC clinics.
- Urge CMS to allow the use of Medicaid administrative dollars to support investment in community water fluoridation efforts. States should explore public-private partnerships and other ways to provide grants to water systems that need to upgrade fluoridation-related equipment.

Conclusion

The findings of the New York State simulation model reinforce the mounting evidence for an oral health delivery care system that focuses on an individual child's level of risk for disease and identifies a number of approaches for crafting dental benefits in a more cost-effective manner.

In combination with proven and emerging public health interventions like community water fluoridation and motivational interviewing, a risk-based approach to oral health care stands to greatly benefit public insurance programs like Medicaid and CHIP; private medical and dental insurers; and the children they serve.

Beyond the program-specific recommendations outlined in this brief, state policymakers should consider pursuing timely systems-change opportunities, as well as existing Medicaid reform options such as:


- New State Innovation Model grants
- Accountable Care Organizations
- Existing Medicaid reform options such as the Medicaid Health Home Initiative, which may serve as mechanisms for testing new models of care

Each of these avenues provides states with broad flexibility in crafting care delivery models that better meet the needs of children and families.

The Power of Early Prevention, Ages 0-5

Fewer Cavities, Lower Cost





1 in 4
preschool-age children have experienced tooth decay¹

Policies supporting care for **high-risk kids** can save money.

Each \$1 spent → Could Save Medicaid:²

 Water fluoridation	\$6.00	     
 Toothbrushing program	\$3.21	  
 Motivational interviewing	\$2.83	  

...and Reduces Dental Disease

↓
27%
through aggressive treatment of early decay³

↓
32%
through fluoride varnish



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 2. 10-year savings estimates detailed in "Reducing early childhood caries in a Medicaid population: A systems model analysis," JADA, April 2015
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The voice for children's dental health.