THE PEW CENTER ON THE STATES

The Cost of Delay

State Dental Policies Fail One in Five Children

FEBRUARY 2010

The Pew Children's Dental Campaign works to promote policies that will help millions of children maintain healthy teeth, get the care they need and come to school ready to learn.

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For additional information on Pew and the Children's Dental Campaign, please visit www.pewcenteronthestates.org/costofdelay.

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Dear Reader:

Most Americans' dental health has never been better—but that is not true for an estimated 17 million children in low-income families who lack access to dental care.

A 2000 report by the U.S. Surgeon General called dental disease a "silent epidemic." Ten years later, too little has changed. Our report—a collaboration of the Pew Center on the States, the DentaQuest Foundation and the W.K. Kellogg Foundation—finds that two-thirds of the states are failing to ensure that disadvantaged children get the dental health care they need. Our report describes the severe costs of this preventable disease: lost school time, challenges learning, impaired nutrition and health, worsened job prospects in adulthood, and sometimes even death.

The good news? This problem can be solved. At a time when state budgets are strapped, children's dental health presents a rare opportunity for policy makers to make meaningful reforms without breaking the bank—while delivering a strong return on taxpayers' investment. Several states are demonstrating the way forward with proven and promising approaches in four areas: preventive strategies such as school sealant programs and water fluoridation; improvements to state Medicaid programs to increase the number of disadvantaged children receiving services; workforce innovations that can expand the pool of providers; and tracking and analysis of data to measure and drive progress.

Pew believes investing in young children yields significant dividends for families, communities and our economy. We operate three campaigns aimed at kids—focused on increasing access to high-quality early education, dental health care and home visiting programs. And a pool of funders helps us research which investments in young children generate solid returns.

The Pew Children's Dental Campaign is a national effort to increase access to dental care for kids. We seek to raise awareness of the problem, recruit influential leaders to call for change, and advocate in states where policy changes can dramatically improve children's lives. We are helping millions of kids maintain healthy mouths, get the restorative care they need and come to school free of pain and ready to learn.

Pew, the DentaQuest Foundation and the W.K. Kellogg Foundation are committed to supporting states' efforts to achieve these goals. Many issues in health care today seem intractable. Improving children's dental health is not one of them.

Sincerely,

Susan Urahn
Managing Director, Pew Center on the States

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Executive Summary

An estimated 17 million low-income children in America go without dental care each year.[1] This represents one out of every five children between the ages of 1 and 18 in the United States. The problem is critical for these kids, for whom the consequences of a "simple cavity" can escalate through their childhoods and well into their adult lives, from missing significant numbers of school days to risk of serious health problems and difficulty finding a job.

Striking facts and figures about health insurance and the high cost of care have fueled the national debate about health care reform. In fact, twice as many Americans lack dental insurance as lack health insurance. Yet improving access to dental care has remained largely absent from the conversation.[2]

The good news: Unlike so many of America's other health care problems, the challenge of ensuring children's dental health and access to care is one that can be overcome. There are a variety of solutions, they can be achieved at relatively little cost, and the return on investment for children and taxpayers will be significant. The $106 billion that Americans are expected to spend on dental care in 2010 includes many expensive treatments—from fillings to root canals—that could be mitigated or avoided altogether through earlier, cheaper and easier ways of ensuring adequate dental care for kids.[3]

Most low-income children nationwide do not receive basic dental care that can prevent the need for higher-cost treatment later. States play a key role in making sure they receive such care, yet research by the Pew Center on the States shows that two-thirds of states are doing a poor job. These states have not yet implemented proven, cost-effective policies that could dramatically improve disadvantaged children's dental health.

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A problem with lasting effects

Overall, dental health has been improving in the United States, but children have not benefited at the same rates as adults. The proportion of children between 2 and 5 years old with cavities actually increased 15 percent during the past decade, according to a 2007 federal Centers for Disease Control and Prevention (CDC) study. The same survey found that poor children continue to suffer the most from dental decay. Kids ages 2 to 11 whose families live below the federal poverty level are twice as likely to have untreated decay as their more affluent peers.[4]

Those statistics are not surprising, considering the difficulty low-income kids have accessing care. Nationally, just 38.1 percent of Medicaid-enrolled children between ages 1 and 18 received any dental care in 2007, the latest year for which data are available. That stands in contrast to an estimated 58 percent of children with private insurance who receive care each year.[5]

The consequences of poor dental health among children are far worse—and longer lasting—than most policy makers and the public realize.

Early growth and development. Cavities are caused by a bacterial infection of the mouth. For children at high risk of dental disease, the infection can quickly progress into rampant decay that can destroy a child's baby teeth as they emerge. Having healthy baby teeth is vital to proper nutrition and speech development and sets the stage for a lifetime of dental health.

School readiness and performance. Poor dental health has a serious impact on children's readiness for school and ability to succeed in the classroom. In a single year, more than 51 million hours of school may be missed because of dental-related illness, according to a study cited in a 2000 report of the U.S. Surgeon General.[6] Research shows that dental problems, when untreated, impair classroom learning and behavior, which can negatively affect a child's social and cognitive development.[7] Pain from cavities, abscesses and toothaches often prevents children from being able to focus in class and, in severe cases, results in chronic school absence. School absences contribute to the widening achievement gap, making it difficult for children with chronic toothaches to perform as well as their peers, prepare for subsequent grades and ultimately graduate.

Overall health. Poor dental health can escalate into far more serious problems later in life. For adults, the health of a person's mouth, teeth and gums interacts in complex ways with the rest of the body. A growing body of research indicates that periodontal disease—gum disease—is linked to cardiovascular disease, diabetes and stroke.[8]

Complications from dental disease can kill. In 2007, in stories that made national headlines, a 12-year-old Maryland youth and a 6-year-old Mississippi boy died because of severe tooth infections. Both were eligible for Medicaid but did not receive the dental care they needed. No one knows how many children have lost their lives because of untreated dental problems; deaths related to dental illness are difficult to track because the official cause of death is usually identified as the related condition—for example, a brain infection—rather than the dental disease that initially caused the infection.

Economic consequences. Untreated dental conditions among children also impose broader economic and health costs on American taxpayers and society. Between 2009 and 2018, annual spending for dental services in the United States is expected to increase 58 percent, from $101.9 billion to $161.4 billion. Approximately one-third of the money will go to dental services for children.[9]

While dental care represents a small fraction of overall health spending, improving the dental health of children has lifetime effects. When children with severe dental problems grow up to be adults with severe dental problems, their ability to work productively will be impaired. Take the military. A 2000 study of the armed forces found that 42 percent of incoming Army recruits had at least one dental condition that needed to be treated before they could be deployed, and more than 15 percent of recruits had four or more teeth in urgent need of repair.[10]

Particularly for people with low incomes, who often work in the service sector without sick leave, decayed and missing teeth can pose major obstacles to gainful employment. An estimated 164 million work hours each year are lost because of dental disease.[11] In fact, dental problems can hinder a person's ability to get a job in the first place.

Why is this crisis happening? Parental guidance, good hygiene and a proper diet are critical to caring for kids' teeth. But the national crisis of poor dental health and lack of access to care among disadvantaged children cannot be attributed principally to parental inattention, too much candy or soda, or too few fruits and vegetables.

Broader, systemic factors have played a significant role, and three in particular are at work: 1) too few children have access to proven preventive measures, including sealants and fluoridation; 2) too few dentists are willing to treat Medicaid-enrolled children; and 3) in some communities, there are simply not enough dentists to provide care.

Solutions within states' reach

Four approaches stand out for their potential to improve both the dental health of children and their access to care: 1) school-based sealant programs and 2) community water fluoridation, both of which are cost-effective ways to help prevent problems from occurring in the first place; 3) Medicaid improvements that enable and motivate more dentists to treat low-income kids; and 4) innovative workforce models that expand the number of qualified dental providers, including medical personnel, hygienists and new primary care dental professionals, who can provide care when dentists are unavailable.

States do not have to start from scratch. A number already have implemented these approaches. Too many, however, have not. Pew's analysis shows that about two-thirds of states do not have key policies in place to ensure proper dental health and access to care for children most in need.

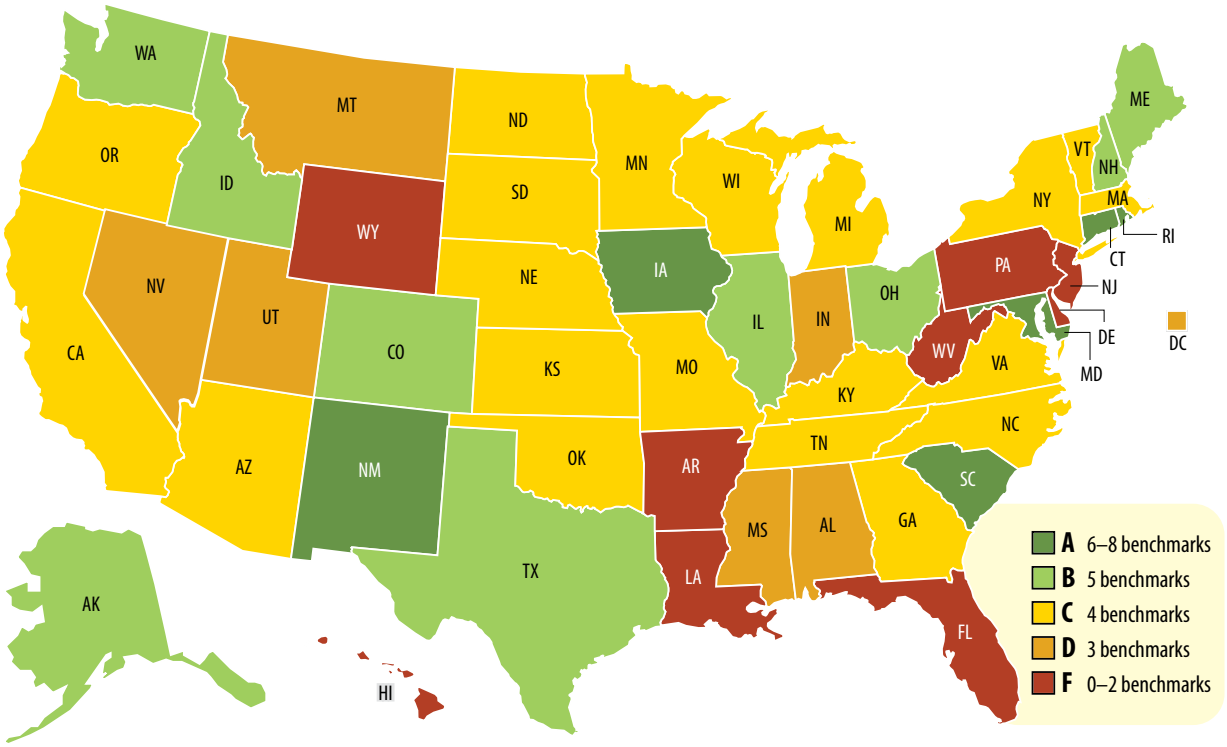
Pew assessed and graded all 50 states and the District of Columbia, using an A to F scale, on whether and how well they are employing eight proven and promising policy approaches at their disposal to ensure dental health and access to care for disadvantaged children (see Exhibit 1). (Because data on indicators such as children's untreated tooth decay were not available for every state, these could not be factored into the grade.) These policies fall into four groups:

- Cost-effective ways to help prevent problems from occurring in the first place: sealants and fluoridation
- Medicaid improvements that enable and motivate more dentists to treat low-income kids
- Innovative workforce models that expand the number of qualified dental providers
- Information: collecting data, gauging progress and improving performance

Only six states merited A grades: Connecticut, Iowa, Maryland, New Mexico, Rhode Island and South Carolina. These states met at least six of the eight policy benchmarks—that is, they had particular policies in place that met or exceeded the national performance thresholds. South Carolina was the nation's top performer, meeting seven of the eight policy benchmarks. Although these states are doing well on the benchmarks, every state has a great deal of room to improve. No state met all

Exhibit 1 GRADING THE STATES

Pew assessed and graded states and the District of Columbia on whether and how well they are employing eight proven and promising policy approaches at their disposal to ensure dental health and access to care for disadvantaged children.



SOURCE: Pew Center on the States, 2010.

eight targets and even those with good policy frameworks can do far more to provide children with access to care.

Thirty-three states and the District of Columbia received a grade of C or below because they met four or fewer of the eight policy benchmarks. Nine of those states earned an F, meeting only one or two policy benchmarks: Arkansas, Delaware, Florida, Hawaii, Louisiana, New Jersey, Pennsylvania, West Virginia and Wyoming.

See Pew's individual state fact sheets for a detailed description of each state's grade and assessment. The fact sheets are available at www.pewcenteronthestates.org/costofdelay.

Cost-effective ways to help prevent problems from occurring in the first place: sealants and fluoridation

Policy Benchmark 1

State has sealant programs in place in at least 25 percent of high-risk schools

Percentage of high-risk schools with sealant programs, 2009	Number of states
75 - 100%	3
50 - 74%	7
25 - 49%	7
1 - 24%	23
None	11

Sealants. Dental sealants have been recognized by the CDC and the American Dental Association (ADA) as one of the best preventive strategies that can be used to benefit children at high risk for cavities. Sealants—clear plastic coatings applied by a hygienist or dentist—cost one-third as much as filling a cavity,[12] and have been shown after just one application to prevent 60 percent of decay in molars.[13]

Healthy People 2010, a set of national objectives monitored by the U.S. Department of Health and Human Services, calls for at least half of the third graders in each state to have sealants by 2010. Data submitted by 37 states as of 2008, however, show that the nation falls well short of this goal. Only eight states have reached it, and in 11 states, fewer than one in three third graders have sealants.[14]

Studies have shown that targeting sealant programs to schools with many high-risk children is a cost-effective strategy for providing sealants to children who need them—but this strategy is vastly underutilized.[15] New data collected for Pew by the Association of State and Territorial Dental Directors show that only 10 states have school-based sealant programs that reach half or more of their high-risk schools. These 10 states are Alaska, Illinois, Iowa, Maine, New Hampshire, Ohio, Oregon, Rhode Island, South Carolina and Tennessee. Eleven states have no organized programs at all to extend this service to the schools most in need: Delaware, Hawaii, Missouri, Montana, New Jersey, North Dakota, Oklahoma, South Dakota, Vermont, West Virginia and Wyoming.[16] Overall, in Pew's analysis, just 17 states met the minimum threshold of reaching at least 25 percent of high-risk schools.

Policy Benchmark 2

State does not require a dentist's exam before a hygienist sees a child in a school sealant program

State allows hygienist to provide sealants without a prior dentist's exam, 2009	Number of states
Yes	30
No	21

Not only do sealants cost a third of what fillings do, they also can be applied by a less expensive workforce.[17] Dental hygienists are the primary providers in school-based sealant programs. How many kids are served by a sealant program and how cost effective it is depends in part on whether the program must locate and pay dentists to examine

children before sealants can be placed. Dental hygienists must have at least a two-year associate degree and clinical training that qualifies them to conduct the necessary visual assessments and apply sealants.[18] But states vary greatly in their laws governing hygienists' work in these programs, and many have not been updated to reflect current science, which indicates that x-rays and other advanced diagnostic tools are not necessary to determine the need for sealants. Thirty states currently allow a child to have hygienists place sealants without a prior dentist's exam, while seven states require not only a dentist's exam, but also that a dentist be present on-site when the sealant is provided.[19]

Policy Benchmark 3

State provides optimally fluoridated water to at least 75 percent of citizens on community systems

Percentage of population on community water supplies receiving optimally fluoridated water, 2006	Number of states
75% or greater	26
50 - 74%	16
25 - 49%	7
Less than 25%	2

Fluoridation. Water fluoridation stands out as one of the most effective public health interventions that the United States has ever undertaken. Fluoride counteracts tooth decay and, in fact, strengthens the teeth. It occurs naturally in water, but the level varies within states and across the country. About eight million people are on community systems whose levels of naturally occurring fluoride are high enough to prevent decay, but most other Americans receive water supplies with lower natural levels. Through community water fluoridation, water engineers adjust the level of fluoride to about one part per million—about one teaspoon of fluoride for every 1,300 gallons of water. This small level of fluoride is sufficient to reduce rates of tooth decay for children—and adults—by between 18 percent and 40 percent.[20]

Fluoridation also saves money. A 2001 CDC study estimated that for every $1 invested in water fluoridation, communities save $38 in dental treatment costs.[21] Perhaps more than $1 billion could be saved every year if the remaining water supplies in the United States, serving 80 million persons, were fluoridated.[22]

With those kinds of results, it is no surprise that the CDC identified community water fluoridation as one of 10 great public health achievements of the 20th Century and a major contributor to the dramatic decline in tooth decay over the last five decades.[23] Approximately 88 percent of Americans receive their household water through a community system (the rest use well water), yet more than one-quarter do not have access to optimally fluoridated water.[24] Pew's review of CDC data found that in 2006, 25 states did not meet the national benchmark, based on Healthy People 2010 objectives, of providing fluoridated water to 75 percent of their population on community water systems. In nine states—California, Hawaii, Idaho, Louisiana, Montana, New Hampshire, New Jersey, Oregon and Wyoming—the share of the population with fluoridated water had not reached even 50 percent.[25]

The CDC is working to update its fluoridation data as of 2008. Although they were not available at the time this report went to press, the newer data are expected to reflect progress in the last few years in California because of a state law that has produced gains in cities like Los Angeles and San Diego. They also may show that states such as Delaware and Oklahoma that were close to the national goal in 2006 now have met it.

Medicaid improvements that enable and motivate more dentists to treat low-income kids

Policy Benchmark 4

State meets or exceeds the national average (38.1 percent) of children ages 1 to 18 on Medicaid receiving dental services

Percentage of Medicaid children receiving any dental service, 2007	Number of states
59% or greater	0
50 - 58%	3
38.1 - 49.9%	26
30 - 38.0%	13
Less than 30%	9

Medicaid utilization. States are required by federal law to provide medically necessary dental services to Medicaid-enrolled children, but nationwide only 38.1 percent of such children ages 1 to 18 received any dental care in 2007. That national average is very low, but even so, 21 states and the District of Columbia failed to meet it, and some fell abysmally short. Dental care was still out of reach for more than three-quarters of all children using Medicaid in Delaware, Florida and Kentucky. More than half of Medicaid-enrolled kids received dental care in just three states: Alabama, Texas and Vermont.

Policy Benchmark 5

State pays dentists who serve Medicaid-enrolled children at least the national average (60.5 percent) of Medicaid rates as a percentage of dentists' median retail fees

Medicaid reimbursement rates as a percentage of dentists' median retail fees, 2008	Number of states
100% or greater	1
90 - 99%	2
80 - 89%	3
70 - 79%	10
60.5 - 69%	9
50 - 60.4%	12
40 - 49%	10
Less than 40%	4

Medicaid participation. In part, the low number of children accessing care is because not enough dentists are willing to treat Medicaid-enrolled patients. Dentists point to low reimbursement rates, administrative hassles and frequent no-shows by patients as deterrents to serving them. It is easy to see why they cite low reimbursement rates: Pew found that for five common procedures, 26 states pay less than the national average (60.5 percent) of Medicaid rates as a percentage of dentists' median retail fees. In other words, their Medicaid programs reimburse less than 60.5 cents of every $1 billed by a dentist.[26]

States are taking steps to address these issues and as a result are seeing significant improvements in dentists' willingness to treat children on Medicaid and in children's ability to access the care they need. The six states that have gone the furthest to raise reimbursement rates and minimize administrative hurdles—Alabama, Michigan, South Carolina, Tennessee, Virginia and Washington—all have seen greater willingness among dentists to accept new Medicaid-enrolled patients and more patients taking advantage of this access, a 2008 study by the National Academy for State Health Policy found. In those states, provider participation increased by at least one-third and sometimes more than doubled following rate increases.[27]

And while increasing investments in Medicaid is difficult during tight fiscal times, some states have shown that it is possible to make improvements with limited dollars. Despite budget constraints, 27 states increased reimbursement rates for dental services in 2009 and 2010, while only 12 states made cuts during the same period.[28]

Innovative workforce models that expand the number of qualified dental providers

Policy Benchmark 6

State Medicaid program reimburses medical care providers for preventive dental health services

Medicaid pays medical staff for early preventive dental health care, 2009	Number of states
Yes	35
No	16

Medicaid reimbursement for medical providers. Some communities have a dearth of dentists—and particular areas, including rural and low-income urban locales, have little chance of attracting enough new dentists to meet their needs. In fact, Pew calculates that more than 10 percent of the nation's population is unlikely to be able to find a dentist in their area who is willing to treat them.[29] In some states, such as Louisiana, this rises to one-third of the general population. Nationwide, it would take more than 6,600 dentists choosing to practice in the highest-need areas to fill the gap.

A growing number of states are exploring ways to expand the types of skilled professionals who can provide high-quality dental health care. They are looking at three groups of professionals in particular: 1) medical providers; 2) dental hygienists; and 3) new types of dental professionals.

Doctors, nurses, nurse practitioners and physician assistants are increasingly being recognized for their ability to see children, especially infants and toddlers, earlier and more frequently than dentists. Currently, 35 states take advantage of this opportunity by making Medicaid payments available to medical providers for preventive dental health services.

Policy Benchmark 7

State has authorized a new primary care dental provider

State has authorized a new primary care dental provider, 2009	Number of states
Yes	1
No	50

Authorization of new providers. An increasing number of states are exploring new types of dental professionals to expand access and fill specific gaps. Some are primary care providers who could play a similar role on the dental team as nurse practitioners and physician assistants do on the medical team, expanding access to basic care and referring more complex cases to dentists who may provide supervision on- or off-site. In a model proposed by the ADA, these professionals would play a supportive role similar to a social worker or community health worker. In remote locations, the most highly trained professionals could provide basic preventive and restorative care as part of a dental team with supervision by an off-site dentist.

In 2009, Minnesota became the first state in the country to authorize a new primary care dental provider. Dental therapists (who must attain a four-year bachelor's degree) and advanced dental therapists (who must attain a two-year master's degree) will be authorized to provide routine preventive and restorative care. While dental therapists will require the on-site supervision of dentists, advanced dental therapists may provide care under collaborative practice agreements with dentists.[30] In November, the Connecticut State Dental Association endorsed a pilot project to test a two-year dental therapist model, under which providers would be able to work without on-site dental supervision in public health and institutional settings.[31]

Information: Collecting data, gauging progress and improving performance

Policy Benchmark 8

State submits basic screening data to the national database

State submits basic screening data to the national database, 2009	Number of states
Yes	37
No	14

Data collection on children's dental health. Expertise and the ability to collect data and plan programs are critical elements of an effective state dental health program. They also are necessary for states to appropriately allocate resources and compete for grant and foundation funding—all the more important at a time when state budgets are increasingly strained. Tracking the number of children with untreated tooth decay and the number with sealants is essential to states' ability to craft policy solutions and measure their progress. Thirteen states and the District of Columbia, however, have never submitted this data to the National Oral Health Surveillance System. While some states, such as Texas and North Carolina, collect data using their own, independent methods, the lack of nationally comparable information leaves the states without a vital tool from which to learn and chart their paths forward.

Conclusion

Millions of disadvantaged children suffer from sub-par dental health and access to care. This is a national epidemic with sobering consequences that can affect kids throughout their childhoods and well into their adult lives. The good news? This is not an intractable problem. Far from it. There are a variety of solutions, they can be achieved at relatively little cost, and the return on investment for children and taxpayers will be significant.

Yet dental disease is pervasive among low-income children in America in large part because they do not have access to basic care. A "simple cavity" can snowball into a lifetime of challenges. Children with severe dental problems are more likely to grow up to be adults with severe dental problems, impairing their ability to work productively and maintain gainful employment.

By making targeted investments in effective policy approaches, states can help eliminate the pain, missed school hours and long-term health and economic consequences of untreated dental disease among kids. A handful of states are leading the way, but all states can and must do more to ensure access to dental care for America's children most in need.

Endnotes

[1] The estimate of low-income children without dental care comes from U.S. Department of Health and Human Services, Centers for Medicare and Medicaid Services, "Medicaid Early & Periodic Screening & Diagnostic Treatment Benefit—State Agency Responsibilities" (CMS-416) http://www.cms.hhs.gov/MedicaidEarlyPeriodicScrn/03_ StateAgencyResponsibilities.asp. (accessed July 8, 2009). The CMS-416 report collects data on the statewide performance of states' Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) program for all children from birth through age 20. In this report, we chose to examine a subset of that population, children ages 1 to 18. We chose the lower bound of age 1 because professional organizations like the American Academy of Pediatric Dentistry recommend that a child have his or her first dental visit by age 1. We chose the upper bound of 18 because not all state Medicaid programs opt to offer coverage to low-income 19- and 20-year-olds. Data are drawn from lines 12a and 1 of the CMS-416 state and national reports; the sum of children ages 1 to 18 receiving dental services was divided by the sum of all children ages 1 to 18 enrolled in the program. Note that the denominator (line 1) includes any child enrolled for one month or more during the year. It is estimated that in July 2007 the civilian population of children ages 1 to 18 was 73,813,044, meaning that about 22.8 percent, or 1 in 5, were enrolled in Medicaid and did not receive dental services. U.S. Bureau of the Census, Monthly Postcensal Civilian Population, by Single Year of Age, Sex, Race, and Hispanic Origin: 7/1/2007 to 12/1/2007, http://www.census.gov/popest/national/asrh/2008-nat-civ.html (accessed January 5, 2010).

[2] The most recent available data from the Medical Expenditure Panel Survey showed that 35 percent of the United States population had no dental coverage in 2004. Data from the Kaiser Family Foundation showed that 15 percent of the population had no medical coverage in 2008. R. Manski and E. Brown, "Dental Use, Expenses, Private Dental Coverage, and Changes, 1996 and 2004." Agency for Healthcare Research and Quality 2007, 10, http://www.meps.ahrq.gov/mepsweb/data_files/publications/cb17/cb17.pdf (accessed December 7, 2009); Kaiser Family Foundation. Health Insurance Coverage in the U.S. (2008), http://facts.kff.org/chart.aspx?ch=477 (accessed December 16, 2009).

[3] U.S. Department of Health and Human Services, Centers for Medicare and Medicaid Services, "National Health Expenditure Projections, 2008-2018," 4, http://www.cms.hhs.gov/NationalHealthExpendData/downloads/proj2008.pdf (accessed November 10, 2009). In 2004, the latest year for which data were available, 30.4 percent of personal health expenditures for dental care were for children ages 1 to 18. See CMS National Health Expenditure Data, Health Expenditures by Age, "2004 Age Tables, Personal Health Care Spending by Age Group and Type of Service, Calendar Year 2004," 8, http://www.cms.hhs.gov/NationalHealthExpendData/downloads/2004-age-tables.pdf (accessed December 16, 2009).

[4] B. Dye, et al., "Trends in Oral Health Status: United States, 1988-1994 and 1999-2004," Vital Health and Statistics Series 11, 248 (2007), Table 5, http://www.cdc.gov/nchs/data/series/sr_11/sr11_248.pdf (accessed December 4, 2009).

[5] The figure of 58 percent reflects data as of 2006, the latest year for which information was available. That figure was unchanged from 2004 and only slightly changed from 1996, when it was 55 percent. R. Manski and E. Brown, "Dental Coverage of Children and Young Adults under Age 21, United States, 1996 and 2006," Agency for Health Care Research and Quality, Statistical Brief 221 (September 2008), http://www.meps.ahrq.gov/mepsweb/data_files/publications/st221/stat221.pdf (accessed January 14, 2010).

[6] H. Gift, S. Reisine and D. Larach, "The Social Impact of Dental Problems and Visits," *American Journal of Public Health* 82 (1992) 1663-1668, in U.S. Department of Health and Human Services, "Oral Health in America: A Report of the Surgeon General," National Institutes of Health (2000), 143, http://silk.nih.gov/public/hck1ocv.@www.surgeon.fullrpt.pdf (accessed December 16, 2009).

[7] S. Blumenshine et al., "Children's School Performance: Impact of General and Oral Health," *Journal of Public Health Dentistry* 68 (2008): 82–87.

[8] See, for example, D. Albert et al., "An Examination of Periodontal Treatment and per Member per Month (PMPM) Medical Costs in an Insured Population," *BMC Health Services Research* 6 (2006): 103.

[9] National Health Expenditure data.

[10] Unpublished data from Tri-Service Center for Oral Health Studies, in J. G. Chaffin, et al., "First Term Dental Readiness," *Military Medicine*, 171 (2006): 25-28, http://findarticles.com/p/articles/mi_qa3912/is_200601/ai_n17180121/ (accessed November 19, 2009).

[11] Centers for Disease Control and Prevention, Division of Oral Health, "Oral Health for Adults," December 2006, http://www.cdc.gov/OralHealth/publications/factsheets/adult.htm (accessed November 18, 2009).

[12] National median charge among general practice dentists for procedure D1351 (dental sealant) is $40 and national mean charge for procedure D2150 (two-surface amalgam filling) is $145. American Dental Association. 2007 Survey of Dental Fees. (2007), 17, http://www.ada.org/ada/prod/survey/publications_freereports.asp (accessed January 25, 2010).

[13] Task Force on Community Preventive Services, "Reviews of Evidence on Interventions to Prevent Dental Caries, Oral and Pharyngeal Cancers, and Sports-Related Craniofacial Injuries," *American Journal of Preventive Medicine*, 23 (2002):21-54.

[14] National Oral Health Surveillance System, Percentage of Third-Grade Students with Untreated Tooth Decay, and Percentage of Third-Grade Students with Dental Sealants. http://apps.nccd.cdc.gov/nohss/ (accessed July 8, 2009).

[15] Task Force on Community Preventive Services, 2002.

[16] Delaware reports that its sealant program was suspended in 2008 because of loss of staff, but the state plans to reinstate the program in 2010.

[17] According to the Bureau of Labor Statistics (BLS), the difference in mean annual wage between a dentist and a dental hygienist is about $87,000. BLS Occupational Employment Statistics gives the mean annual wage for dentists (Dentists, General, 29-1021) as $154,270 and $66,950 for dental hygienists (Dental Hygienists, 29-2021) as of May 2008. Bureau of Labor Statistics, Occupational Employment Statistics, May 2008 National Occupational Employment and Wage Estimates. http://www.bls.gov/oes/2008/may/oes_nat.htm#b29-0000 (accessed December 16, 2009).

[18] Recent systematic review by the CDC and the ADA indicated that it is appropriate to seal teeth that have early noncavitated lesions, and that visual assessments are sufficient to determine whether noncavitated lesions are present. J. Beauchamp et al. "Evidence-Based Clinical Recommendations for Use of Pit-and-Fissure Sealants: A Report of the American Dental Association Council on Scientific Affairs," *Journal of the American Dental Association* 139(2008):257–267. Accreditation standards for dental hygiene training programs include standard 2-1: "Graduates must be competent in providing the dental hygiene process of care which includes: Assessment." Commission on Dental Accreditation, Accreditation Standards for Dental Hygiene Education Programs, 22, http://www.ada.org/prof/ed/accred/standards/dh.pdf (accessed November 23, 2009).

[19] American Dental Hygienists' Association, "Sealant Application—Settings and Supervision Levels by State," http://adha.org/governmental_affairs/downloads/sealant.pdf (accessed July 8,2009); American Dental Hygienists' Association, "Dental Hygiene Practice Act Overview: Permitted Functions and Supervision Levels by State," http://adha.org/governmental_affairs/downloads/fiftyone.pdf (accessed July 8, 2009).

[20] Centers for Disease Control and Prevention. "Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States," *Morbidity and Mortality Weekly Report*, Reports and Recommendations, August 17, 2001, http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm (accessed August 7, 2009).

[21] Centers for Disease Control and Prevention, "Cost Savings of Community Water Fluoridation," August 9, 2007, http://www.cdc.gov/fluoridation/fact_sheets/cost.htm (accessed August 7, 2009).

[22] Estimate based on per-person annual cost savings from community water fluoridation, as calculated in S. Griffin, K. Jones and S. Tomar, "An Economic Evaluation of Community Water Fluoridation," *Journal of Public Health Dentistry* 61(2001): 78-86. The figure of more than $1 billion was calculated by multiplying the lower-bound estimate of annual cost savings per person of $15.95 by the 80 million people without fluoridation.

[23] Centers for Disease Control and Prevention, "Achievements in Public Health, 1900-1999: Fluoridation of Drinking Water to Prevent Dental Caries," *Morbidity and Mortality Weekly Report*, October 22, 1999, http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4841a1.htm (accessed August 6, 2009).

[24] W. Bailey, "Promoting Community Water Fluoridation: Applied Research and Legal Issues," Presentation, New York State Symposium. Albany, New York, October 2009.

[25] National Oral Health Surveillance System, "Oral Health Indicators, Fluoridation Status, 2006," http://www.cdc.gov/nohss/ (accessed July 8, 2009).

[26] Pew Center on the States analysis of Medicaid reimbursements and dentists' median retail fees. See methodology section of this report for full explanation. American Dental Association, "State Innovations to Improve Access to Oral Health, A Compendium Update" (2008), http://www.ada.org/prof/advocacy/medicaid/medicaid-surveys.asp (accessed May 28, 2009); American Dental Association, 2007 Survey of Dental Fees.

[27] A. Borchgrevink, A. Snyder and S. Gehshan, "The Effects of Medicaid Reimbursement Rates on Access to Dental Care," National Academy of State Health Policy, March 2008, http://nashp.org/node/670 (accessed January 14, 2010).

[28] Data provided by Robin Rudowitz, principal policy analyst, Kaiser Family Foundation via e-mail, November 11, 2009.

[29] Pew Center on the States analysis of the following Health Resources and Services Administration shortage data and Census population estimates: U.S. Department of Health and Human Services, Health Resources and Services Administration, Designated HPSA Statistics report, Table 4, "Health Professional Shortage Areas by State Detail for Dental Care Regardless of Metropolitan/Non-Metropolitan Status as of June 7, 2009," http://datawarehouse.hrsa.gov/quickaccessreports.aspx (accessed June 8, 2009); U.S. Bureau of the Census, State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2008–CIVILIAN, http://www.census.gov/popest/states/asrh/(accessed June 23, 2009).

[30] 2009 Minnesota Statutes, Chapter 150A.105 and 150A.106, https://www.revisor.mn.gov/statutes/?id=150A (accessed November 24, 2009).

[31] Resolution 29-2009, "DHAT Pilot Program," Connecticut State Dental Association, November 18, 2009.

Chapter 1: America's Children Face Significant Dental Health Challenges

The national debate about health care reform raging across the country has been fueled by astounding facts and figures. More than 45 million Americans lack health insurance,[1] and some estimate that as many as 20,000 uninsured adults die each year because they are unable to obtain timely care.[2]

Access to dental care has remained largely absent from this debate, yet twice as many Americans lack dental insurance as lack health insurance.[3] And even among those with insurance, access to dental care can be elusive because many dentists do not treat low-income people on Medicaid. Nationally, at least 30 million Americans—more than 10 percent of the overall population—are unlikely to be able to find a dentist in their area who is willing to treat them. An analysis by the Pew Center on the States found that the problem is far worse in some states than others: In Louisiana, roughly 33 percent of the population is unserved, compared with just 9 percent in Pennsylvania.[4] (See box on page 23.)

The problem is particularly critical for kids, for whom the consequences of a "simple cavity" can fall like dominoes well into adulthood, from missing significant numbers of school days to risk of serious health problems and difficulty finding a job. "Dental problems have a huge impact on school performance and on every other aspect of a child's life," said Governor Martin O'Malley (D) of Maryland, where a 12-year-old, Medicaid-eligible boy died in 2007 after an infection from an abscessed tooth spread to his brain.[5]

One way to measure how children are faring when it comes to their dental health is to count the percentage of children who have untreated cavities. This figure should be 21 percent or less by 2010, according to Healthy People 2010 objectives, a set of national objectives monitored by the U.S. Department of Health and Human Services.[6] But with untreated decay present in almost one in three 6- to 8-year-olds, the United States has not yet met this goal, according to the most recent national data.[7] Thirty-seven states monitor their progress and report on this measure, and the problem varies dramatically. Pew found that only nine of the 37 states had reached or exceeded the Healthy People 2010 goal by 2008. Nevada ranked worst among the states: 44 percent of its third graders had untreated cavities. Close behind was Arkansas, at 42 percent of third graders. Iowa and Vermont ranked the best, with just 13 percent and 16 percent of their third graders having untreated cavities, respectively.[8] (See Exhibit 1.)

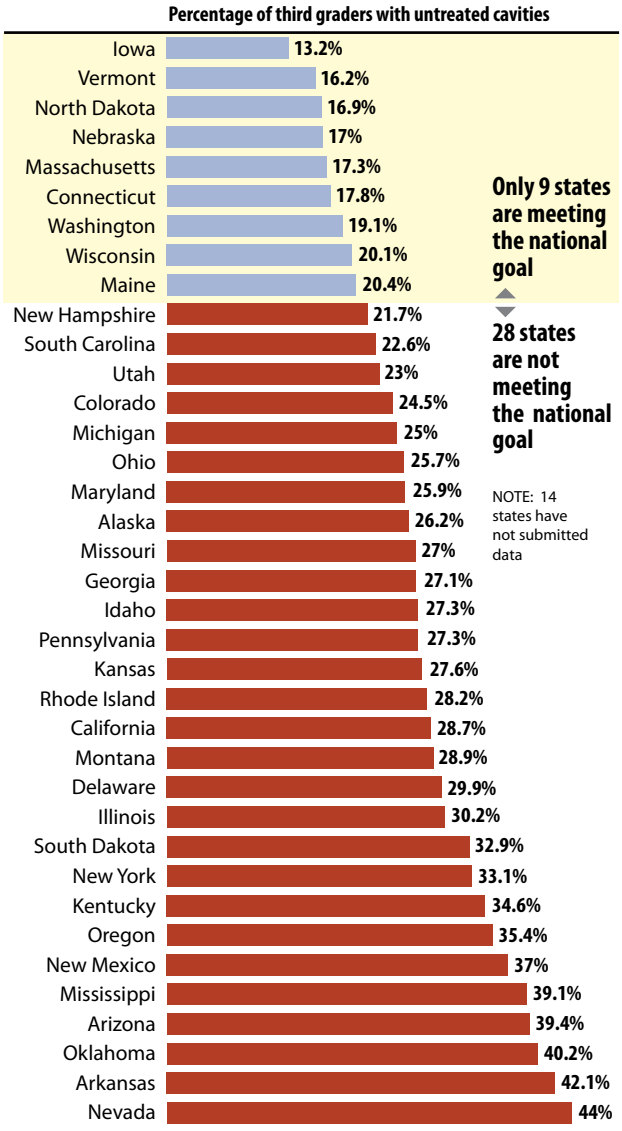
Low-income children are disproportionately affected

Overall, dental health has been improving in the United States, but children have not benefited at the same rates as adults. The proportion of children between 2 and 5 years old with cavities actually increased 15 percent during the past decade, according to a 2007 Centers for Disease Control and Prevention (CDC) study.[9] The same survey found that poor children continue to suffer the most from dental decay. Kids ages 2 to 11 whose families live below the federal poverty level are twice as likely to have untreated decay as their more affluent peers.[10] "While most Americans have access to the best oral health care in the world, low-income children suffer disproportionately from oral disease,"

Exhibit 1

THIRD GRADERS WITH UNTREATED CAVITIES

Just nine states have met the national goal of having no more than 21 percent of children with untreated tooth decay.



SOURCE: Pew Center on the States, 2010; National Oral Health Surveillance System: Oral Health Indicators, data submitted through 2008.

U.S. Representative Michael Simpson (R-Idaho), one of two dentists who serve in the House of Representatives, said in 2004. "Even as our nation's health has progressed, dental caries or tooth decay remains the most prevalent chronic childhood disease."[11]

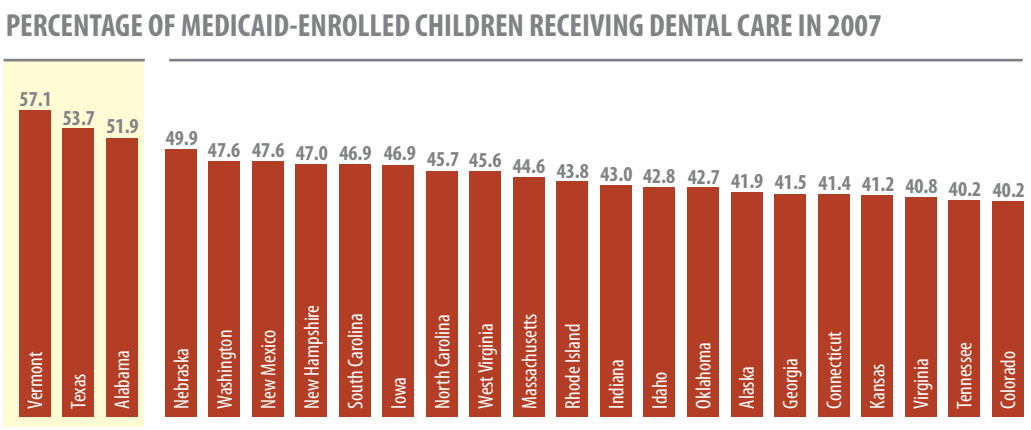
Those statistics are not surprising considering the difficulty disadvantaged kids have accessing care. Nationally, only 38.1 percent of Medicaid-enrolled children between the ages of 1 and 18 received any dental care in 2007—meaning that nearly 17 million low-income kids went without care. This represents one out of every five children—regardless of family income level—between the ages of 1 and 18 in the United States.[12] On average, 58 percent of children with private insurance receive care.[13] Where you live matters: More than half of Medicaid-enrolled kids received dental services in 2007 in just three states—Alabama, Texas and Vermont. Fewer than one in four Medicaid-enrolled children in Delaware, Florida and Kentucky got them. In contrast, 57 percent of Vermont's Medicaid-enrolled children received care that year. (See Exhibit 2.)

The national average of 38.1 percent is actually an improvement from 2000, when only 30 percent of Medicaid-enrolled children received any care. But with a majority of low-income children going without care, America earns a failing grade for ensuring their dental health. The problem is particularly bad for very young children. Only 13 percent of Medicaid-enrolled 1- and 2-year-olds received dental care in 2007, up from 7 percent in 2000.[14] This is troubling because decay rates are rising among these groups, and children on Medicaid are those most at risk for aggressive tooth decay called Early Childhood Caries. Formerly known as "baby-bottle tooth decay," this severe bacterial infection can destroy a baby's teeth as they emerge, hampering speech development and the transition to solid food.

No reliable national data exist on what low-income families do when their children have dental problems but cannot access regular care, but anecdotal evidence suggests that a sizeable number turn to emergency rooms. "Without

Exhibit 2 LOW-INCOME CHILDREN LACK ACCESS TO DENTAL CARE

Nationally, just 38.1 percent of Medicaid-enrolled children received dental care in 2007. That share trails privately insured children, 58 percent of whom receive care each year.



SOURCE: Pew Center on the States, 2010; Centers for Medicare and Medicaid Services, 1995-2007 Medicaid Early & Periodic Screening & Diagnostic Treatment Benefit (CMS-416).

sufficient access to dental care in Medicaid, millions of low-income families opt to postpone needed dental care until a dental emergency occurs requiring immediate, more complicated and more expensive treatment," Dr. Frank Catalanotto, a pediatric dentist and former dean of the University of Florida dental school, testified before Congress in October 2009.[15]

Children who are taken to hospital emergency departments for severe dental pain can end up in a revolving door that costs Medicaid—and taxpayers—significantly more than preventive and primary care. Hospitals are generally not equipped to provide definitive treatment for toothaches and dental abscesses. "Unless the hospital has a dental program, they give [the child] an antibiotic and send him on his way," said Dr. Paul Casamassimo, dental director for Nationwide Children's Hospital in Ohio. The antibiotic may suppress the infection, but it does not fix the underlying problem.[16]

In 2007, California counted more than 83,000 visits to emergency departments for both children and adults for preventable dental conditions, a 12 percent increase over 2005, at a cost of $55 million. The rate of emergency room visits in California for preventable dental conditions exceeds the number for diabetes.[17]

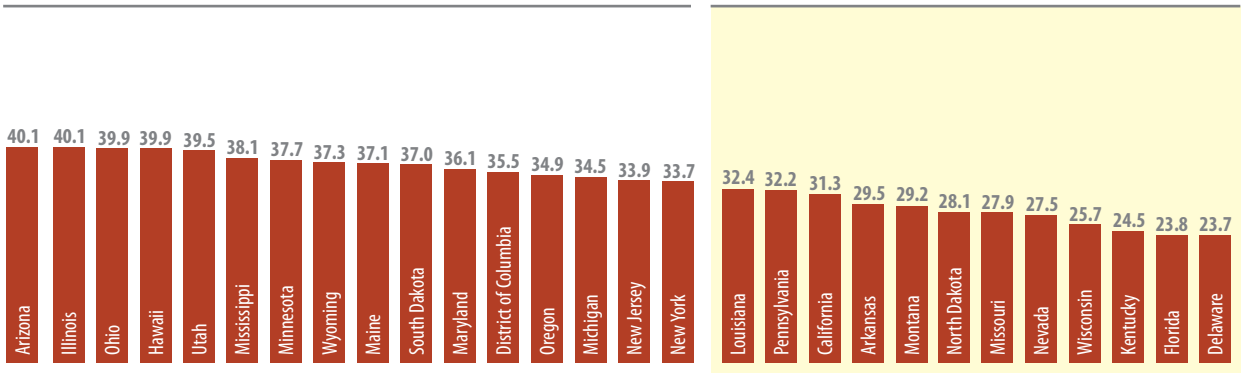
Sometimes a child's dental disease will be so extensive that it can be treated only under general anesthesia. In North Carolina alone, 5,500 children over two years received general anesthetics for dental services.[18] This is a small number of cases, but they are extraordinarily expensive. Data from the federal Agency for Healthcare Research and Quality show that 4,272 children were hospitalized in 2006 with principal diagnoses related to oral health problems. These hospitalizations cost an average of $12,446 and totaled more than $53 million.[19]

Minority and disabled children are the hardest hit

As with many other health issues, race and ethnicity are closely linked to dental health and access to care. The most recent National Health and Nutrition Examination Survey found that 37 percent of non-Hispanic black children and 41 percent of Hispanic children had untreated decay, compared to 25 percent of white children.

"Latinos are the most uninsured ethnic group in the United States," said Dr. Francisco Ramos-Gomez,

Exhibit 2 LOW-INCOME CHILDREN LACK ACCESS TO DENTAL CARE



NOTE: Percentages were calculated by dividing the number of children ages 1-18 receiving any dental service by the total number of enrollees ages 1-18.

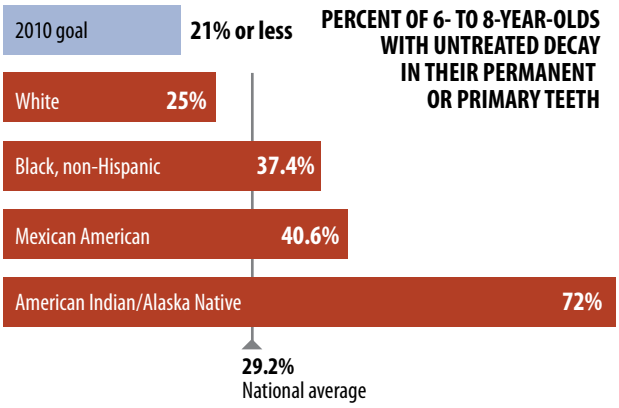
president-elect of the Hispanic Dental Association. "They are more likely than other groups to have low-wage jobs without benefits. Many can't afford dental insurance if not provided by their employer, much less pay for services out-of-pocket."[20] In 2004, Hispanics represented 14 percent of U.S. residents but comprised 30 percent of the uninsured.[21]

American Indians and Alaska Natives have the highest rate of tooth decay of any population cohort in the United States: five times the national average for children ages 2 to 4.[22] A survey by the Indian Health Service found that American Indians and Alaska Natives had significantly worse dental health; 72 percent of 6- to 8-year-olds had untreated cavities—more than twice the rate of the general population.[23] (See Exhibit 3.)

Nationwide, people with disabilities suffer from dental disease at higher rates than non-disabled people.[24] In fact, the most prevalent unmet need for children with special health care needs is dental care, according to a national telephone survey of families.[25] The root of this crisis is threefold: Mental and physical impairments often prohibit individuals from caring for their mouths; disabilities and sensitivities create difficult experiences during dental visits; and families struggle to find dentists who are able to cater to patients' special needs. "Clinical dental treatment is the most exacting and demanding medical procedure that [people with developmental disabilities] must undergo on a regular basis throughout their lifetimes," explained Dr. Ray Lyons, chief of dental services with the Los Lunas Community Program in New Mexico and former president of the Academy of Dentistry for Persons with Disabilities.[26]

Exhibit 3 UNTREATED TOOTH DECAY BY ETHNICITY

Dental health varies drastically by ethnicity; American Indian and Alaska Native children fare the worst.



SOURCES: Pew Center on the States, 2010; Data from National Health and Nutrition Examination Survey, 1999-2004; Indian Health Service, 1999.

Why it matters

The national epidemic of poor oral health and lack of access to dental care among low-income kids has not captured the public's attention—but it should. While to date the issue has been overshadowed by other health reform challenges, the consequences of poor dental health among children are far worse—and longer lasting—than most people realize.

Early Growth and Development. Cavities are caused by a bacterial infection of the mouth. Those bacteria live in a sticky film on the teeth—plaque—and use the sugars in the food we eat to grow and create acid. That acid, unchecked, can create soft spots and eventually holes in teeth—what we know as cavities.

Cavity-causing bacteria are passed from caregivers to infants in the first few months of life, even before a child's first tooth erupts. It happens through regular daily activities, like sharing a spoon. Almost everyone has these bacteria, but whether a child develops cavities hangs in the balance between risk factors, like diet and the severity of the infection, and preventive factors like access to fluoride.[27]

For children at high risk of dental disease, infection can quickly progress into Early Childhood Caries, rampant decay that can destroy a child's baby teeth as they emerge. These teeth are more important than they may seem. Primary teeth are vital to lifetime dental health and overall child development. They are necessary for children to make the transition from milk to solid food and to develop speech. They hold space in the mouth for the permanent teeth that will emerge as a child ages. Losing baby teeth prematurely can cause permanent teeth to come in crowded or crooked, which can result in worsened orthodontic problems in adolescence.

Decay in primary teeth, particularly in molars, is a predictor of decay in permanent teeth, and cavity-causing bacteria persist in the mouth as permanent teeth grow in.[28]

School Readiness and Performance. Poor dental health has a serious impact on children's readiness for school and ability to succeed in the classroom. In a single year, more than 51 million hours of school may be missed because of dental-related illness, according to a study cited in a 2000 report of the U.S. Surgeon General.[29] If a child is missing teeth, "[t]hat could affect school performance or school readiness, particularly in being able to relate to other children," said Ben Allen, public policy and research director of the National Head Start Association.[30]

Research shows that dental problems, when untreated, impair classroom learning and behavior, which can negatively affect a child's social and cognitive development.[31] The pain from cavities, abscesses and toothaches often prevents children from being able to focus in class and, in severe cases, results in chronic school absence.[32] A 2009 study from California showed that among children missing school for dental problems those who needed dental care but could not afford it were much more likely to miss two or more school days than those whose families could afford it.[33] School absences contribute to the widening achievement gap, making it difficult for children with chronic toothaches to perform as well as their peers, prepare for subsequent grades and ultimately graduate.

A 2008 study in North Carolina found that children with both poor oral and general health were 2.3 times more likely to perform badly in school than their healthier peers, while children with either poor dental or general health were 1.4 times more likely to perform badly. The study concluded that improving children's oral health may be a vehicle for improving their educational experience.[34]

Poor dental health can cause speech impairments and physical abnormalities that can also make learning difficult. Children whose speech is affected may be reluctant to participate in school activities and discussions, an important part of learning and of social development.[35] This is also true with physical abnormalities, most commonly missing teeth. Children with abscesses often do not smile because they are embarrassed about their physical appearance.[36]

Overall Health. Poor dental health in childhood can escalate into far more serious problems later in life. For adults, the health of a person's mouth, teeth and gums interacts in complex ways with the rest of the body.[37]

A growing body of research indicates that periodontal disease—gum disease—is linked to cardiovascular disease, diabetes and stroke.[38] Severe gum disease in older Americans is even linked to increased risk of death from pneumonia.[39] The connection to diabetes is particularly strong, and a 2006 article in the *Journal of the American Dental Association* described the relationship as a "two-way street," with diabetes being linked to worsened gum disease, and uncontrolled gum disease making it harder for diabetics to control their blood sugar.[40]

Several studies have suggested an association between untreated gum disease and increased likelihood of preterm labor and low birth weight.[41] Although recent studies have raised doubts about whether treating gum disease in pregnant women can improve birth outcomes, the dental health of pregnant women and new mothers is critically important, because cavity-causing bacteria are passed from parents to their children.[42]

In some cases, complications from dental disease have taken lives. In 2007, a 12-year-old Maryland boy, Deamonte Driver, died after an infection from an abscessed tooth spread to his brain. An $80 tooth extraction could have saved his life, but his mother did not have private dental insurance and the family's Medicaid coverage had lapsed. "Deamonte's death exposed a huge chasm in our nation's health coverage for children," said U.S. Representative Elijah Cummings (D-Maryland).[43] (See sidebar on page 18.)

No one knows how many children have lost their lives because of complications stemming from untreated dental problems. But Deamonte Driver is not alone. In 2007, for instance, Alexander Callendar, a 6-year-old boy in Mississippi, was not able to get treatment for two infected teeth in his lower jaw. When Alex's teeth were pulled, he went into shock and died. Doctors reported that he went into shock from the severity of the infection.[48]

In October 2009, a mentally impaired woman in Michigan died from a chronic dental infection after cuts to the adult dental Medicaid benefit prevented her from getting the surgery she needed.[49] Her teeth were so badly infected that she needed a surgical extraction in a hospital setting, but lack of Medicaid coverage forced her to wait until the infection became severe enough to qualify for emergency dental coverage. After she waited for three months, the infection killed her.[50]

Deaths related to dental illness are difficult to track because the official cause of death is usually identified as the related condition—for example, a brain infection—rather than the dental disease that initially caused the infection. The number of deaths related to childhood dental disease "likely never will be known owing to inadequate surveillance, lack of an [Early Childhood Caries] registry, issues of confidentiality, … and even inconsistent diagnostic coding choices by hospitals and physicians," concluded a 2009 article in the *Journal of the American Dental Association*. "Among brain abscesses alone, 15 percent result from infections of

DASHAWN DRIVER'S YEARLONG SEARCH FOR CARE

When Deamonte Driver, a 12-year-old boy from Prince George's County, Maryland, died from a dental infection that spread to his brain in February 2007, the tragedy quickly attracted national and international attention and prompted a congressional investigation. Yet policy makers would be equally wise to pay attention to the story of Deamonte's younger brother, DaShawn Driver. It took DaShawn's mother, Alyce Driver, and a team of social workers, advocates and public health officials nearly a year of urgently seeking care to find a dentist willing to treat DaShawn's oral health problems under his existing Medicaid coverage.[44]

The story began in 2006 when DaShawn, then 9 years old, began having severe toothaches and mouth pain. He had to miss school because of the pain, and at other times, had to go to class with swollen cheeks. "It hurt all the time unless I put pressure on it," said DaShawn, who carried around old candy wrappers to bite down on for that purpose.[45]

The first dentist who agreed to see DaShawn under Medicaid did a consultation but refused to take him as a patient because the youth was fidgety and "wiggled too much in the dentist's chair," said Alyce Driver.[46] She then sought help from the Public Justice Center in Baltimore, Maryland.[47] The staff obtained a list of primary care dentists who claimed to accept DaShawn's Medicaid managed care plan. The first 26 providers on the list turned them down. They eventually found a primary care dentist for DaShawn, who confirmed that he had six severely diseased teeth that needed to be pulled, and advised his mother to take him to an oral surgeon. Alyce Driver once again turned to the Public Justice Center, which in turn consulted the Department of Health and Mental Hygiene, the local health department and the state's Medicaid plan. They secured the earliest available appointment with a contracted oral surgeon—six weeks later. After an initial consultation, an appointment was set several weeks after that to begin the extractions. But when Alyce and DaShawn Driver showed up for the rescheduled appointment, the surgeon's staff told them they no longer accepted Medicaid patients, Alyce Driver said.

It was at about this time that Deamonte—whose teeth appeared to Alyce Driver to be in much better shape than DaShawn's—became severely ill from an infection from an abscessed tooth that had spread to his brain. He was hospitalized, underwent two brain surgeries and died six weeks later.

The next oral surgeon the Drivers found for DaShawn a month later—again with the help of the Public Justice Center's staff and a team of case workers—immediately pulled one tooth and agreed that five others were badly enough infected to require extraction. But the dentist insisted that DaShawn come back to have one tooth taken out every month for five months, said Alyce Driver. "I said, 'Wow, am I going to lose my other son, too?'" she recalled. The University of Maryland Dental School clinic in Baltimore agreed to take DaShawn's case, and removed the rest of the diseased teeth promptly.

Now, DaShawn sees a dentist every six months. In fact, the dentist that DaShawn sees is Alyce Driver's new employer. Devastated by Deamonte's death and inspired to make a difference in his memory, she applied for a training program to become a dental assistant and was given a full scholarship. She now works part time as a dental assistant, and periodically accompanies her employer to work in schools as part of the Deamonte Driver Dental Project. The Project, founded by the Robert T. Freeman Dental Society Foundation and funded by the State of Maryland and several foundations, includes education and outreach, dental screenings, fluoride varnish and referrals. Dentists in Action, a group of local dentists, has vowed to provide regular sources of care to all children referred by the project with hope of preventing "another Deamonte Driver"—and maybe even another DaShawn Driver—from happening again.

unknown source, some or many of which may be of dental origin."[51]

Economic Consequences. Untreated dental conditions among children also impose broader economic and health costs on American taxpayers and society. Between 2009 and 2018, annual spending for dental services in the United States is expected to increase 58 percent, from $101.9 billion to $161.4 billion. Approximately one-third of the money spent on dental services goes to services for children.[52] Added to that are the tens of millions of dollars spent on children requiring extensive treatment in hospital operating rooms, estimated at more than $53 million in 2006 alone, according to federal data.[53]

While dental care represents a small fraction of overall health spending, it is significant because neglecting the dental health of children has lifetime effects. A good predictor of future decay is past experience with tooth decay.[54] When children with severe dental problems grow up to be adults with severe dental problems, their ability to work productively will be impaired.

Consider the military. A 2000 study of the armed forces found that 42 percent of incoming Army recruits had at least one dental condition that needed to be treated before they could be deployed, and more than 15 percent of recruits had four or more teeth in urgent need of repair.[55]

Particularly for people with low incomes, who often work in the service sector without sick leave, decayed and missing teeth can pose major obstacles to gainful employment. An estimated 164 million work hours each year are lost because of oral disease.[56]

Dental problems can hinder a person's ability to get a job in the first place. A 2008 study from the University of Nebraska confirmed a widely held

A 2000 study of the armed forces found that 42 percent of incoming Army recruits had at least one dental condition that needed to be treated before they could be deployed, and more than 15 percent of recruits had four or more teeth in urgent need of repair.

but little-discussed prejudice: People who are missing front teeth are seen to be less intelligent, less desirable and less trustworthy than people without a gap in their smile.[57] Stories of personal embarrassment and lost opportunities from poor dental health are easy to find. Take, for example, this 2007 account from the *New York Times*:

> "Try finding work when you're in your 30s or 40s and you're missing front teeth," said Jane Stephenson, founder of the New Opportunity School in Berea, Ky., which provides job training to low-income Appalachian women.
>
> Ms. Stephenson said the program started helping women buy dentures 10 years ago. She said about half of the women who go through the program, most in their 40s, were missing teeth or had ones that were infected. As a result, she said, they are shunned by employers, ashamed to go back to school and to be around younger peers and often miss work because of pain or complications of the infections.[58]

But this is not just anecdote. A 2008 study found that women who grew up in communities with fluoridated water earned approximately 4 percent more than women who did not. The effect was almost exclusively concentrated among women from low-income families, and fluoride exposure in childhood was found to have a robust, statistically significant effect on income, even after controlling for a variety of trends and community-level variables. The authors of the study attributed this difference primarily to consumer and employer discrimination against women with missing or damaged teeth.[59]

Another study from the University of California-San Francisco tracked 377 welfare recipients in need of extensive dental repair. Eighty percent of the 265 people who finished treatment said their quality of life had improved dramatically, and this group was twice as likely to receive favorable or neutral employment outcomes as those who did not follow through with treatment. The article concluded that by providing dental treatment to this group, barriers to employment were reduced.[60]

As Harvard University professor Dr. Chester Douglass described in a recent interview with the online magazine Slate: "If you enjoy chewing; if you enjoy speaking; if you enjoy social interaction; if you enjoy having a job—a responsible position—you've got to have oral health. So the question becomes how important is eating, speaking, social life, and a job?"[61]

Why is this happening?

Dental hygiene should begin at home, where parents can teach their children about the importance of brushing and flossing regularly and eating a healthy diet. But too often, parents themselves do not practice these behaviors. Their failure to model them hurts their children's oral health, as does the abundance of sugary foods available to children—and the lack of nutritional foods available to low-income kids in particular. More can be done to help educate parents about the importance of their children's oral hygiene. But the national crisis of poor dental health and lack of access to care among disadvantaged children cannot be attributed principally to parental inattention, too much candy or soda or not enough fruits and vegetables.

In fact, broader, systemic factors have played a significant role. Three in particular are at work: 1) too few children have access to proven preventive measures, including sealants and fluoridation; 2) too few dentists are willing to treat Medicaid-enrolled children; and 3) in some places in America, there are simply not enough dentists—or no dentists at all—to provide care to the people who need it most.

Too Few Children Have Access to Proven Preventive Measures

The U.S. Task Force on Community Preventive Services has identified two effective community-based strategies that it recommends states pursue to combat tooth decay: school-based sealant programs and community water fluoridation.[62] These proven methods, however, have not reached all the children who need them.

Sealants. Dental sealants are not a replacement for regular dental care, but they have been recognized by the American Dental Association (ADA) as one of the best preventive strategies that can be used to benefit children at high risk for cavities. Sealants—clear plastic coatings applied by a hygienist or dentist—cost one-third as much as filling a cavity,[63] and have been shown after just one application to prevent 60 percent of decay in molars.[64]

Ninety percent of cavities in children occur on the first and second molars, so protecting those back teeth is crucial to children's dental health.[65] The deep grooves in molars, too narrow to be brushed

PENNYWISE STRATEGIES THAT PAY OFF

Sealants and fluoridated water have been found effective both at protecting teeth and saving money. Sealants cost one-third as much as filling a cavity and have been shown after just one application to prevent 60 percent of decay in molars. And for every $1 invested in water fluoridation, communities save $38 in dental treatment costs, according to the CDC. More than $1 billion could be saved every year if the remaining water supplies in the United States, serving 80 million persons, were fluoridated.

effectively, make these teeth excellent habitats for bacteria and particularly susceptible to decay. Walling off the deep grooves with a sealant blocks bacteria and food particles and greatly reduces the chances of developing a cavity.

The Healthy People 2010 national goal is for at least half of third graders in each state to have sealants—but data submitted by 37 states show that the nation falls well short of this goal. Pew's analysis found that only eight states have reached it, and in 11 states, fewer than one in three third graders have sealants. Four of the states meeting the Healthy People goal—North Dakota, Vermont, Washington and Wisconsin—also claim some of the lowest rates of childhood tooth decay, while Arkansas and Mississippi, two of the states that do not meet the sealants goal, are among the states with the highest decay rates.

Unfortunately, this effective service is unavailable to many kids.[66] When children living in or close to poverty are unable to visit a dentist for preventive care, they miss the chance to get the sealants that could prevent the need for more urgent and expensive restorative care later.

Some states have developed school-based sealant programs in low-income neighborhoods to help meet the need, but this strategy is vastly underutilized. New data collected for Pew by the Association of State and Territorial Dental Directors show that only 10 states have school-based sealant programs that reach half or more of their high-risk schools. These 10 states are Alaska, Illinois, Iowa, Maine, New Hampshire, Ohio, Oregon, Rhode Island, South Carolina and Tennessee. Eleven states have no organized programs at all to provide this service to the schools most in need: Delaware, Hawaii, Missouri, Montana, New Jersey, North Dakota, Oklahoma, South Dakota, Vermont, West Virginia and Wyoming.[67]

Fluoridation. Water fluoridation stands out as one of the most effective public health interventions that the nation has ever undertaken. Fluoride counteracts tooth decay and, in fact, strengthens the teeth. It occurs naturally in water, but the level varies within states and across the country. About eight million people are on community systems whose levels of naturally occurring fluoride are high enough to prevent decay, but most other Americans receive water supplies with lower natural levels. Through community water fluoridation, water engineers adjust the level of fluoride to about one part per million—about one teaspoon of fluoride for every 1,300 gallons of water. This small level of fluoride is sufficient to reduce rates of tooth decay for children—and adults—by between 18 percent and 40 percent.[68]

It also saves money. The median cost for one dental filling is $120.[69] It costs less than $1 per person per year to fluoridate a large community of 20,000 people or more and $3 per person in a small community of 5,000 people or fewer. A 2001 CDC study estimated that for every $1 invested in water fluoridation, communities save $38 in dental treatment costs.[70] Perhaps more than $1 billion could be saved every year if the remaining water supplies in the United States, serving 80 million persons, were fluoridated.[71]

With those kinds of results, it is no surprise that the CDC identified community water fluoridation as one of 10 great public health achievements of the 20th Century and a major contributor to the dramatic decline in tooth decay over the last five decades.[72] Approximately 88 percent of Americans receive their household water through a community system—the rest use well water—yet more than one-quarter of them do not have access to optimally fluoridated water.[73] Pew's review of CDC data found that in 2006, 25 states did not meet the Healthy People 2010 goal of providing fluoridated water to 75 percent of their population on community water systems, and nine states—California, Hawaii, Idaho, Louisiana, Montana, New Hampshire, New Jersey, Oregon and Wyoming—did not reach even 50 percent.[74]

The CDC is working to update its fluoridation survey based on 2008 data. Although they were not available at the time this report went to press, the newer data are expected to reflect progress in the last few years in California because of a state law that has produced gains in cities like Los Angeles and San Diego. They also may show that states like Delaware and Oklahoma that were close to the national goal in 2006 now have met it.

Community water fluoridation has occasionally stirred debate, with opponents claiming linkages to a host of health conditions, from brittle bones to lowered IQ. The vast majority of scientific research has not supported these claims, however, and six decades of study have shown community water fluoridation to be a safe, efficient and effective way to prevent decay.[75]

Too Few Dentists Are Willing to Treat Medicaid-enrolled Children

Medicaid requires that all enrolled children receive dental care as part of the program's Early and Periodic Screening, Diagnosis and Treatment benefit. The reality, however, is that low-income children who are enrolled in Medicaid often do not receive adequate dental care. As noted earlier, in 2007, only about one-third of all children enrolled in Medicaid, from birth through age 20, received any dental services.[76] The figure is slightly higher—38.1 percent—for children ages 1 to 18, but it still lags far behind the national average of 58 percent for children with private dental insurance.[77] More than half of Medicaid-enrolled kids received dental care in just three states: Alabama, Texas and Vermont.

Those dismal numbers actually represent an improvement in recent years. Since a landmark report by the U.S. Surgeon General in 2000, the percentage of children enrolled in Medicaid receiving dental services has increased by eight percentage points.[78] But that improved performance has not been uniform across states. In 2007, in the worst cases, dental care was still out of reach for more than three-quarters of all children using public insurance in Delaware, Florida and Kentucky. (See Appendix Table 2.)

Despite increased efforts by state and federal governments to improve access, they have not succeeded on a scale sufficient to fix the problem, a 2009 report by the federal Government Accountability Office (GAO) concluded. "Although [the Centers for Medicare and Medicaid Services] and states have taken steps to address long-standing barriers, continued attention and action is needed to ensure children's access to Medicaid dental services," the GAO wrote.[79]

In some cases, the lack of affordable care can be attributed to dentists' resistance to see Medicaid patients. While the average dentist provides about $33,000 in charity and reduced-fee care to patients every year—equivalent to care for about 54 people—they often do not participate in Medicaid.[80] A 2000 GAO study found that in 25

of 31 responding states, fewer than one-quarter of dentists treated at least 100 Medicaid-enrolled patients.[81] In 2007, fewer than 6 percent of patients who visited single-dentist practices had public insurance.[82]

Many dentists say they are reluctant to participate in state Medicaid programs because they require burdensome paperwork and patients often miss appointments. More frequently, however, they point to low reimbursement rates.[83] It is easy to see why: Pew found that 26 states pay less than the national average (60.5 percent) of Medicaid rates as a percentage of dentists' median retail fees. In other words, their Medicaid programs reimburse less than 60.5 cents of every $1 billed by a dentist.[84] For five common children's procedures (examinations, fluoride applications, sealant applications, basic fillings and tooth extractions), state payments range from rough parity with dentists' median charges in New Jersey to just 30 cents on the dollar in Florida.[85] "If you have a patient coming in that has Medicaid, you know you're going to lose money," said Dr. Nolan Allen, a Clearwater dentist who was president of the Florida Dental Association. "We're small-business owners. We've got overhead and bills to pay."[86]

Some Communities Lack Enough Dentists

Some areas—both urban and rural—simply lack enough dentists to meet community needs, and they have little ability to build a pipeline of new providers.

Just 14 percent of dentists nationwide practice in rural areas, according to a report by the National Rural Health Association.[87] Many such rural areas have sought and received designation by the federal government as Dental Health Professional Shortage Areas (DHPSAs). But shortages are not limited to the countryside; the movement of health professionals out of city centers means that many urban neighborhoods also qualify as DHPSAs. The U.S. Department of Health and Human Services has named more than 4,000 such areas across the country. Many more cities and counties likely would qualify as DHPSAs, but they lack the staff or resources to complete the application for the designation, which would make them eligible for additional federal funds and programs to attract new dental graduates to their area.[88] Still, more than 46 million people live in DHPSAs across the United States, an estimated 30 million of whom lack access to a dentist.

ADDING UP TO A SHORTFALL

More than 46 million people live in Dental Health Professional Shortage Areas across the United States, an estimated 30 million of whom lack access to a dentist. From this figure, Pew calculates that more than 10 percent of the nation's population has no reasonable expectation of being able to find a dentist. How was this number identified? The U.S. Department of Health and Human Services calculates the severity of dental shortage by comparing the population of the designated area and the number of practicing dentists. Each dentist is assumed to be able to meet the needs of 3,000 people—although many dentists see fewer patients than that.

Unserved population = Total population - (Number of dentists x 3,000)

Multiply the number of dentists by 3,000 and subtract that figure from the total population of the designated area to get the estimated unserved population. In Louisiana, that is 1.5 million people—33.5 percent of the state's total population.

By this very conservative estimate, Pew calculates that more than 10 percent of the nation's population has no reasonable expectation of being able to find a dentist.[89] In some states such as Louisiana, this rises to one-third of the general population. (See Appendix Table 3.)

In 2006, roughly 4,500 new dentists graduated from the United States' 56 dental schools.[90] But it would take more than 6,600 dentists choosing to practice in DHPSAs to provide care for those 30 million people. More than 10 percent of those are needed in Florida alone, where it would take at least 751 new dentists to close the access gap. Some states, such as North Dakota, fare far better; just 11 new providers in North Dakota theoretically would be able to care for the state's unserved population.[91]

These dentist shortages are projected to worsen. Although several dental schools have opened in the past few years, the number of dentists retiring every year will soon exceed the number of new dentists graduating and entering practice. In 2006, more than one-third of all practicing dentists were over the age of 55 and edging toward retirement.[92]

A MISSION OF MERCY

When dental needs go unmet, provider shortages and the lack of dental insurance coverage can compound those problems into a truly dire situation. Dental coverage for adults is an option under Medicaid that not all states provide. This leaves low-income adults to pay out of pocket or seek charity care.[93] Recently, efforts such as Mission of Mercy (MoM) have emerged around the country, from rural Appalachia to populous Inglewood, California.[94] These temporary clinics do just what the name implies—take mercy on people in pain by giving them a chance to receive needed dental care.

In October 2009 Virginia Smith, 45, arrived at 12:30 a.m. at the MoM free clinic, hosted at the Church of the Brethren in Frederick, Maryland. Smith hoped to be one of the lucky few to get their dental needs addressed during the clinic's operating hours of 9 a.m. to 4 p.m. During her visit to MoM, volunteer dentist Dr. Adam Frieder pulled Smith's remaining three teeth, decayed beyond recovery. Smith planned to wait for her mouth to heal and then spend most of her money—she has about $1,500 in the bank—on dentures. It took her about a year to save up the money, but she felt it would be worth it. "I'll be able to smile, I'll be able to laugh—it's going to change everything. People are going to look at me differently," she explained.[95]

Smith had been seeking dental care for years. Her problems started when she was a teenager. "I didn't take care of my teeth," she said wistfully. "My mom didn't push it on me. Now I regret it." Though she was fortunate to escape gum disease or infection, her teeth steadily deteriorated as she was unable to find a dentist she could afford.[96]

The MoM mobile clinic, which includes dental and primary care, comes to Frederick once or twice a month. It does not take appointments because many patients cannot keep them due to uncertain transportation. So the waiting line for the dental clinic begins in the dead of night and is often at capacity by 4 a.m. Each of the two volunteer dentists can treat only about 10 to 12 patients in a day.[97]

The clinic in Frederick is clean, friendly and efficient, and includes a Spanish-English interpreter. But Frederick, the busiest site in the Maryland-Pennsylvania program, is consistently overwhelmed by dental patients from all over the state. The Maryland and Pennsylvania dental clinics served 1,284 patients between July 2008 and June 2009.[98] MoM operates in Arizona and Texas as well, and patients and visits to its medical and dental clinics have risen steadily since the program began in 1994.[99] In the last 15 years, the organization has provided more than 230,000 dental visits.[100]

Chapter 2: Solutions

Millions of disadvantaged children suffer from sub-par dental health and access to care. This is a national epidemic with sobering consequences that can affect kids throughout their childhoods and well into their adult lives. The good news? This is not an intractable problem. Far from it.

There are a variety of solutions, they can be achieved at relatively little cost, and the return on investment for children and taxpayers will be significant. The $106 billion that Americans are expected to spend on dental care in 2010 includes many expensive restorative treatments—from fillings to root canals—that could be mitigated or avoided altogether through earlier, easier and less expensive ways of ensuring adequate dental care for children.[101]

Four approaches stand out for their potential to improve both the dental health of children and their access to care: 1) school-based sealant programs and 2) fluoridation, both of which are cost-effective ways to help prevent problems from occurring in the first place; 3) Medicaid improvements that enable and motivate more dentists to treat low-income kids; and 4) innovative workforce models that expand the number of qualified dental providers, including medical personnel, hygienists and new primary care dental professionals, who can provide care when dentists are unavailable.

The federal government plays a role in whether and to what degree these measures are implemented across the country. It provides significant funding for Medicaid, and federal law mandates that Medicaid-enrolled children receive dental care. In February 2009, the federal legislation that reauthorized the Children's Health Insurance Program (CHIP) significantly expanded its dental coverage (see sidebar on page 26). Further changes are being contemplated in the health care reform bills being debated as this report is being written—including expanded dental coverage for children, and funding for state oral health programs, training and workforce expansion.

Beyond these important federal steps, many solutions remain principally in the hands of state lawmakers. State policies set Medicaid reimbursement rates and determine how the program is administered. States help fund and coordinate sealant programs, and they provide grants and adopt mandates or regulations to encourage community water fluoridation. States also set standards for dentists, dental hygienists and medical personnel who provide dental care, and they can lead the exploration of new types of dental professionals.

Finally, states can collect information about oral health within their borders to understand the type and intensity of the problems they face. Once they measure the problem, they can track it and gauge their own progress, and set and achieve benchmarks for themselves and the programs they support.

The states that have not yet implemented these approaches do not have to start from scratch. Some states have adopted strong prevention measures, including school-based sealant programs and fluoridation mandates or incentives. Many have raised reimbursement rates and streamlined administration of the Medicaid dental program for dentists, with promising results. And a growing number of states are showing interest in expanding the ability of pediatricians, dental hygienists and new types of providers.

THE NEXT GENERATION OF CHIP

The Children's Health Insurance Program (CHIP) was introduced in 1997 as a way to extend health coverage to the millions of children in near-poor families. The program is much smaller than Medicaid. In June 2008, 4.8 million children were enrolled in CHIP, compared to 22.7 million children enrolled in Medicaid.[102] States can choose to administer CHIP as an extension of Medicaid, or design a separate program with different benefits and administration.

Pew's analysis of children's dental health concentrated on Medicaid, rather than CHIP, primarily because of the lack of data on CHIP programs. Until last year, CHIP programs were not required to offer dental benefits, nor did they have to report utilization data comparable to annual Medicaid reporting requirements. The 2009 CHIP Reauthorization Act addressed this, requiring that states cover dental services for children "necessary to prevent disease and promote oral health, restore oral structures to health and function, and treat emergency conditions" and that the states report annually on utilization of dental services.[103]

The bill also contained new measures to improve the dental health of children in both Medicaid and CHIP. The law requires that

- parents of Medicaid- or CHIP-enrolled newborns receive education about their babies' dental health;
- states allow community health centers to contract with private dentists for care;
- states make a list of Medicaid- and CHIP-participating dental providers accessible through the federal Insure Kids Now Web site; and
- the GAO study children's access to care and the feasibility of using new types of dental providers to meet children's needs.

Finally, the law gives states the option to extend dental benefits to children with private medical, but not dental, insurance—otherwise known as the "CHIP wrap."[104] U.S. Senator Olympia Snowe (R-Maine), a sponsor of the bill, said the measure "will ensure that working families will not forego oral healthcare and will provide an incentive to maintain private medical coverage, while gaining equality with their peers who are now guaranteed dental coverage through CHIP."[105]

Cost-effective ways to help prevent problems before they occur: sealants and fluoridation

Sealants

Not only are sealants a third of the cost of fillings, they also can be applied by a less expensive workforce.[106] Sealants can be applied by dental hygienists in all states, although in some states an examination by a dentist, or the physical presence of a dentist, is required by long-standing state regulations that have not been updated to keep pace with current clinical and scientific recommendations.

"A sealant prevents caries and even if it needs to be replaced it doesn't snowball into something bigger," said Dr. Mark Siegal, director of the Ohio Bureau of Oral Health Services. "A filling isn't forever. Each time it gets replaced it is bigger, so that small filling placed in a child over time gets bigger and bigger and maybe it becomes a root canal or crown or both and then it becomes a $2,000 or $3,000 tooth. At that point the $35 filling was kind of a down payment on a $3,000 tooth."[107]

Studies have shown that sealant programs targeted to schools with many high-risk children are a highly recommended cost-effective strategy for providing sealants to children who need them.[108] Most programs identify target schools by the percentage of students who are eligible for free or reduced-cost lunch. Others may rely on parent surveys indicating kids do not have dental insurance or have not seen a dentist in the past year, recognizing that children living in poverty suffer two times more untreated tooth decay than their peers.[109]

The basic formula in Ohio, a state whose school-based sealant programs have been lauded by the CDC for eliminating income disparity in sealants, is to reach out to all children in second and sixth grades in schools where at least 40 percent of the student body is enrolled in the free and reduced-cost lunch program. Ohio chose this level, which includes more schools than programs in many other states, after a state Department of Health study found a lowered threshold would still be cost effective and reach more at-risk kids.[110] (See sidebar.)

There are all manner of variations of these programs. In some states, a dentist visually assesses a child's teeth and then a dental hygienist and assistants apply sealants; in other states, hygienists can place sealants without a dentist's exam. Some school-based sealant programs operate out of fixed facilities in schools; most use portable equipment and move among schools. And some programs are school-linked, with screening done at schools but sealants affixed elsewhere. Having any part of the program in the school means kids do not have to miss as much class time for dental care as they would if traveling to a clinic or dentist's office, nor do parents need to take time off from work.

What can states do?

School sealant programs are local interventions, but states can help replicate them by:

- allocating resources: States can give grants or contracts to deliver sealants.
- providing leadership: A state dental director and oral health bureau can administer funds, set standards and facilitate expansion of local programs.
- adopting workforce policies: States can update regulations to ensure more efficient use of the dental workforce and enable programs to reach more kids.

SEALING OHIO

In Ohio, state efforts led to nearly 30,000 children in schools in low-income neighborhoods in 2008 receiving sealants through public programs, at no cost to their families. The program has grown steadily since it began in 1988.[111] Ohio has found ways to create reliable funding and implement the program efficiently with a high level of accountability, largely through the leadership of the state health department.

The Ohio Department of Health coordinates sealant programs, but they are carried out by local governments or private nonprofits that follow requirements set by the state. This decentralized system is flexible, allowing diverse communities to tailor programs to their unique needs and maximize participation. Grantees are required to file detailed quarterly cost and utilization reports on their programs, which allows the state to set benchmarks, monitor and compare performance and make sure money is being well spent. The grants are written to maximize efficiency and cost effectiveness, but they do not stipulate how to do this; a program is eligible for state funding as long as it serves schools in which 40 percent of the students are eligible for free or reduced-cost lunch and it reaches the required number of children (1,000) at competitive costs. Local programs innovate to secure state funding; for example, they sometimes extend neighborhood programs to small rural areas that would not otherwise meet the 1,000-child eligibility threshold.

About $750,000 in annual funding for the program comes from the state's decision to allocate a portion of the flexible federal Maternal and Child Health Block grant to fund local sealant programs. This is paired, whenever possible, with Medicaid and CHIP funding for eligible children. Otherwise, according to Mark Siegal, director of the Ohio Bureau of Health Services, it would not be enough to achieve the results Ohio is seeing.[112]

The state reports that sealant programs are present in more than half of the state's high-risk schools. While Ohio's program "has met only a portion of the need for dental sealants, [it] has already shown that school-based programs can reach children at high risk for tooth decay and could potentially reduce or eliminate racial and economic disparities in the prevalence of this effective preventive measure," the CDC concluded in 2009.[113]

With a return of $38 for every dollar spent, water fluoridation is one public health solution on which states can rely.

Pew found that only 17 states have sealant programs that reach even one-quarter of their high-risk schools, and 11 reported having no programs at all. But a number of states have invested significantly in school-based sealant programs because they have proven successful and cost-effective.

Ohio is not the only state to recognize the value of these programs. New Mexico's Office of Oral Health has been sending dentists, hygienists and dental assistants to schools with high proportions of at-risk children to provide oral hygiene education, screening and sealants since 1979. For areas beyond its reach the office contracts with other providers. In the 2007-2008 school year, the program provided dental sealants to more than 8,600 children.[114]

Arizona added a sealant program to its budget in 1989, picking up where charitable grants left off and funding a full-time dental hygienist/program coordinator as well as supplies, travel, equipment and contract personnel. In addition to state appropriations, allocations from the federal Maternal and Child Health Block Grant and corporate foundation donations pay for the sealant program. The Arizona initiative employs dental, dental hygiene and assisting students from various schools around the state in externships to help fill workforce gaps and give students an important public health experience. Staff members bring portable dental equipment to public and charter schools with 65 percent or higher free and reduced-price school meal program participation. In the 2007-2008 school year, Arizona administered 29,628 sealants to 7,860 children in 192 schools.[115]

Arizona and New Mexico are making progress, but because of the resources necessary to implement the programs in the large number of low-income schools in those states, neither reaches more than a quarter of high-risk schools. A number of other states are making headway in school-based sealant programs, exploring how to document and increase their effectiveness and efficiency, create steady funding streams and expand the ability of hygienists to work without unnecessary restrictions to mitigate the cost and scheduling constraints of dentists.

Fluoridation

The 25 states that provide less than 75 percent of their population with optimal levels of water fluoridation can benefit from 60 years of experience and solid research from across the United States. With a return of $38 for every dollar spent, water fluoridation is one public health solution on which states can rely.[116]

Water fluoridation policy is set at both state and local levels. While fluoridation decisions are frequently made by a health board or water utility, state legislatures and agencies can provide leadership and assistance. Currently, 12 states and the District of Columbia have mandatory fluoridation laws. Overall, nearly 80 percent of the residents on community water systems in these states receive optimal levels of fluoridation.[117] (Mandates may not reach 100 percent of the population on public water systems if the law applies only to communities of a certain size or contains opt-out provisions or other restrictions. For example, a provision may allow a community to defer implementation until it raises money to fund the program, but place unnecessary restrictions on funding sources that can lead to indefinite delays.) On average, a higher proportion of the population

FLUORIDATION IN THE LONE STAR STATE

As of 2006, 78 percent of Texans had access to publicly fluoridated water, surpassing the national goal of 75 percent set by Healthy People 2010.[119]

Backed by the Texas Commission on Environmental Quality and funded by an allocation of the federal Public Health and Health Services Block Grant, the Texas Fluoridation Program serves as a resource to water utilities throughout the state. The program awards start-up grants to local communities, provides engineering services and maintains data records to support their water fluoridation efforts.[120] As the percentage of fluoridated communities in Texas has increased, the incidence of decay and cavities has decreased. Meanwhile, rates of decay continue to rise among children in the state's nonfluoridated communities.[121]

The state's success in fluoridating its communities' water did not come without difficulty. Faced with vocal opposition from a few local groups, the Texas legislature commissioned a report from the state's oral health program to investigate the safety and economic viability of water fluoridation. The report, released in 2000, confirmed the proven health benefits gained from drinking water with optimal levels of fluoridation. Experts also determined a savings of $24 per child in Medicaid expenditures for children because of the cavities that were averted by drinking fluoridated water.[122]

In the past 15 years, fluoridation coverage in Texas has risen by more than 10 percent. In 2002, implementation in San Antonio brought publicly fluoridated water to more than one million residents.[123] Until then, San Antonio had remained the largest U.S. city without fluoridated water, a position now held by San Jose, California.[124]

ultimately accesses fluoridated water in states with a mandate than residents in states that lack such a measure.[118]

Even when decisions about fluoridation are made locally, state policies play a significant role. States can help communities that are ready to access the benefits of fluoridation by assisting them with engineering studies, the costs of purchasing and installing equipment, cost-benefit projections, standards for operation, quality control and a strong office of oral health collaborating with the state's environmental health agency.

Medicaid improvements that enable and motivate more dentists to treat low-income kids

As described earlier, states are required by federal law to provide all medically necessary dental services for Medicaid-enrolled children, but nationwide, only 38.1 percent of such children ages 1 to 18 received any dental care in 2007. In part, this is because not enough dentists are willing to treat Medicaid-enrolled patients. Dentists point to low reimbursement rates, administrative hassles and frequent no-shows by patients as deterrents to serving them.

Because of high overhead costs, dentists need to be compensated through Medicaid at a rate of at least 60 percent of their usual fees to break even.[125] Pew's analysis found that Medicaid reimburses dentists at a national average of 60.5 percent of their usual fees, with 26 states falling below this level. But raising rates alone often is not enough—streamlining the administrative burdens for participating dentists and working collaboratively with providers are also important.

Some states are taking steps to address these issues. As a result, dentists are more willing to treat children on Medicaid and children have become more able to access the care they need.

In the late 1990s and early 2000s, for example, states such as Tennessee and Alabama overhauled their Medicaid dental programs. They streamlined administrative processes—Tennessee by bidding out a contract to a specialized vendor, Alabama

by obtaining a grant to revamp its own internal processes—and raised rates to levels close to dentists' retail fees. In both states, the number of children receiving dental services more than doubled over just four years. This meant that 75,000 additional Alabama children and 130,000 more Tennessee children were able to see a dentist.[126] Both states tripled their total dental expenditures as their efforts to make it easier for low-income children to receive care succeeded.[127] While Alabama has not been able to deliver subsequent rate increases to keep pace with inflation, the state has sustained its existing payment rates despite the budget crisis of the last two years.[128] Meanwhile, Tennessee's Medicaid payment rates are still above 75 percent of dentists' usual charges. While Tennessee made drastic reductions to medical coverage for adults in 2005, children's benefits, including its dental enhancements, were preserved.[129]

As reimbursement rates increase, so do dentist participation and the volume of services delivered, increasing the overall price tag of the program. Still, even with these increases, expenses related to dental care comprise less than 2 percent of all Medicaid expenditures.[130]

The six states that have gone the furthest to raise reimbursement rates and minimize administrative hurdles—Alabama, Michigan, South Carolina, Tennessee, Virginia and Washington—all have seen greater willingness among dentists to accept new Medicaid-enrolled patients and more patients taking advantage of this access, a 2008 study by the National Academy for State Health Policy found.[131] In those states, provider participation increased by at least one-third and sometimes more than doubled following rate increases.

In Virginia, prior to reforms implemented in 2005, dentists were being paid less than half of what it cost them to provide care. Consequently, only about 620 dentists statewide had been seeking reimbursement for treating Medicaid patients.[132] Some dentists were seeing Medicaid patients for free so that they could sidestep the onerous paperwork involved, according to Terry Dickinson, director of the Virginia Dental Association. The state overhauled its Medicaid system—scrapping eight individual managed care organizations in favor of one private operator—and raised reimbursement rates by 30 percent. The Virginia Department of Medical Assistance Services worked closely with the Virginia Dental Association to pinpoint and eliminate administrative headaches—for example, having to call ahead for "pre-authorization" before providing basic restorative care—and allocate reimbursement increases effectively across particular procedures.[133]

The number of participating dentists had more than doubled to 1,264 as of September 2009, and 94 percent of providers indicated in a recent survey that they are satisfied with the program.[134] The percentage of Medicaid-enrolled children ages 1 to 18 who see a dentist each year increased from 22 percent in 2000 to 41 percent in 2007, nearly doubling the number of kids who receive care.[135] And streamlined processes have saved the state money, said state Medicaid director Patrick Finnerty.[136]

While increasing investments in Medicaid is difficult during tight fiscal times, some states have shown that it is possible to make improvements with limited dollars. Despite budget constraints, 27 states increased reimbursement rates for dental services in 2009 and 2010, while only 12 states made cuts during the same period.[137] Maryland made a $7 million investment in reimbursement rates (matched by $7 million in federal funding) in 2008 and has already added 200 new providers. Following in Virginia's footsteps, the state also consolidated program management under a single dental benefits manager to streamline administration.[138]

THE AMERICAN DENTAL ASSOCIATION'S ROLE

The American Dental Association (ADA), the most prominent organization in the field, has sought to increase congressional appropriations for federal dental health programs, including those at the Indian Health Service and the CDC.[140] The ADA, representing more than 157,000 members, and other dental associations have also urged Congress to improve and secure dental coverage for low-income families through CHIP and health care reform.

At the state and local level, the ADA has supported raising Medicaid reimbursement rates and streamlining administration to encourage more dentists to participate. It also has been a supporter of community water fluoridation, devoting substantial staff and financial resources to helping state and local groups ensure drinking water is optimally fluoridated.[141] "The [ADA] continues to endorse fluoridation of community water supplies as safe and effective for preventing tooth decay. This support has been the Association's position since policy was first adopted in 1950. The ADA's policies regarding community water fluoridation are based on the overwhelming weight of peer-reviewed, credible scientific evidence," the organization said in a 2005 statement commemorating the 60th anniversary of community water fluoridation.[142]

The most visible dentistry-led effort on children's dental health is Give Kids a Smile.[143] Begun in 2002, it has become a nationwide day of volunteer service every February that delivers a substantial amount of care. In 2009, 1,700 programs around the country provided check-ups, fillings and dental supplies to 466,000 low-income children.[144]

Organized dental groups also have been working to address more systemic barriers to access that voluntary efforts cannot reach. The ADA convened a task force on workforce to study potential new models for service delivery. It also has partnered with many other organizations and invested substantial resources in convening two summits on dental access. In 2007, the ADA convened a conference on ways to improve the dental health of American Indians.[145] In 2009, it held another gathering to chart a long-term course for improving dental health.[146] Significant differences of opinion remain about new workforce models—in particular, what role new types of dental professionals should play in serving disadvantaged kids. Overall, the ADA's convenings have resulted in ongoing partnerships among government, organized dentistry, advocates, researchers and others who share the goal of improving access to oral health for critical underserved populations.

"Early diagnosis, preventive treatments and early intervention can prevent or halt the progress of most oral diseases … Yet millions of American children and adults lack regular access to routine dental care, and many of them suffer needlessly with disease that inevitably results, …," the ADA stated in a preface to a 2004 white paper on access to care. "Dentists alone cannot bring about the profound change needed to correct the gross disparities in access to oral health care."[147]

Rhode Island's RIte Smiles program moved money inside its oral health budget to provide an enhanced benefit—higher reimbursement rates, training for dentists in caring for young children and a specialized benefit manager—for children under the age of 6. The new program emphasizes prevention, with the expectation of lowered future costs. In its first year of operation in 2006, participation among dentists grew from 27 to 217 dentists (of about 500 in the state) and use of services among children in the program increased, particularly among the oldest children targeted by RIte Smiles.[139]

Innovative workforce models that expand the number of qualified dental providers

As described earlier, some communities have a dearth of dentists available—and particular areas, including rural and low-income urban communities, have little chance of attracting enough new dentists to meet the need. Moreover, only 3 percent of all dentists are pediatric practitioners who are skilled at caring for young children and trained to handle the highest-need cases.[148]

A growing number of states are exploring ways to expand the types of skilled professionals who can provide high-quality dental health care to children. The types fall into three main categories: 1) medical providers; 2) dental hygienists, and 3) new types of dental professionals.

Medical Providers. Pioneering projects in Washington State and North Carolina helped set the standard for training and paying physicians, nurses and medical staff to provide preventive dental care to very young children—specifically, health education and guidance to parents, referrals to dentists for needed services, and application of fluoride varnish, a concentrated fluoride treatment that can be painted onto babies' first teeth and is effective at reducing future decay.[149]

Into the Mouths of Babes, a North Carolina initiative that enlists pediatricians and other medical providers to offer dental care to infants and toddlers, has steadily grown to provide access to early preventive care for over 57,000 children in 2007.[150] Preliminary results from a forthcoming evaluation show that children who participated in the program had a 40 percent reduction in cavities compared to those who did not.[151]

Although the North Carolina Dental Society supported the initiative from its inception, there was some initial resistance to the idea of physicians providing dental services to patients. "Some people saw it as a bit of an encroachment on the scope of practice of dentists," said Dr. Alec Parker, director of the North Carolina Dental Society. "You had some dentists say, 'Are you going to put me out of business?' There was some real paranoia." The sentiment quickly changed, said Parker, as dentists realized the potential of the program to expand access to preventive care and began receiving referrals from physicians.[152]

The American Academy of Pediatrics (AAP) has led the effort to get state Medicaid programs to reimburse for these services, with 35 states now doing so.[153] Pew is supporting AAP's efforts to encourage all states to adopt this policy. "It's a perfect fit because parents actually take their child to the pediatrician for all those required shots; they're far less likely to take their children to see a dentist," said Martha Ann Keels, chairperson of the AAP Section on Pediatric Dentistry and Oral Health and a professor of pediatric dentistry at Duke University.[154]

Dental Hygienists. Dental hygienists are the primary workforce for school-based dental sealant programs. In an efficiently operated program, one team working five days per week can place dental sealants on 3,300 to 3,600 students each school year.[155] Dental hygienists must have at least a two-year associate degree and clinical training that qualifies them to conduct the necessary visual assessments and apply sealants.[156] But states vary greatly in their laws governing hygienists' work in these programs, and many have not been updated to reflect current science. Thirty states allow a child to have hygienists place sealants without a prior dentist's exam, while seven states require not only a dentist's exam, but also that a dentist be present when the sealant is provided.[157]

The ADA's Council on Scientific Affairs recently reported that x-rays and other advanced screenings are not necessary to determine the need for sealants. Rather, a simple visual assessment for obvious cavities is sufficient to determine whether a molar is healthy enough for a sealant. "These updated recommendations … should increase practitioners' awareness of the [school-based sealant program] as an important and effective public health approach that complements clinical care systems in promoting the oral health of children and adolescents," its authors noted.[158] With hygienists qualified to make such visual

assessments, these findings make it clear that dentists do not need to be on-site or examine a child before a sealant is placed.

While hygienists can refer children with decay to a dentist, the hope is that hygienists will be able to reach each child before the problem is able to progress. "The hygienist is going to prevent cavities," said Katharine Lyter, who directs public health dental programs and oversees six clinics for Montgomery County in Maryland. "The better job she does, the more cavities are reduced over time."[159] Pew found that of the eight states reporting that 50 percent or more of all third graders have sealants, none require direct supervision by dentists, and just three always require a dentist's exam prior to sealant placement.

New Models. An increasing number of states are exploring new types of dental professionals to expand access and fill specific gaps. Some are primary care providers who could play a similar role on the dental team as nurse practitioners and physician assistants do on the medical team. These providers could expand access to basic care and refer more complex cases to dentists who may provide supervision on- or off-site. Some, including a model proposed by the ADA, would play a supportive role similar to a social worker or community health worker. In the most highly trained model, providers would offer basic preventive and restorative care as part of a dental team with supervision by an off-site dentist.

A Dental Health Aide Therapist (DHAT) program was launched in Alaska in 2003 under the authority of the Alaska Native Tribal Health Consortium, a nonprofit health organization owned and managed by Alaska Native tribal governments and their regional health organizations. The DHAT is modeled after a program introduced in New Zealand in 1921 that has been fully integrated into the health

> In 2009, Minnesota became the first state in the country to authorize a new primary care dental provider.

systems of 53 countries. Worldwide, dental therapists are as common as nurses.[160] A 2008 review noted that since their introduction, "Multiple studies have documented that dental therapists provide quality care comparable to that of a dentist, within the confines of their scope of practice. Acceptance and satisfaction with the care provided by dental therapists is evidenced by widespread public participation. Through providing basic, primary dental care, a dental therapist permits the dentist to devote more time to complex therapy that only a dentist is trained and qualified to provide."[161]

Residents of remote Native Alaskan villages typically rely on outside dentists to visit their communities once or twice a year. Many rural villages are only accessible by boat, snowmobile or airplane, and an expensive two-day trip is required to reach most medical and dental hubs. Travel is almost impossible when weather conditions are unfavorable, which is up to three-quarters of the year.[162] Today, there are dental therapists practicing in 11 villages. They are trained through intensive, two-year programs with clinical experiences that resemble the last two years of dental school, and provide basic restorative and preventive services in satellite clinics in far-flung communities under the supervision of dentists at a hub clinic. Students are recruited from the communities where they will work. "I see the therapists as bridging the gap for us," said Mary Williard, a dentist who directs Alaska's DHAT training

program. "We're providing the care that is now a valued service in these communities."[163] (See sidebar on page 35.)

In 2009, Minnesota became the first state in the country to authorize a new primary care dental provider. (As noted above, Alaska's program was instituted under tribal authority, not state law.) Dental therapists will be trained in a four-year bachelor's program and advanced dental therapists in a two-year master's program. While dental therapists will require the on-site supervision of dentists, advanced dental therapists will not have this requirement, but will maintain "collaborative practice" relationships with dentists to whom they can refer complex cases.[164]

"The bill was about children, and about access to care," said State Senator Ann Lynch (D), one of the sponsors of the legislation. "What we are doing here in Minnesota is happening in over 50 other countries. So while we're very excited to be leading the way in this country, to be fair, this is a way of practice that has been happening for a long time in other parts of the world."[165]

In November 2009, the Connecticut State Dental Association voted to launch a pilot project to test a DHAT model, under which providers with two years of training would be able to work without on-site dental supervision in public health and institutional settings.[166]

Information: Collecting data, gauging progress and improving performance

To do their jobs effectively, state oral health programs must have adequate capacity. Without it, a state will not be able to determine how bad the problem is—let alone how to best target resources.

Planning, data collection and expertise are critical elements of a healthy state oral health program.

SUPPORT FOR DENTAL WORKFORCE INNOVATION

Pew and its partners are supporting states and tribes interested in exploring new types of primary care dental providers.

The Dental Health Aide Therapist (DHAT) training program in Alaska is supported by a consortium of private funders, including the W.K. Kellogg Foundation, the Rasmuson Foundation, the Bethel Community Services Foundation and Murdock Charitable Trusts.

The Pew Children's Dental Campaign provided nonpartisan testimony to the Minnesota state legislature as it was considering its dental therapy bill and supported a coalition that was advocating for the proposal.[167] The W.K. Kellogg Foundation provided significant funding for that coalition, and the former director of the Kellogg-supported DHAT training program, Dr. Ron Nagel, also provided testimony to the state legislature.

Responding to the growing interest in new dental workforce models, the Pew Children's Dental Campaign, in partnership with the National Academy for State Health Policy and with funding from the W.K. Kellogg Foundation, has laid out a framework for states interested in exploring the issue. That publication, called *Help Wanted: A Policy Maker's Guide to New Dental Providers*, guides states through assessing their current workforce, projecting their needs and thinking through how new types of providers might help meet those needs.[168]

They also are necessary for states to appropriately allocate existing health agency resources and compete effectively for grant and foundation funding—all the more essential at a time when state budgets are increasingly strained. Further, state oral health programs play an important role in coordinating and leveraging the work of many different public and private entities involved in oral health, often bringing together disparate interests.

"Frequently the state oral health program is really seen as being impartial," said Christine Wood, director of the Association of State and Territorial Dental Directors. "The dental association has its own

DENTAL THERAPISTS SERVING THEIR COMMUNITIES

Alison Kaganak, 25, is a Yupik Eskimo from a remote part of Alaska that is visited by a dentist only once a year. When she was growing up, Kaganak remembers everyone in the village waiting in anticipation—and sometimes pain—for the dentists' visits. "My teeth used to be hurting, and I used to tell my dad, and my dad would say, 'Just wait, the dentist will come,'" Kaganak said.[169]

Eventually, however, her father did have to take Kaganak on a 140-mile trip to Bethel, Alaska—a medical hub that has an oral surgeon and a strong public health infrastructure—to have a full-mouth rehabilitation. Weather conditions are not very favorable for three fourths of the year, and a flight costs several hundred dollars. "All of our villages are remote villages; there are no roads to any of them," said Susan Hoeldt, a public health nurse who works in a medical clinic in the area. "Some people wait for winter because it's cheaper by snowmobile than flying."[170]

The collision of modern dietary habits and the traditional dental care practices practiced by Alaska Natives has led to a high need for restorative care. Alaskan Native children ages 2 to 5 have five times the amount of tooth decay than other children in the United States.[171]

Water—let alone fluoridated water—is a precious commodity, and junk food is cheap and plentiful. "Our stores may not have a lot of things, but they're always good at having soda," Hoeldt said. "A lot of folks put soda and Tang in a bottle and feed it to their children." Many rub a special type of tobacco on their children's gums to manage the pain, she said.[172]

Kaganak did her best to keep the teeth of her two children—Skyler, now 9, and Javen, now 6—in good condition because of the pain she had experienced as a child. Ultimately, however, both children had to make the trip to Bethel for major restorative surgery, requiring general anesthesia.

Now, Kaganak is training to be a dental health aide therapist so that she can help educate others in her community about proper oral hygiene and make it easier for them to access dental care. This means spending almost two years more than 500 miles away from her kids, in Anchorage, and leaving them with their grandfather. This time, though, she is making sure that Javen and Skyler take care of their teeth, which have been cavity-free since their surgeries. "I ask them every day on the phone if they brush," she said.[173]

particular agenda, as does the dental school. If you have a community health center, its primary focus is providing access to care. The state oral health program's missions are more global."[174]

The CDC has articulated minimum staffing requirements for state oral health programs and provides capacity-building grants to help states meet them, though its current funding stretches to only 16 states. States must have a full-time dental director to provide leadership, along with the capacity to conduct statewide epidemiological surveys and run sealant and fluoridation programs, among several other key functions. Twenty-one states have met or have authority to hire staff for at least six of the seven functions, but 23 meet three or fewer of the standards.

CDC Requirements

Staff	Number of states with position
1. Dental director (full-time)	45
2. Program coordinator (half-time)	32
3. Sealant coordinator (half-time)	27
4. Fluoridation specialist (half-time)	28
5. Epidemiology specialist (half-time)	22
6. Health educator (quarter-time)	35
7. Program evaluator (quarter-time)	20

While most states reported having a dental director position, fewer than half have staff resources for epidemiology and program evaluation, which are critical to performing statewide surveys. And just over half have staff dedicated to overseeing school sealant and fluoridation programs.

Harry Goodman, Maryland's dental director, has experienced firsthand the impact that increased capacity can have on an oral health program. For years, the Maryland dental health program had only one staff member—Goodman. "Maryland was at one time ranked near the bottom of states back in the early to mid 1990s since it did not have a state dental program and state dental officer who could be invited to the table and ask, 'What about dental?'" Goodman said. "I think, at least in Maryland, you can see a connection between the growth of the Office of Oral Health and having a state dental director and the growth of understanding and awareness of oral health in the state."[175]

Following Deamonte Driver's death, a Dental Action Committee was formed to examine problems in access to care for disadvantaged children and formulate a plan. Maryland successfully applied for CDC funding to bolster its capacity, and was among 16 states in 2009 to receive support.[176] Now, Maryland has met all seven CDC standards and has made significant progress toward improving access to preventive and restorative care for low-income children, according to Goodman.[177] Since 2007, about 100 additional dentists have begun billing $10,000 or more to Medicaid annually—a generally accepted benchmark for "significant" participation.[178]

Chapter 3: Grading the States

Pew graded states and the District of Columbia on whether and how well they are employing eight proven and promising policy approaches to ensure dental health and access to care for disadvantaged children. These policies fall into four groups, consistent with the previous chapter on "Solutions":

- Cost-effective ways to help prevent problems from occurring in the first place: sealants and fluoridation:
  1. Providing Sealant Programs in High-Risk Schools
  2. Adopting New Rules for Hygienists in School Sealant Programs
  3. Fluoridating Community Water Supplies
- Medicaid improvements that enable and motivate more dentists to treat low-income kids:
  4. Providing Care to Medicaid-enrolled Children
  5. Improving Medicaid Reimbursement Rates for Dentists
- Innovative workforce models that expand the number of qualified dental providers:
  6. Reimbursing Medical Providers for Basic Preventive Care
  7. Authorizing New Primary Care Dental Providers
- Information: collecting data, gauging progress and improving performance:
  8. Tracking Basic Data on Children's Dental Health

We set benchmarks for each of the eight key policy approaches based on levels of performance that states have shown they can achieve. In some cases, like fluoridation, the benchmark is a nationally set goal; in others, like Medicaid utilization, the grade reflects whether the state has bested the national average. A point was given for each benchmark a state meets. Just because a state met or exceeded a national average does not mean it has succeeded or solved the problem. (See Methodology for a detailed description.)

We graded states' performance on an A to F scale:

Benchmarks met	Grade
6-8	A
5	B
4	C
3	D
0-2	F

Pew's analysis shows that about two-thirds of states are doing a poor job ensuring proper dental health and access to care for children most in need. (See Exhibit 4.)

Only six states merited A grades: Connecticut, Iowa, Maryland, New Mexico, Rhode Island and South Carolina. These states met at least six of the eight policy benchmarks—that is, they had particular policies that met or exceeded the national performance thresholds. South Carolina was the nation's top performer, meeting seven of the eight benchmarks. Although these states are doing well on these benchmarks, every state has a great deal of room to improve. No state met all eight targets.

Note: This report discusses data on the overall status of children's dental health in each of the states—in particular, the rate of untreated decay among third graders. However, because of limitations with this data, Pew's grades do not reflect this measure and instead focus solely on states' policy responses to the problem. Thirteen states and the District of Columbia do not submit comparable data to the National Oral Health Surveillance System on their levels of untreated tooth decay among children. Among the 37 that do submit data, the information is not available for a comparable time period; some states have submitted data as recently as 2008, while others have not updated their information within the last five years. As a result, we focused our assessment on policy responses for which comparable data were available for all 51 jurisdictions.

We awarded 33 states and the District of Columbia a grade of C or below because they met half or fewer of the benchmarks—that is, either they did not have particular policies in place, or their policies did not meet their national benchmarks for performance. Nine of those states earned an F, with only one or two policies meeting the benchmarks: Arkansas, Delaware, Florida, New Jersey, Hawaii, Louisiana, Pennsylvania, West Virginia and Wyoming.

In fact, some of the high-scoring states perform only adequately on many policies, and lower-scoring states may be leaders on one or two individual approaches. New Jersey, for example, has among the best performance in terms of Medicaid payment rates, but fails to meet any of the other benchmarks.

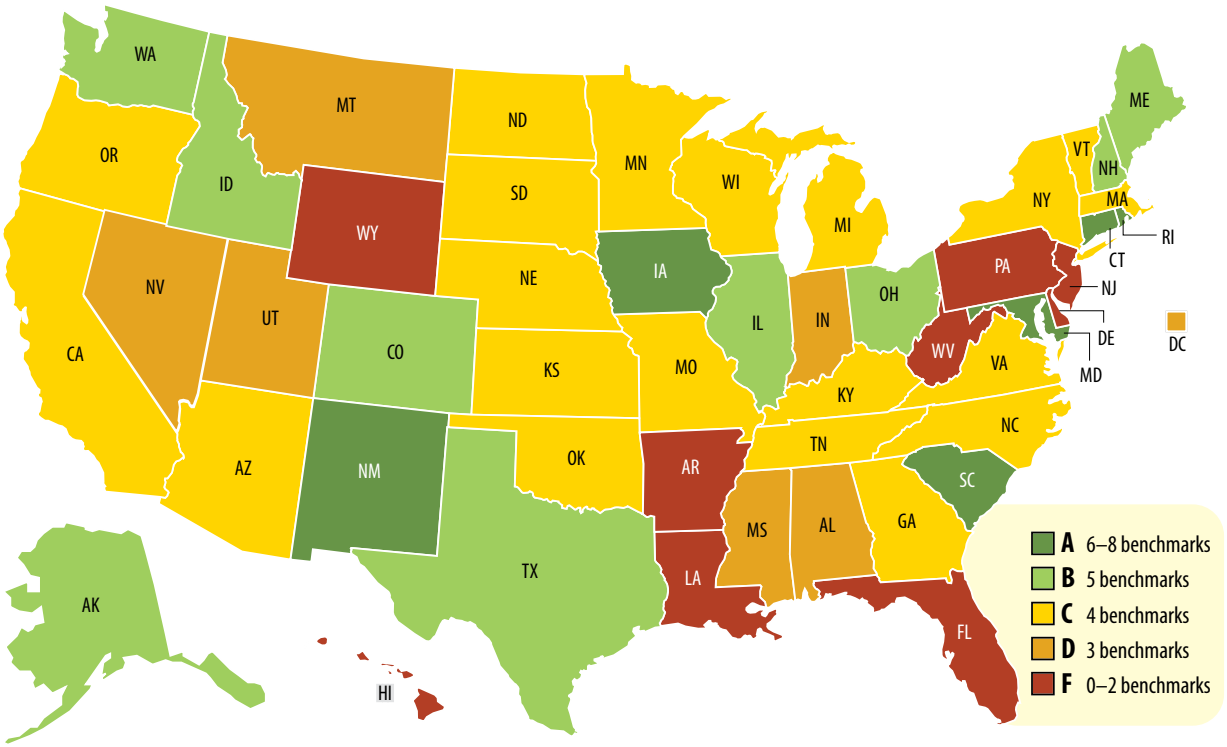
Some states have made progress on a particular policy approach but not quite met it. For example, 16 states provided fluoridated water to more than 50 percent, but less than 75 percent—the national benchmark—of their residents in 2006, the latest year for which data is available.

Leading states are not determined by size or geography. These eight effective policies can be implemented in states as different as Rhode Island and New Mexico, Connecticut and South Carolina. There are examples in every region of the country of states leading the way and of those falling behind.

See Pew's individual fact sheets for a detailed description of each state's grade. The fact sheets are available at www.pewcenteronthestates.org/costofdelay. (Also see Appendix Table 4.)

Exhibit 4 **GRADING THE STATES**

Pew assessed and graded states and the District of Columbia on whether and how well they are employing eight proven and promising policy approaches at their disposal to ensure dental health and access to care for disadvantaged children.



SOURCE: Pew Center on the States, 2010.

Key performance indicators

Cost-effective ways to help prevent problems from occurring in the first place: sealants and fluoridation

1. Providing Sealant Programs in High-Risk Schools

Benchmark: State has sealant programs in place in at least 25 percent of high-risk schools.

Thirty three states and the District of Columbia fail to bring school-based sealant programs to even one-quarter of their high-risk schools. While minimal, this benchmark was identified because it was a level of performance that indicates significant progress toward reaching high-risk schools. Almost a dozen states could report no sealant programs in their high-risk schools. Only three—Alaska, Maine and New Hampshire—reach more than 75 percent of their target schools.

Percentage of high-risk schools with sealant programs, 2009	Number of states
75 - 100%	3
50 - 74%	7
25 - 49%	7
1 - 24%	23
None	11

2. Adopting New Rules for Hygienists in School Sealant Programs

Benchmark: State does not require a dentist's exam before a hygienist treats a child in a school sealant program.

None of the states with the highest overall prevalence of sealants requires the direct supervision of a dentist while a hygienist applies sealants to children's teeth in schools. Seven states—Alabama, Georgia, Indiana, Mississippi, New Jersey, West Virginia and Wyoming—still have this requirement. An additional 14 states do not require a dentist's presence, but still require the unnecessary step of a dentist examining the child.

State allows hygienists to provide sealants without a prior dentist's exam, 2009	Number of states
Yes	30
No	21

3. Fluoridating Community Water Supplies

Benchmark: State provides optimally fluoridated water to at least 75 percent of citizens on community systems.[179]

The nation has made good progress toward the national goal, set by Healthy People 2010, of providing fluoridated water to 75 percent of people on community systems. Half of the states and the District of Columbia had reached the national goal, but some states still lagged far behind as of 2006, the latest year for which data were available. Poor performance was concentrated in the West: California, Idaho, Montana, Oregon and Wyoming provided optimal fluoride to fewer than half of their residents on community water supplies, as did Louisiana and New Hampshire. New Jersey and Hawaii failed to reach 25 percent of their populations. A forthcoming update from the CDC, based on 2008 data, is expected to reflect progress in the last few years in California, and it could show that states like Delaware and Oklahoma that were close to the national goal in 2006 now have met it.

Percentage of population on community water supplies receiving optimally fluoridated water, 2006	Number of states
75% or greater	26
50 - 74%	16
25 - 49%	7
Less than 25%	2

Medicaid improvements that enable and motivate more dentists to treat low-income kids

4. Providing Care to Medicaid-enrolled Children

Benchmark: State meets or exceeds the national average (38.1 percent) of children ages 1 to 18 on Medicaid receiving dental services.

The national average of 38.1 percent of Medicaid-enrolled children receiving a dental service in 2007 is a very low benchmark, but even so, 21 states and the District of Columbia failed to meet it, and some fell abysmally short. Nine states report fewer than three in 10 children ages 1 to 18 receiving any dental care in 2007, and three—Delaware, Florida and Kentucky—show fewer than one in four children receiving care.

Even in the three states with the highest scores—Alabama, Texas and Vermont—children on Medicaid still lagged behind the estimated 58 percent of privately insured children who use services each year.

Percentage of Medicaid children receiving any dental service, 2007	Number of states
59% or greater	0
50 - 58%	3
38.1 - 49.9%	26
30 - 38.0%	13
Less than 30%	9

5. Improving Medicaid Reimbursement Rates for Dentists

Benchmark: State pays dentists who serve Medicaid-enrolled children at least the national average (60.5 percent) of Medicaid rates as a percentage of dentists' median retail fees.

Nationally, Medicaid payment rates for five common procedures are just over 60 percent of dentists' median retail charges. (This coincides with a widely quoted figure for dentists' overhead costs.) Twenty-four states and the District of Columbia met or exceeded the national average, while 26 states did not. In 14 states, providers are paid less than 50 cents on the dollar for this basket of common, primary dental care procedures.

Medicaid reimbursement rates as a percentage of dentists' median retail fees, 2008	Number of states
100% or greater	1
90 - 99%	2
80 - 89%	3
70 - 79%	10
60.5 - 69%	9
50 - 60.4%	12
40 - 49%	10
Less than 40%	4

Innovative workforce models that expand the number of qualified dental providers

6. Reimbursing Medical Providers for Basic Preventive Care

Benchmark: State Medicaid program reimburses medical care providers for preventive dental health services.

Doctors, nurses, nurse practitioners and physician assistants are increasingly being recognized for their ability to see children in high need at an earlier age and more frequently than dentists. Currently, 35 states take advantage of this opportunity by making Medicaid payments available to medical providers for services to help prevent tooth decay.

Medicaid pays medical staff for early preventive dental health care, 2009	Number of states
Yes	35
No	16

7. Authorizing New Primary Care Dental Providers

Benchmark: State has authorized a new primary care dental provider.

Minnesota is the only state currently meeting this benchmark (the DHAT program operating on Alaska Native tribal lands does not qualify because it is overseen by a tribal entity, not the state). A growing number of states are exploring new models.

State has authorized a new primary care dental provider, 2009	Number of states
Yes	1
No	50

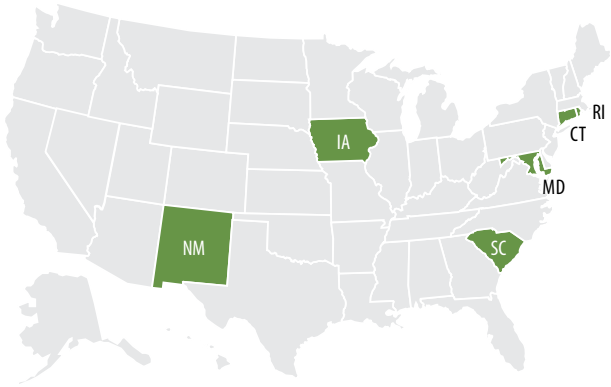
Information: Collecting data, gauging progress and improving performance

8. Tracking Basic Data on Children's Dental Health

Benchmark: State submits basic screening data to the National Oral Health Surveillance System.

Tracking the number of children with untreated tooth decay and the number with sealants is critical to states' ability to craft policy solutions and measure their progress. Thirteen states and the District of Columbia, however, have never submitted this data to the National Oral Health Surveillance System. While some states, such as Texas and North Carolina, collect data using their own, independent methods, the lack of nationally comparable data leave the states without a vital tool to learn from and chart their paths forward.

State submits basic screening data to the national database, 2009	Number of states
Yes	37
No	14



The leaders

Six states—Connecticut, Iowa, Maryland, New Mexico, Rhode Island and South Carolina—earned A grades in Pew's assessment. Although these states' populations, challenges and policies differ, they are working to expand the solutions at their disposal, including improvements to Medicaid, on which low-income children depend. But they also increasingly are looking beyond the traditional delivery system to provide children with greater access to dental care.

These states have realized important gains. But an A grade should not be interpreted to mean that a state can ease its efforts. Even states with this basic policy framework have many improvements to make: Connecticut's low rate of high-risk schools with sealant programs or Maryland's lower-than-average utilization of dental services among Medicaid-enrolled children are just two examples. And notably, none of the six top states allow new types of professionals to provide primary dental care, a policy change that could substantially expand disadvantaged children's access to care.

South Carolina (meets 7 of 8 benchmarks)

South Carolina received the highest score in Pew's assessment, beating almost every national benchmark for the policies we examined. Nearly 95 percent of South Carolinians on community systems receive fluoridated water and half of the

state's high-risk schools have sealant programs. And the state's Medicaid reimbursement rate is 62.8 percent—higher than the national average—thanks to a program started a decade ago to improve its Medicaid processes and dentist participation. The improved rates paid off: Between 1999 and 2006, the number of licensed dentists enrolled in Medicaid nearly doubled, making it easier for Medicaid patients to find care.[180] South Carolina falls short on just one benchmark: authorizing the use of new primary dental care professionals.

Connecticut (meets 6 of 8 benchmarks)

Connecticut ranks fourth nationwide on its Medicaid reimbursement rate to dentists, and improvements in those rates have helped expand children's access to necessary services. Children's access to care has been made easier by the state's willingness to allow dental hygienists to provide services in schools. A team of 10 hygienists, three dentists, four dental assistants and two dental clerks completed 47,000 dental procedures in Hartford, Connecticut—an inner-city school district of 25,000 students—in 2008 alone.[181]

Connecticut fails to meet just two targets: Despite the success of the Hartford initiative, less than 25 percent of the state's high-risk schools have sealant programs in place, and the state has not yet authorized a new primary care dental professional.

Iowa (meets 6 of 8 benchmarks)

Iowa surpasses the national benchmark on six of eight policies. More than 90 percent of its population on community systems receives fluoridated water, and more than 50 percent of its high-risk schools have sealant programs in place. Iowa's Medicaid program outperforms the nation in utilization: In 2007, 46.9 percent of Medicaid-enrolled children received care.

The state's innovative I-Smile program requires that every child under 12 must have a "dental home"—a primary site where the child is connected to dental care—by the end of 2010. A joint effort of the state's Department of Public Health, Department of Human Services, the University of Iowa College of Dentistry and the Iowa Dental Association, I-Smile aims to reach unserved children and their families while improving the state's dental Medicaid program, recruiting new dentists and improving rural dental services. A network of 24 dental hygienists act as regional I-Smile coordinators and serve as the points of contact for public health agencies, families, health care providers, school districts and dental offices.[182] The program had an immediate impact: It led to a 16 percent increase in Medicaid-enrolled children receiving dental services in 2008, its first year.[183]

Despite the recession's strain on its budget, Iowa has continued to invest in children's dental health. It is taking advantage of the newly instituted option under the federal CHIP law that allows states to extend dental benefits to children in families with medical, but not dental, coverage. The state estimated that by adopting the so-called CHIP wrap, it will provide dental care to 11,000 children currently without dental insurance during fiscal year 2010; the state plans to increase funding for the program from $500,000 in 2010 to $1.45 million in 2011, which will cover nearly 25,000 kids.[184]

Maryland (meets 6 of 8 benchmarks)

Maryland has made tangible improvements to its children's dental care program since the 2007 death of Deamonte Driver, including an infusion of $14 million in state and federal Medicaid funding that facilitated increases in the state's reimbursement rates for dentists. Improvements authorized in 2008 also provided for enhanced pediatric training for physicians and general dentists, and allowed hygienists to provide such services as cleanings,

sealants and fluoride treatments in clinics, schools and Head Start programs without the on-site supervision of a dentist.[185] The state also meets all of the CDC's minimum staffing standards; state dental director Harry Goodman says that a dental director backed by a strong oral health program "has the tools both in dentistry and public health to establish a vision for the state and bring to the state the best in evidence-based information and experience."[186]

Maryland misses just two benchmarks: Its Medicaid utilization rate of 36.1 percent of children receiving dental services in 2007 falls below the national average, and it has not authorized new providers of primary dental care.

New Mexico (meets 6 of 8 benchmarks)

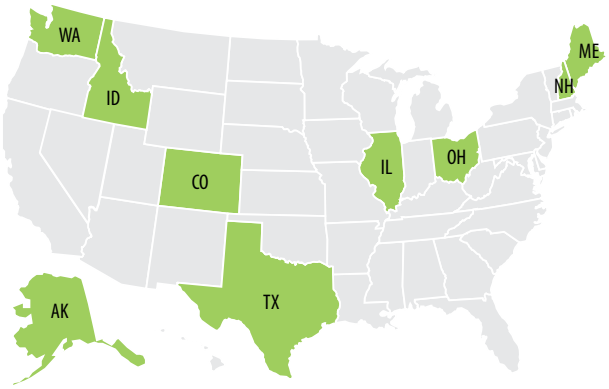
New Mexico's dental challenges exist amid the state's broader health care crisis. One in five New Mexico residents is uninsured, and the state's vast rural areas can complicate finding any health care providers. Nearly every one of the state's 33 counties includes at least one type of federally designated Health Professional Shortage Area (HPSA); to date, the state counts inside its borders 39 primary care HPSAs, 35 dental HPSAs and 29 mental health HPSAs. Dental care can be especially difficult to find. New Mexico ranks 49th among states in its numbers of dentists per capita, and in part because it lacks a dental school, it does not have a robust pipeline for recruiting new dentists.[187]

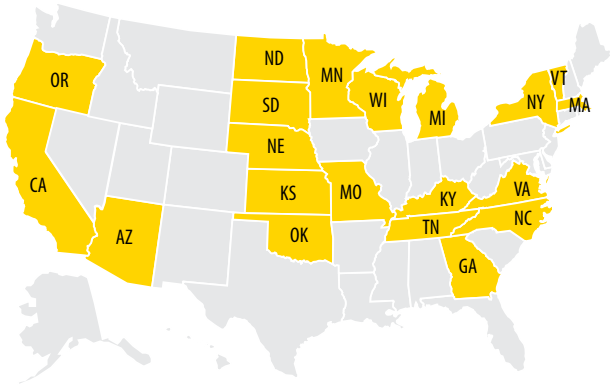
Despite these challenges, New Mexico beats the national benchmark in six of eight areas. In 2007, 47.6 percent of Medicaid-enrolled children received some dental care, in comparison to the national average of 38.1 percent. New Mexico is the only state in the West that has met the goal for water fluoridation, with 77 percent of its residents on community systems receiving fluoridated water. And state leaders have adopted other policies to improve access to dental care. For nearly 15 years, New Mexico has used the incentive of an enhanced Medicaid reimbursement to encourage dentists to provide dental services to people with developmental disabilities. Between 1995, the inception of the Special Needs Code program, and 2006, 40 dentists completed the training and registered more than 37,000 patient visits.[188]

More recently, Governor Bill Richardson (D) and U.S. Senator Jeff Bingaman (D) joined forces to push for the creation of a dental school in New Mexico. In May 2009, the two announced the start of a feasibility study, funded jointly by the state and the federal government, which will determine where a dental school should be located in the state. "Having a school of dentistry would increase the number of dentists and … hygienists in New Mexico—in urban and rural areas. This feasibility study puts New Mexico one step closer to getting a school of dentistry—and closing the crucial gap of oral health needs in our state," Richardson said.[189] Development of a new primary care dental provider might also help ameliorate the state's severe workforce shortages.

Rhode Island (meets 6 of 8 benchmarks)

In Rhode Island, more than 80 percent of the residents on community water systems have fluoridated water, hygienists are able to provide sealants without a prior dentist's exam, and half of the state's high-risk schools have sealant programs. And although Rhode Island's overall Medicaid reimbursement rate to dentists is lower than the national average, the state has taken steps to pay enhanced rates to dentists who provide services to disadvantaged children through its RIte Smiles program. The initiative, which targets children born after May 1, 2000, led participation in Medicaid to grow from 27 dentists to 217—of about 500 statewide—in the first year alone.[190]





States making progress

B States (meet 5 of 8 benchmarks)

The nine states receiving a grade of B in Pew's assessment miss the highest mark because they have adopted only five of the eight key policies at or exceeding the national benchmark. Five of the nine states fall short of the mark on fluoridation. But three of those states—Alaska, Colorado and Washington—are closing in on it, providing optimally fluoridated water to more than 50 percent of their citizens.

- Alaska
- Colorado
- Idaho
- Illinois
- Maine
- New Hampshire
- Ohio
- Texas
- Washington

For a detailed profile of every state, see Pew's individual fact sheets at www.pewcenteronthestates.org/costofdelay

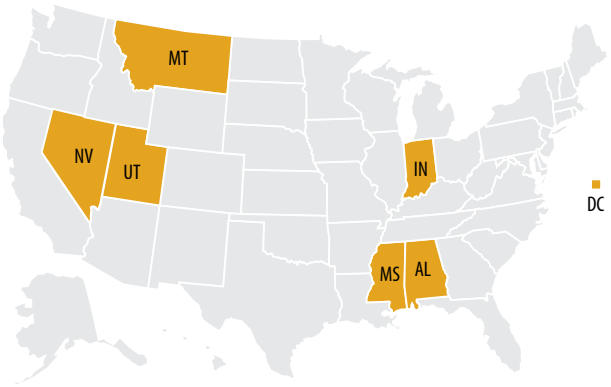
States falling short

Unfortunately, there are far more states falling well short of providing America's disadvantaged children with the dental health and access to care they need.

C States (meet 4 of 8 benchmarks)

The 20 states that have received a grade of C represent the murky middle, with each state hitting the mark on some targets and missing others. The one clear commonality is that these states are not making full use of school sealant programs. Only four of these states—California, Georgia, Oregon and Tennessee—meet the benchmark of having programs in more than 25 percent of their high-risk schools.

- Arizona
- California
- Georgia
- Kansas
- Kentucky
- Massachusetts
- Michigan
- Minnesota
- Missouri
- Nebraska
- New York
- North Carolina
- North Dakota
- Oklahoma
- Oregon
- South Dakota
- Tennessee
- Vermont
- Virginia
- Wisconsin



D States (meet 3 of 8 benchmarks)

The seven states receiving a D grade in Pew's assessment meet only three of our policy benchmarks. None has a school sealant program in place that serves at least a quarter of high-need schools, and only Alabama, Mississippi and Indiana meet the national average of 38.1 percent for Medicaid utilization. Some of these states are leaders in isolated areas—Alabama with its innovative Medicaid program, the District of Columbia with 100 percent fluoridation of its community water supply—but none have implemented all of the proven and promising approaches available.

Alabama

Alabama fails to meet the national standard in five policy categories. For example, the state has no organized school sealant program, is only one of seven states to require that dentists directly supervise dental hygienists in sealant programs, and does not submit data to the National Oral Health Surveillance System. One bright spot: Its innovative Medicaid program called Smile Alabama! has outperformed the nation in providing access to care for low-income children; in 2007, Alabama was third behind only Vermont and Texas in its percentage of Medicaid-enrolled kids receiving dental care (51.9 percent). In the early 2000s, Alabama's Medicaid program obtained a grant to revamp its own internal processes and raised rates to levels close to dentists' retail fees. While Alabama has not been able to deliver subsequent rate increases to keep pace with inflation, the state has sustained the existing payment rates despite the budget crisis of the last two years.[191] And nearly 83 percent of Alabama's population on community water systems has access to optimally fluoridated water.

The District of Columbia

The District of Columbia's low percentage of Medicaid-enrolled children who received dental services in 2007—35.5 percent—actually represents a significant increase from a low of 20 percent just four years earlier.[192] The improvement can be traced to the District's increase in Medicaid reimbursement rates for dentists in 2006. D.C. has not made progress on all fronts, however. Its sealant programs reach less than one-quarter of high-risk schools, and it neglects to submit nationally comparable data to the National Oral Health Surveillance System. The District can boast, though, that it is the only jurisdiction in Pew's analysis to provide optimally fluoridated water to all of its citizens on community systems.

Indiana

Indiana is currently the only Midwestern state to not reimburse primary care physicians for providing preventive dental health care, and it is one of seven states that have the most restrictive supervision laws for dental hygienists placing sealants in schools and other public health settings. The state does not report data to the National Oral Health Surveillance System on untreated tooth decay and sealant prevalence among children, making it difficult to identify the scope and size of its problems—which are further complicated by the state's low percentage of high-risk schools with sealant programs. On the positive side, more than 95 percent of Indiana residents on community systems

are receiving fluoridated water, and 43 percent of Medicaid-enrolled children received dental services in 2007—just above the national average.

Mississippi

While Mississippi has worked hard to bring fluoridation to just over half of its residents, it still falls well short of the national goal. Likewise, it fails to meet the benchmark for sealants, with programs in less than a quarter of high-risk schools, and a low overall rate of sealant prevalence—less than 25 percent. In a letter releasing the state's oral health plan in 2006, Governor Haley Barbour (R) said, "3 in 4 children have experienced dental disease by age 8, 1 in 3 children have untreated dental decay, and 1 in 10 have urgent need for dental care due to pain and infection. This should not be tolerated as Mississippi's future relies on the quality of the early childhood experiences that we provide to our children today."[193]

Montana

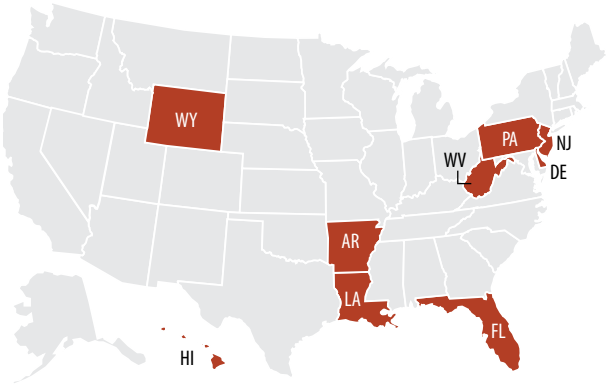
Montana is one of just nine states that does not provide fluoridated water to half its population on community water systems—more than 68 percent go without. The state also falls under the national averages for prevalence of school-based sealant programs and the rate at which it reimburses its dentists for services to Medicaid-enrolled children. Recently, the state oral health program introduced a dental education agenda aimed at infant and child caregivers, but the program is so new that the results are as yet unknown. Montana submits nationally comparable data to the National Oral Health Surveillance System, and reimburses medical providers for providing preventive dental health services.

Nevada

Nevada ranks among the bottom five states in the percentage of Medicaid-enrolled children who received dental care—in 2007, just 27.5 percent did. Seventy-two percent of the state's population on community water systems has access to optimally fluoridated water, just short of the national goal of 75 percent. Nevada has made some progress on sealants: 41 percent of Nevada's third graders have received sealants, due in part to capacity the state has developed through a CDC grant that it has received since 2001. With these funds, the state increased school sealant programs and preventive dental care services for preschoolers. The volunteer Seal Nevada program uses portable equipment to place sealants on second graders at schools that have 50 percent or more children on free or reduced-cost lunch.[194] These efforts are not yet widespread, however: Fewer than a quarter of all high-risk schools in the state have sealant programs. The state does submit nationally comparable data to the National Oral Health Surveillance System.

Utah

Utah falls short of the national benchmarks for two proven preventive strategies: fluoridation and sealants. Just more than one in two Utahns have access to a fluoridated community water supply, and fewer than a quarter of the state's high-risk schools have sealant programs—a challenge made more difficult by the state's restrictions that prohibit hygienists from applying sealants without a dentist's prior exam. The state has recently sliced its Medicaid reimbursement rates for dentists—a budget-balancing maneuver in the fiscal crisis that may prove less cost effective in the long run. However, 39.5 percent of the state's Medicaid-enrolled children received dental care in 2007, surpassing the national average of 38.1 percent.



F States (meet 1 or 2 benchmarks)

Nine states received an F, the lowest grade in Pew's assessment. These states span the nation from coast to coast and across a range of demographics: Arkansas, Delaware, Florida, Hawaii, Louisiana, New Jersey, Pennsylvania, West Virginia and Wyoming.

Almost across the board, these states are missing the opportunity to improve children's dental health with relatively inexpensive and cost-effective strategies. Just one state with a failing grade—Louisiana—meets the national benchmark for school sealant programs, and just two—Florida and West Virginia—exceed the threshold for community water fluoridation. And six states receiving an F—Florida, Hawaii, Louisiana, New Jersey, West Virginia and Wyoming—do not track critical data in a way that would enable them to compare their performance and progress to other states.

Looking regionally, only the Midwest is not home to a state receiving an F. The South has the dubious distinction of having the most Fs, with five of the 17 states in its census region receiving failing grades. Some of these states fall especially far from the mark in terms of their Medicaid-enrolled children receiving dental care: In Arkansas, Delaware and Florida, fewer than three in 10 children received dental care in 2007. All five Southern states require a dentist's examination before a hygienist can place sealants in a school program, and West Virginia imposes the most restrictive rules requiring a dentist to be physically present when sealants are placed. It would cost nothing for these states to amend the practice act to reflect current clinical science and the cost-effective strategies employed by other states.

Arkansas (meets 2 of 8 benchmarks)

Arkansas is one of five states receiving a failing grade in the South. The state meets the national benchmarks only on Medicaid reimbursement rates and its tracking of dental data; in other areas it falls far short of the goal. This is particularly true of its rate of Medicaid-enrolled children receiving dental care: Fewer than 30 percent did in 2007. Arkansas' sealant programs need improvement, too—less than a quarter of the state's high-risk schools have them, and the state continues to prohibit dental hygienists from applying sealants without a dentist's prior exam. There is some positive movement in the state, however. Its fluoridation rate—64.4 percent—is approaching the Healthy People 2010 goal of 75 percent, and several mobile dental units, sponsored by Children's Hospital, Ronald McDonald House Charities of Arkansas and Delta Dental of Arkansas, began serving schools in the state in 2009.[195]

Delaware (meets 2 of 8 benchmarks)

Delaware exemplifies the fragile nature of children's dental programs across the country. The state suspended its school sealant program in 2008 after losing its program coordinator, but intends to restart the initiative in 2010.[196] Delaware's rate of Medicaid-enrolled children who received care in 2007 was the lowest nationwide, at 23.7 percent. Kids' access to sealants is further restricted by the state's requirement that hygienists cannot place sealants without a dentist's prior exam. In addition, physicians in Delaware are not reimbursed for providing preventive care. On a more positive note, the state is among the nation's leaders in Medicaid payment rates to dentists, reimbursing dentists at

80 percent of the amount they bill. And nearly 74 percent of Delaware's population had access to community water supplies with optimal fluoride as of 2006—just missing the national goal.

Florida (meets 2 of 8 benchmarks)

Florida exceeds the national benchmarks only on its percentage of residents receiving fluoridated water supplies and its reimbursement of physician-provided preventive dental health services. The state falls especially short in its rate of Medicaid-enrolled children who received dental services in 2007; that year only 24 percent of children did, making Florida one of just three states (joined by Delaware and Kentucky) where less than a quarter of children accessed dental services.

The state's restrictions on dental hygienists further complicate disadvantaged children's ability to access care. Although the Florida Board of Dentistry has recently lifted the requirement that dentists directly supervise hygienists applying sealants, children must still see a dentist prior to seeing the hygienist. An elimination of that requirement had been proposed, but not enacted, at the time this report went to press.

Hawaii (meets 2 of 8 benchmarks)

Hawaii exceeds the national benchmarks only in its percentage of Medicaid-enrolled children who received dental care in 2007 and its policy allowing hygienists to apply sealants without a prior dentist's exam. Far less favorable is the state's fluoridation rate: At 8.4 percent, it is the lowest nationwide. Only those residents living on military bases receive fluoridated water.[197]

Like Alaskans who reside in the United States' only other non-contiguous state, Hawaiians face geographic challenges in accessing nearby dental care. But Hawaii stands in contrast to Alaska in its lack of use of sealants as a way to address that challenge. While Alaska is one of three states with sealant programs in more than 75 percent of its high-need schools, Hawaii lacks a sealant program altogether.

The budget crisis is compounding Hawaii's difficulty in providing preventive dental care: State employee layoffs in November 2009 dismantled the state's Dental Health Division's Dental Hygiene Branch—the group responsible for advancing preventive strategies statewide. "The big concern is the impact all of this is having on our public health system," said Dr. Mark Greer, chief of the Hawaii Health Department's Dental Health Division. "The ability of the private and public sectors to respond to community needs is really being crippled."[198]

Louisiana (meets 2 of 8 benchmarks)

Louisiana earns a failing grade in Pew's assessment. Fewer than one in three Medicaid-enrolled children statewide received dental care in 2007. Although a quarter of high-risk schools have sealant programs, the state continues to require a dentist's exam before a hygienist can apply sealants. Additionally, Louisiana does not submit data to the National Oral Health Surveillance System. The state has made some progress toward implementing more preventive strategies by passing a recent mandate for communities to fluoridate their water—a much-needed step, as the water of 60 percent of the state's residents is not fluoridated. But the state's budget crisis has hampered the effort: The state lacks the necessary funds to pay for the improvements it promised community systems under the legislation.[199]

Pennsylvania (meets 2 of 8 benchmarks)

Although Pennsylvania has demonstrated progress in several key areas, it meets only two of eight national benchmarks in Pew's assessment. Its school-based sealant programs reach less than a quarter of high-need schools, and just under a

third of Medicaid-enrolled children in the state received dental services in 2007. Because of its low utilization rate, the state was one of 13 identified for investigation in 2008 by the federal Centers for Medicare and Medicaid Services, which found that the state needs to do more to ensure adequate access to providers.[200] The state recently created a Medicaid pay-for-performance program to award bonuses to dentists providing continuous care to children (and other vulnerable populations such as pregnant women), but it does not reimburse primary care physicians for providing preventive oral health services.[201]

The Keystone State provides fluoridated water to just over half of its population, well short of the goal of 75 percent. Fluoridation would be particularly helpful in the areas of southeastern Pennsylvania that surround Philadelphia. A 2000 report to the state found that, while most of the supplies in Philadelphia and Delaware counties were fluoridated, fluoride only reached a third of the 583,000 Bucks County residents, about half of the 417,000 people in Chester County, and only 3 percent of the 712,000 people in Montgomery County, the state's third-most populous county.[202] A bill introduced in February 2009 would bring fluoridation to all communities with 500 or more buildings connected to a water system, but it has not passed.[203]

West Virginia (meets 2 of 8 benchmarks)

West Virginia, home to no dedicated full-time dental staff, meets just two of eight benchmarks. The absence of such staff—Idaho is the only other state in a similar position—makes it difficult for West Virginia to track and improve the performance of its limited dental programs, and indeed, it does not report data to the National Oral Health Surveillance System. In addition, the lack of a dental director may be costing the state money in these times of budget stress: Without a full-time dental director, it is difficult for the state to coordinate public-private efforts or to apply for federal grants.[204]

This expertise and leadership could be instrumental in improving children's access to care. The state currently lacks a school-based sealant program, the absence of which looms larger when combined with the fact that West Virginia is one of just seven states that continues to require a dentist to be present while a hygienist applies sealants to a child's teeth. The state has excelled at providing another preventive measure, however: More than 90 percent of West Virginia residents on community systems receive fluoridated water.

Wyoming (meets 2 of 8 benchmarks)

Wyoming falls short on all but two benchmarks. Like their neighbors in other Mountain West states, Wyoming residents often travel long distances over difficult terrain to get to their doctors and dentists. But unlike some other neighboring states, including Montana, Wyoming is one of just seven states that require a dentist to supervise as hygienists apply sealants to children's teeth. The state also lacks a school-based sealant program for its high-risk schools. And although Wyoming does reimburse physicians for providing basic, preventive dental health services, most kids are not receiving regular fluoride in their drinking water; the state provides fluoridated water to just 36.4 percent of its population on community water supplies. The state's percentage of Medicaid-enrolled children receiving dental services in 2007 fell just shy of the national average.

New Jersey (meets 1 of 8 benchmarks)

Pew's assessment identified New Jersey as the worst performer of all states. The state exceeds just one national benchmark, Medicaid reimbursement rates for dentists; at 103 percent of the dentists' median retail fees, it is the highest payment rate in

the nation. Still, a 2009 survey by the Association of State and Territorial Dental Directors found that fewer than one in three licensed dentists in New Jersey participates in Medicaid, and just one in nine sees 50 or more Medicaid patients a year.[205]

The state is just one of two in the Northeast to receive a failing grade and stands out in the region for its lack of investment in fluoridated water and school-based sealant programs. It is the least fluoridated state in the Northeast: Fewer than a quarter of its residents have fluoridated water. A bill that would mandate community water fluoridation was introduced in the New Jersey legislature in February 2009; it passed out of committee but the full legislature had not taken action on the proposal by year's end.

Conclusion

In the midst of the array of complex health care issues confounding the nation, ensuring that children have access to dental care should be non-controversial. Proven policy solutions exist. They are relatively inexpensive and can save taxpayers money.

Yet millions of low-income children—one out of five children overall—cannot get access to care. The problems resulting from a "simple cavity" can snowball well into adulthood—wasting taxpayer resources on expensive treatments, sapping children's potential to learn and grow and setting kids up for a lifetime of subsequent challenges.

Although a handful of states are leading the way in breaking down these barriers, every state must do more to put proven policies in place to ensure dental health and access to care for America's children.

Methodology

This report is an attempt to gauge each state's policy responses to the crisis in dental health among America's disadvantaged children. We set out to answer four questions:

- Are states making optimal use of proven preventive strategies?
- Are states meeting their obligation to provide children on Medicaid with access to dental health care?
- Are states taking advantage of promising approaches for expanding the oral health workforce?
- Do states have the capacity to track their progress and provide a strong and effective voice for children's dental health?

We used a variety of public data sources, supplemented with additional information collected through surveys by partnering organizations, to assemble an analysis of eight key policies that states have at their disposal to improve low-income children's dental health and access to care. This is not an exhaustive list. Other approaches, such as public education about dental hygiene for kids, or state loan repayment programs for dentists locating in shortage areas, may also play a role—but they are beyond the scope of this report.

National data from the National Health and Nutrition Examination Survey show that low-income children disproportionately bear the burden of dental disease. This report discusses one measure of the overall status of children's dental health in each of the states—in particular, the rate of untreated decay among third graders. States report this data to the National Oral Health Surveillance System (NOHSS). However, 13 states and the District of Columbia do not submit comparable data to NOHSS, and among the 37 that do submit data, the information is not available for a comparable time period; some states have submitted data as recently as 2008, while others have not updated their information within the last five years. As a result of these data limitations, we focused our assessment on policy responses for which comparable data were available for all 51 jurisdictions.

Setting benchmarks

We identified baselines, or benchmarks, for each of the eight key policy approaches based on levels of performance that states have shown they can achieve.

The benchmarks have different origins. In some cases, as with water fluoridation, the benchmark is a goal established by Healthy People 2010, a set of national objectives monitored by the U.S. Department of Health and Human Services. In others, like authorization of new primary care dental providers, it is whether a state has taken an action or adopted a specific policy. For two of the indicators—Medicaid utilization rates and Medicaid payment rates—we used the national averages. It is important to note that just because a state met or exceeded a national average does not mean it has solved the problem. For instance, we set the benchmark for Medicaid utilization at 38.1 percent—the national average for Medicaid-enrolled children who received dental services in 2007. That is an abysmally low bar, but it is a practical and realistic baseline that allows us to distinguish between states with a policy framework that moves them in the right direction and those falling behind.

The grades

A point was given for each benchmark that a state met. We adopted this approach because of the variety of types of policy indicators involved in the analysis—some require a simple yes or no, others assess percentages on a continuous scale. For indicators such as water fluoridation, states may have made progress toward the benchmarks but not quite met them. We have attempted to indicate the range of state performance in the tables on pages 39-41 describing each indicator.

We assigned letter grades based on the following scale:

Benchmarks met	Grade
6-8	A
5	B
4	C
3	D
0-2	F

The indicators

1. Providing Sealant Programs in High-risk Schools

Benchmark: State has sealant programs in place in at least 25 percent of high-risk schools.

Pew contracted with the Association of State and Territorial Dental Directors (ASTDD) to conduct a telephone survey of all state dental directors regarding the status of states' oral health programs in fiscal year 2009.[206] States were asked to report the percentage of target high-risk schools reached by school-based or school-linked sealant programs in one of five categories: no programs; programs reaching less than 25 percent of target schools; those reaching between 25 and 49 percent of target schools; those reaching between 50 and 74 percent of target schools; and those reaching 75 percent or more of target schools.[207]

States were awarded a point if they reached 25 percent or more of their target schools.

This benchmark was identified because it is a level of performance that is indicative of progress toward the U.S. Task Force on Community Preventive Services' recommendation that sealant programs be implemented in all high-risk schools.

2. Adopting New Rules for Hygienists in School Sealant Programs

Benchmark: State does not require a dentist's exam before a hygienist sees a child in a school sealant program.

The ability of school-based sealant programs to use resources efficiently and serve as many high-risk children as possible depends in part on whether programs must locate and pay dentists to examine children before sealants can be placed. Dental hygienists are the primary workforce for school-based sealant programs. Recent reviews by the CDC and the ADA Council on Scientific Affairs have found that a simple visual assessment, which dental hygienists are qualified to perform, is sufficient to determine whether a tooth is healthy enough for a sealant.

Pew compiled information on states' requirements for dental hygienists working in school sealant programs from two publications of the American Dental Hygienists' Association that describe state practice statutes.[208] Composite information from those publications resulted in a four-level scale: dentist's exam not required in "public health settings," including school sealant programs; dentist's exam sometimes required; dentist's exam always required; dentist's exam and direct supervision required. States were awarded a point for meeting the benchmark if they fall into one of the first two categories—in other words, if a dentist's exam is not always required in public health settings.

3. Fluoridating Community Water Supplies

Benchmark: State provides optimally fluoridated water to at least 75 percent of citizens on community systems.

We evaluated state-level estimates published by the CDC of the percentage of each state's population that is on community water supplies with access to optimally fluoridated water. Note that this excludes the portion of the population in each state that is not connected to a community water supply—for example, people who get their drinking water from private wells, which is about 12 percent of the population nationally. The most recent CDC estimates available at the time of this report were for 2006.[209] Estimates based on 2008 data were being prepared by CDC, but were not available at the time this report went to press.

The national goal, as articulated in the Healthy People 2010 objectives, is for states to provide optimally fluoridated water to 75 percent or more of their population on community water systems. States meeting or exceeding this level were awarded a point.

4. Providing Care to Medicaid-enrolled Children

Benchmark: State meets or exceeds the national average (38.1 percent) of children ages 1-18 on Medicaid receiving dental services in 2007.

We used Medicaid data reported by states to the federal Centers for Medicare and Medicaid Services to determine the percentage of Medicaid-enrolled children ages 1 to 18 who received any dental care in federal fiscal year 2007.[210] Dividing the number of Medicaid-enrolled children who received any dental service by the total number of children in the program at any time during the year yields a percentage of children receiving dental services.[211] Data from 2007 comprise the grade, but trend data since 2000 is reported in the individual state fact sheets and discussed in the report. (See Appendix Table 2.)

States meeting or exceeding the national average were awarded a point. As discussed above, this is a level of performance indicative of states' progress toward a goal, but beating the national average does not mean a state has succeeded in meeting its obligation to provide dental health care to low-income children. Indeed, the national average of 38.1 percent is dismally low, and falls well short of the national average of 58 percent for children with private dental insurance who received services in 2006 (the latest year for which data were available).[212]

5. Improving Medicaid Reimbursement Rates for Dentists

Benchmark: State pays dentists who serve Medicaid-enrolled children at least the national average (60.5 percent) of Medicaid rates as a percentage of dentists' median retail fees.

We used ADA survey data to compare the fees paid by state Medicaid programs in 2008 for five very common children's procedures to the median retail charge of dentists in that state's region in 2007, the most recent data available.[213] The five Current Dental Terminology procedure codes that were used represent core children's dental services: examination; fluoride application; sealants; a basic filling; and tooth extraction.[214] Total Medicaid payments for these five procedures were summed and divided by the total retail charges for the procedures.[215] The national average Medicaid rate paid was 60.5 percent of dentists' median retail fees.

The ADA survey of Medicaid fees reported the fee-for-service payment rate for the largest group of child beneficiaries in the state. States such as Michigan provide higher payments for subsets of their Medicaid-enrolled children, and those differences are not captured in this calculation.

Likewise, it does not capture any enhanced rates paid by managed care companies that contract with a state.

States meeting or exceeding the national average were awarded a point. This is a level of performance that is indicative of states' progress toward a goal. It also coincides with a widely quoted figure for dentists' overhead costs.

6. Reimbursing Medical Providers for Basic Preventive Care

Benchmark: State Medicaid program reimburses medical care provider for preventive dental health services.

Pew collaborated with the National Academy for State Health Policy (NASHP) and the American Academy of Pediatrics to conduct an e-mail survey of all state Medicaid agencies about state policies on the reimbursement of medical care providers for preventive dental health services. States reimbursing medical care providers for these services were awarded a point.

This report addresses only the basic question of whether each state Medicaid program reimburses medical providers for preventive dental health services. More detailed information about the payment rates, policies and specific procedures reimbursed in each state is available in the Pew-funded NASHP publication, "Engaging Primary Care Medical Providers in Children's Oral Health."[216] Since the publication of that report, New York began reimbursing for these services in October 2009.[217]

7. Authorizing New Primary Care Dental Providers

Benchmark: State has authorized a new primary care dental provider.

States were awarded a point if they have authorized a new primary care dental provider who can provide basic preventive and restorative dental services.

As of this writing, Minnesota is the only state that has authorized a new primary care dental provider. The Dental Health Aide Therapist program in Alaska is authorized by the Alaska Native Tribal Health Consortium, not the state.

8. Tracking Basic Data on Children's Dental Health

Benchmark: State submits basic screening data to the National Oral Health Surveillance System.

The NOHSS is a national database of nine key oral health indicators maintained by the CDC, in collaboration with the ASTDD.[218] Three of those indicators—the rate of children who have ever had a cavity, the rate of untreated tooth decay and overall sealant prevalence—come from statewide surveys of third graders.[219] As of November 2009, only 37 states have ever submitted data on these indicators to NOHSS. NOHSS data are submitted individually by states, so the time period of the data reported differs between states, with some of the data more than five years old. Thirteen states and the District of Columbia have never submitted data to NOHSS. (See Appendix Table 1.)

We awarded a point to each state that has submitted data to NOHSS.[220]

Other data discussed in the report

The report also includes data on Dental Health Professional Shortage Areas and state oral health program staffing.

Dental Health Professional Shortage Areas. We conservatively estimated the percentage of the population in each state and the nation that is unserved for dental care by comparing census data for the civilian (i.e., non-military, non-incarcerated)

population to estimates of dentist shortages made by the federal Health Resources Services Administration (HRSA). Localities may apply to HRSA for designation as a Dental Health Professional Shortage Area. For areas that are granted this designation, HRSA determines both the number of people who are unserved for dental care and the number of dentists that would be needed to meet the shortage. We divided the unserved population in each state by the total civilian population to arrive at the percentage of each state's population estimated to be unserved for dental care.

This is a voluntary designation for which localities or states have to apply. This figure only counts those localities that have applied for and received designations, and is likely an undercount. (See Appendix Table 3.)

State oral health program staffing. The ASTDD telephone survey of state dental directors also included a question about state oral health program staffing. States were asked to report how many of seven key competencies that they had authority to staff as of the end of fiscal year 2009—that is, positions that were either filled or for which the state was actively recruiting. The key capacities are those articulated by the CDC, which are used in the administration of the agency's capacity-building grants to states.[221] The capacities could be filled by state employees or outside contractors, and they could be located in a central oral health program office or across agencies.

Endnotes

[1] Kaiser Family Foundation, "The Uninsured: A Primer," October 2009, http://www.kff.org/uninsured/upload/7451-05.pdf (accessed December 7, 2009).

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[207] "High-risk" schools were defined as those with 50 percent or more of their students participating in the federal Free and Reduced Lunch Program (FRL). This is in keeping with the recommendations of the U.S. Task Force on Community Preventive Services, and the recently published recommendations of the CDC. Note that some states may choose to use different criteria for high need when designing their own sealant programs, but the 50 percent FRL threshold is a reasonable standard to gauge performance across states.

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[211] The CMS-416 report collects data on the statewide performance of states' Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) program for all children from birth through age 20. In this report, we chose to examine a subset of that population, children ages 1 to 18. We chose the lower bound of age 1 because professional organizations like the American Academy of Pediatric Dentistry recommend that a child have his or her first dental visit by age 1. We chose the upper bound of 18 because not all state Medicaid programs opt to offer coverage to low-income 19- and 20-year-olds. Data are drawn from lines 12a and 1 of the CMS-416 state and national reports; the sum of children ages 1 to 18 receiving dental services was divided by the sum of all children ages 1 to 18 enrolled in the program. Note that the denominator (line 1) includes any child enrolled for one month or more during the year.

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New England: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
Middle Atlantic: New Jersey, New York, Pennsylvania
East North Central: Indiana, Illinois, Michigan, Ohio, Wisconsin
West North Central: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota
South Atlantic: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia
East South Central: Alabama, Kentucky, Mississippi, Tennessee
West South Central: Arkansas, Louisiana, Oklahoma, Texas
Mountain: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming
Pacific: Alaska, California, Hawaii, Oregon, Washington.

[214] D0120, periodic oral evaluation; D1203, topical fluoride application, child; D1351, sealant; D2150, amalgam filling, 2 surfaces; D7140, single tooth extraction.

[215] Several states were missing information for one of these five procedures; where that was the case, both the Medicaid payment and retail charge for that procedure were omitted from the calculation. Note that no calculation was performed for Delaware, since it has no set fee schedule and simply pays 80 percent of each dentist's billed charges.

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[219] Children in third grade are selected because it allows states to simultaneously collect surveillance information and also check the retention of dental sealants that were placed by school-based sealant programs, which target second-graders.

[220] To be included in the NOHSS, surveys must follow a particular sampling methodology that allows estimation of the dental health of all children in the state. We understand that some states may have collected other data on the dental health status of their children, but the importance of having nationally comparable data for all states supports this as a minimum benchmark.

[221] http://www.cdc.gov/oralhealth/state_programs/infrastructure/activity1.htm. The seven competencies equate to 3.5 full-time employees (FTE), and include the following:
1.0 FTE State dental director
0.5 FTE Program coordinator
0.5 FTE Sealant coordinator
0.5 FTE Fluoridation specialist
0.5 FTE Epidemiologist
0.25 FTE Health educator
0.25 FTE Program evaluator

TABLE 1. Untreated Decay and Sealant Prevalence, State By State Indicators from the National Oral Health Surveillance System (NOHSS)

State	School Year of Data Collection	Percentage of Third Graders with Untreated Tooth Decay	Percentage of Third Graders with Dental Sealants
Alaska	2007-2008	26.2	55.3
Arizona	1999-2002	39.4	36.2
Arkansas	2001-2002	42.1	24.4
California	2004-2005	28.7	27.6
Colorado	2006-2007	24.5	37.1
Connecticut	2006-2007	17.8	38.1
Delaware	2001-2002	29.9	34.3
Georgia	2004-2005	27.1	40.3
Idaho	2000-2001	27.3	53.6
Illinois	2003-2004	30.2	26.9
Iowa	2005-2006	13.2	45.5
Kansas	2003-2004	27.6	33.1
Kentucky	2000-2001	34.6	28.8
Maine	1998-1999	20.4	47.6
Maryland	2000-2001	25.9	23.7
Massachusetts	2006-2007	17.3	45.5
Michigan	2005-2006	25.0	23.3
Mississippi	2004-2005	39.1	25.6
Missouri	2004-2005	27.0	28.6
Montana	2005-2006	28.9	46.2
Nebraska	2004-2005	17.0	45.3
Nevada	2005-2006	44.0	41.0
New Hampshire	2000-2001	21.7	45.9
New Mexico	1999-2000	37.0	43.2
New York	2001-2003	33.1	27.0
North Dakota	2004-2005	16.9	52.7
Ohio	2004-2005	25.7	43.3
Oklahoma	2002-2003	40.2	37.2
Oregon	2006-2007	35.4	42.7
Pennsylvania	1998-1999	27.3	26.1
Rhode Island	2007-2008	28.2	36.3
South Carolina	2007-2008	22.6	23.9
South Dakota	2005-2006	32.9	61.1
Utah	2000-2001	23.0	50.0
Vermont	2002-2003	16.2	66.1
Washington	2004-2005	19.1	50.4
Wisconsin	2007-2008	20.1	50.8

Source: National Oral Health Surveillance System: Oral Health Indicators, data submitted as of 2009, http://www.cdc.gov/nohss/ (accessed July 8, 2009).
Note: See NOHSS for full information and notes on sample size, response rate, etc. Data have not been submitted to NOHSS by 13 states and the District of Columbia: Alabama, District of Columbia, Florida, Hawaii, Indiana, Louisiana, Minnesota, New Jersey, North Carolina, Tennessee, Texas, Virginia, West Virginia and Wyoming.

TABLE 2. Percentage of Low-Income Children Receiving Dental Services, State by State

Medicaid Utilization for Children Ages 1-18, Federal Fiscal Years 2000-2007

State	2000	2001	2002	2003	2004	2005	2006	2007
Alabama	23.9%	28.9%	32.2%	36.2%	39.6%	41.2%	42.5%	51.9%
Alaska	37.1%	38.8%	41.0%	41.1%	41.8%	43.3%	43.0%	41.9%
Arizona	23.9%	23.3%	29.2%	31.1%	31.6%	31.8%	37.9%	40.1%
Arkansas	24.5%	26.7%	28.9%	30.8%	32.6%	31.8%	32.6%	29.5%
California	32.4%	34.4%	34.1%	34.5%	32.6%	33.8%	31.1%	31.3%
Colorado	38.6%	30.2%	32.8%	38.6%	39.3%	47.2%	38.5%	40.2%
Connecticut	33.7%	30.3%	33.3%	34.5%	35.6%	33.0%	36.5%	41.4%
Delaware	23.1%	25.2%	17.3%	26.7%	29.3%	30.4%	32.4%	23.7%
District of Columbia	25.4%	30.5%	24.8%	19.8%	30.4%	32.0%	28.8%	35.5%
Florida	25.9%	24.0%	24.9%	25.8%	25.9%	22.5%	23.2%	23.8%
Georgia	24.5%	20.3%	23.8%	35.5%	37.9%	41.3%	39.4%	41.5%
Hawaii[1]	30.6%	37.4%	0.8%	0.8%	0.8%	43.8%	45.2%	39.9%
Idaho	29.9%	32.0%	20.9%	36.3%	29.2%	42.1%	43.9%	42.8%
Illinois	29.1%	29.5%	28.2%	30.3%	32.8%	35.7%	39.1%	40.1%
Indiana	32.2%	35.1%	37.4%	40.5%	41.1%	40.9%	42.5%	43.0%
Iowa[1]	35.1%	38.1%	3.3%	42.4%	43.6%	44.9%	46.0%	46.9%
Kansas	22.2%	22.5%	25.7%	29.9%	35.2%	38.2%	40.4%	41.2%
Kentucky[1]	35.1%	35.5%	38.3%	39.1%	20.3%	7.8%	36.4%	24.5%
Louisiana	28.6%	29.4%	30.9%	31.6%	33.7%	33.7%	30.2%	32.4%
Maine[2]	37.9%	35.0%	33.2%				35.8%	37.1%
Maryland	11.4%	20.0%	24.0%	28.5%	30.1%	33.0%	32.9%	36.1%
Massachusetts	33.8%	34.3%	35.7%	36.7%	38.9%	40.2%	41.6%	44.6%
Michigan	22.8%	24.0%	31.5%	32.6%	33.0%	33.0%	33.0%	34.5%
Minnesota	34.6%	32.2%	32.1%	35.2%	35.8%	37.3%	37.2%	37.7%
Mississippi[1]	27.6%	29.1%	27.1%	32.1%	69.4%	69.7%	37.3%	38.1%
Missouri	20.4%	21.6%	22.8%	23.3%	23.8%	24.1%	26.2%	27.9%
Montana	26.5%	25.9%	26.0%	25.9%	25.2%	25.9%	25.8%	29.2%
Nebraska	42.0%	42.5%	44.9%	43.2%	46.4%	47.5%	47.9%	49.9%
Nevada	20.6%	20.4%	17.1%	15.8%	13.8%	19.3%	22.4%	27.5%
New Hampshire	34.1%	34.7%	36.6%	27.7%	38.1%	42.3%	45.4%	47.0%
New Jersey	18.2%	19.7%	21.6%	23.4%	23.7%	25.5%	28.1%	33.9%
New Mexico	24.7%	29.8%	39.3%	42.8%	41.7%	33.0%	45.1%	47.6%
New York	27.3%	25.9%	27.1%	26.6%	27.7%	32.9%	30.1%	33.7%
North Carolina	24.6%	28.0%	32.3%	36.0%	37.2%	41.1%	43.3%	45.7%
North Dakota	13.8%	33.0%	31.6%	33.4%	27.8%	27.5%	21.2%	28.1%
Ohio	43.1%	25.6%	29.4%	33.2%	35.6%	37.0%	38.8%	39.9%
Oklahoma	17.0%	18.4%	14.3%	19.8%	29.2%	36.9%	40.5%	42.7%
Oregon	28.6%	32.8%	31.9%	30.1%	30.5%	32.0%	34.4%	34.9%
Pennsylvania	23.2%	27.8%	28.8%	31.3%	29.5%	29.9%	29.8%	32.2%
Rhode Island	36.7%	36.3%	36.4%	36.9%	37.7%	39.4%	41.0%	43.8%
South Carolina	31.3%	19.2%	38.8%	41.5%	42.9%	46.1%	46.8%	46.9%
South Dakota	14.6%	29.4%	31.5%	33.3%	33.7%	37.0%	37.5%	37.0%
Tennessee	29.5%	28.0%	28.5%	34.9%	40.2%	41.7%	40.7%	40.2%
Texas	42.8%	41.7%	42.5%	46.6%	47.6%	48.3%	47.8%	53.7%
Utah	34.0%	33.6%	36.1%	35.7%	37.5%	38.6%	39.3%	39.5%
Vermont	48.9%	49.5%	49.7%	50.9%	50.8%	52.7%	56.3%	57.1%
Virginia	21.8%	24.2%	20.9%	26.6%	26.8%	27.0%	35.4%	40.8%
Washington	46.7%	47.7%	41.1%	43.5%	43.2%	45.7%	46.1%	47.6%
West Virginia[1,2]	34.6%	35.4%	37.2%	37.7%		45.2%	62.2%	45.6%
Wisconsin	22.2%	20.9%	27.5%	32.4%	35.7%	23.0%	24.1%	25.7%
Wyoming	33.5%	28.7%	32.3%	32.2%	33.0%	35.8%	36.5%	37.3%
National	29.8%	29.4%	30.8%	33.6%	34.8%	36.1%	36.3%	38.1%

Source: Centers for Medicare and Medicaid Services, 1995-2007 Medicaid Early & Periodic Screening & Diagnostic Treatment Benefit (CMS-416), http://www.cms.hhs.gov/MedicaidEarlyPeriodicScrn/03_StateAgencyResponsibilities.asp (accessed July 8, 2009).
Note: Percentages were calculated by dividing the number of children ages 1-18 receiving any dental service by the total number of enrollees ages 1-18.
[1] Hawaii submitted data in 2002, 2003 and 2004 that appear to be abnormally low, as did Iowa in 2002 and Kentucky in 2005. Mississippi submitted data in 2004 and 2005 that appear to be abnormally high, as did West Virginia in 2006, indicating possible problems with the submission. Please use caution when interpreting the data in question for these years.
[2] Blank values indicate that data were not submitted for the year in question.

TABLE 3. Dentist Shortage, State by State

Percentage of each state's civilian population that is living in Dental Health Professional Shortage Areas (DHPSAs) and estimated to be unserved, 2009

State	Total Population Living in DHPSAs	Estimated Unserved Population in DHPSAs	Total Civilian Population (Census Estimate)	Percent Unserved	Number of Dentists Needed to Remove Shortage Designation (approximate)
Alabama	1,516,727	1,241,955	4,649,367	26.7%	288
Alaska	110,931	64,731	664,546	9.7%	12
Arizona	906,796	496,371	6,480,767	7.7%	109
Arkansas	278,654	144,554	2,848,432	5.1%	25
California	2,638,944	1,393,945	36,609,002	3.8%	392
Colorado	455,502	275,879	4,912,947	5.6%	59
Connecticut	377,639	279,539	3,493,783	8.0%	67
Delaware	242,220	143,220	869,221	16.5%	27
District of Columbia	27,595	22,195	588,910	3.8%	5
Florida	3,552,422	2,910,295	18,257,662	15.9%	751
Georgia	1,355,526	938,651	9,622,508	9.8%	224
Hawaii	343,989	169,136	1,250,676	13.5%	30
Idaho	427,285	263,785	1,518,914	17.4%	52
Illinois	2,072,145	1,682,696	12,867,077	13.1%	420
Indiana	264,702	192,102	6,373,299	3.0%	48
Iowa	443,585	312,190	3,000,490	10.4%	61
Kansas	648,458	456,245	2,782,245	16.4%	92
Kentucky	439,261	202,991	4,254,964	4.8%	38
Louisiana	2,699,572	1,474,072	4,395,797	33.5%	236
Maine	534,065	223,365	1,312,972	17.0%	49
Maryland	555,798	374,598	5,604,174	6.7%	61
Massachusetts	1,016,385	544,464	6,492,024	8.4%	97
Michigan	1,448,069	1,147,564	9,998,854	11.5%	270
Minnesota	338,863	195,508	5,215,815	3.7%	41
Mississippi	1,677,220	934,675	2,922,355	32.0%	179
Missouri	1,286,356	1,057,091	5,891,974	17.9%	244
Montana	270,060	182,460	963,802	18.9%	42
Nebraska	46,545	28,545	1,776,757	1.6%	4
Nevada	465,388	381,088	2,589,934	14.7%	85
New Hampshire	59,151	30,651	1,314,533	2.3%	7
New Jersey	112,778	80,709	8,670,204	0.9%	22
New Mexico	763,919	496,302	1,974,993	25.1%	105
New York	2,070,098	1,180,298	19,465,159	6.1%	222
North Carolina	1,396,910	960,530	9,121,606	10.5%	213
North Dakota	69,120	48,720	634,282	7.7%	11
Ohio	1,163,431	827,731	11,476,782	7.2%	179
Oklahoma	304,999	196,999	3,620,620	5.4%	55
Oregon	827,657	545,553	3,786,824	14.4%	118
Pennsylvania	1,597,121	1,144,063	12,440,129	9.2%	279
Rhode Island	158,516	112,316	1,046,535	10.7%	31
South Carolina	1,515,507	937,321	4,438,870	21.1%	193
South Dakota	124,540	96,640	800,997	12.1%	19
Tennessee	1,772,248	1,228,358	6,202,407	19.8%	232
Texas	4,583,388	2,677,016	24,214,127	11.1%	512
Utah	245,911	155,450	2,730,919	5.7%	27
Vermont	28,817	15,617	620,602	2.5%	1
Virginia	1,164,606	675,490	7,648,902	8.8%	132
Washington	932,040	540,734	6,502,019	8.3%	110
West Virginia	235,138	133,254	1,812,879	7.4%	28
Wisconsin	522,425	456,125	5,625,013	8.1%	109
Wyoming	69,011	38,411	529,490	7.3%	7
Total	46,158,033	30,312,198	302,887,160	10.0%	6,620

Source: Health Resources and Services Administration, U.S. Department of Health and Human Services, Geospatial Data Warehouse. Designated HPSA Statistics, Table 4, "Health Professional Shortage Areas by State Detail for Dental Care Regardless of Metropolitan/Non-Metropolitan Status, as of June 7, 2009," http://datawarehouse.hrsa.gov/quickaccessreports.aspx (accessed June 8, 2009).
Source: U.S. Department of the Census, State Single Year of Age and Sex Population Estimates: April 1, 2000 to July 1, 2008 - CIVILIAN. http://www.census.gov/popest/states/asrh/ (accessed June 23, 2009).

TABLE 4. Pew Center on the States Analysis of Eight Key Policy Indicators

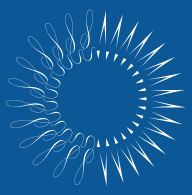
State	Total policy benchmarks met or exceeded	Grade	State has sealant programs in place in at least 25 percent of high-risk schools, 2009	Meets or exceeds benchmark?	State does not require a prior dentist's exam before a hygienist sees a child in a school sealant program, 2009		State provides optimally fluoridated water to at least 75 percent of citizens on community systems, 2006	
National Benchmark			**25% or more**		**Yes**		**75%**	
Alabama	3	D	<25%		No		82.9%	✓
Alaska	5	B	75-100%	✓	Yes	✓	59.5%	
Arizona	4	C	<25%		Yes	✓	56.1%	
Arkansas	2	F	<25%		No		64.4%	
California	4	C	25-49%	✓	Yes	✓	27.1%	
Colorado	5	B	25-49%	✓	Yes	✓	73.6%	
Connecticut	6	A	<25%		Yes	✓	88.9%	✓
Delaware	2	F	0%		No		73.6%	
District of Columbia	3	D	<25%		Yes	✓	100.0%	✓
Florida	2	F	<25%		No		77.7%	✓
Georgia	4	C	25-49%	✓	No		95.8%	✓
Hawaii	2	F	0%		Yes	✓	8.4%	
Idaho	5	B	25-49%	✓	Yes	✓	31.3%	
Illinois	5	B	50-74%	✓	No		98.9%	✓
Indiana	3	D	<25%		No		95.1%	✓
Iowa	6	A	50-74%	✓	Yes	✓	92.4%	✓
Kansas	4	C	<25%		Yes	✓	65.1%	
Kentucky	4	C	<25%		No		99.8%	✓
Louisiana	2	F	25-49%	✓	No		40.4%	
Maine	5	B	75-100%	✓	Yes	✓	79.6%	✓
Maryland	6	A	25-49%	✓	Yes	✓	93.8%	✓
Massachusetts	4	C	<25%		No		59.1%	
Michigan	4	C	<25%		Yes	✓	90.9%	✓
Minnesota	4	C	<25%		Yes	✓	98.7%	✓
Mississippi	3	D	<25%		No		50.9%	
Missouri	4	C	0%		Yes	✓	79.7%	✓
Montana	3	D	0%		Yes	✓	31.3%	
Nebraska	4	C	<25%		Yes	✓	69.8%	
Nevada	3	D	<25%		Yes	✓	72.0%	
New Hampshire	5	B	75-100%	✓	Yes	✓	42.6%	
New Jersey	1	F	0%		No		22.6%	
New Mexico	6	A	<25%		Yes	✓	77.0%	✓
New York	4	C	<25%		Yes	✓	72.9%	
North Carolina	4	C	<25%		No		87.6%	✓
North Dakota	4	C	0%		No		96.2%	✓
Ohio	5	B	50-74%	✓	No		89.3%	✓
Oklahoma	4	C	0%		Yes	✓	73.5%	
Oregon	4	C	50-74%	✓	Yes	✓	27.4%	
Pennsylvania	2	F	<25%		Yes	✓	54.0%	
Rhode Island	6	A	50-74%	✓	Yes	✓	84.6%	✓
South Carolina	7	A	50-74%	✓	Yes	✓	94.6%	✓
South Dakota	4	C	0%		No		95.0%	✓
Tennessee	4	C	50-74%	✓	No		93.7%	✓
Texas	5	B	<25%		Yes	✓	78.1%	✓
Utah	3	D	<25%		No		54.3%	
Vermont	4	C	0%		Yes	✓	58.7%	
Virginia	4	C	<25%		No		95.0%	✓
Washington	5	B	25-49%	✓	Yes	✓	62.9%	
West Virginia	2	F	0%		No		91.7%	✓
Wisconsin	4	C	<25%		Yes	✓	89.7%	✓
Wyoming	2	F	0%		No		36.4%	

Source: Pew Center on the States, 2010.
See Methodology for details on data sources for individual indicators.

APPENDIX

State meets or exceeds the national average of children ages 1 to 18 on Medicaid receiving dental services, 2007		State pays dentists who serve Medicaid-enrolled children at least the national average of Medicaid rates as a percentage of the dentists' median retail fees, 2008		State Medicaid program reimburses medical care providers for preventive dental health services, 2009		State has authorized a new primary care dental provider, 2009		State submits basic screening data to the National Oral Health Surveillance System, 2009	
38.1%		**60.5%**		**Yes**		**Yes**		**Yes**	
51.9%	✓	60.1%		Yes	✓	No		No	
41.9%	✓	89.1%	✓	No		No[1]		Yes	✓
40.1%	✓	76.0%	✓	No		No		Yes	✓
29.5%		70.2%	✓	No		No		Yes	✓
31.3%		33.8%		Yes	✓	No		Yes	✓
40.2%	✓	58.3%		Yes	✓	No		Yes	✓
41.4%	✓	86.5%	✓	Yes	✓	No		Yes	✓
23.7%		80%[2]	✓	No		No		Yes	✓
35.5%		93.2%	✓	No		No		No	
23.8%		30.5%		Yes	✓	No		No	
41.5%	✓	59.9%		No		No		Yes	✓
39.9%	✓	36.8%[3]		No		No		No	
42.8%	✓	46.7%		Yes	✓	No		Yes	✓
40.1%	✓	53.1%		Yes	✓	No		Yes	✓
43.0%	✓	69.6%	✓	No		No		No	
46.9%	✓	51.3%		Yes	✓	No		Yes	✓
41.2%	✓	53.3%		Yes	✓	No		Yes	✓
24.5%		84.0%[4]	✓	Yes	✓	No		Yes	✓
32.4%		71.5%	✓	No		No		No	
37.1%		40.5%		Yes	✓	No		Yes	✓
36.1%		78.3%	✓	Yes	✓	No		Yes	✓
44.6%	✓	71.9%	✓	Yes	✓	No		Yes	✓
34.5%		40.8%		Yes	✓	No		Yes	✓
37.7%		42.9%		Yes	✓	Yes	✓	No	
38.1%	✓	64.0%[5]	✓	No		No		Yes	✓
27.9%		46.8%		Yes	✓	No		Yes	✓
29.2%		58.5%		Yes	✓	No		Yes	✓
49.9%	✓	50.3%		Yes	✓	No		Yes	✓
27.5%		60.3%		Yes	✓	No		Yes	✓
47.0%	✓	69.6%	✓	No		No		Yes	✓
33.9%		102.6%	✓	No		No		No	
47.6%	✓	60.8%	✓	Yes	✓	No		Yes	✓
33.7%		62.5%	✓	Yes[6]	✓	No		Yes	✓
45.7%	✓	64.4%	✓	Yes	✓	No		No	
28.1%		65.6%	✓	Yes	✓	No		Yes	✓
39.9%	✓	48.1%		Yes	✓	No		Yes	✓
42.7%	✓	66.7%	✓	No		No		Yes	✓
34.9%		46.0%		Yes	✓	No		Yes	✓
32.2%		53.2%		No		No		Yes	✓
43.8%	✓	31.7%		Yes	✓	No		Yes	✓
46.9%	✓	62.8%	✓	Yes	✓	No		Yes	✓
37.0%		70.8%	✓	Yes	✓	No		Yes	✓
40.2%	✓	75.5%	✓	No		No		No	
53.7%	✓	70.7%	✓	Yes	✓	No		No	
39.5%	✓	45.1%		Yes	✓	No		Yes	✓
57.1%	✓	60.0%		Yes	✓	No		Yes	✓
40.8%	✓	62.0%	✓	Yes	✓	No		No	
47.6%	✓	46.0%		Yes	✓	No		Yes	✓
45.6%	✓	49.9%		No		No		No	
25.7%		40.1%		Yes	✓	No		Yes	✓
37.3%		67.8%	✓	Yes	✓	No		No	

[1] Dental Health Aide Therapists operating on Alaska Native lands are authorized by the Alaska Native Tribal Health Consortium, not the state.
[2] Note that no calculation was performed for Delaware, since it has no set fee schedule, and simply pays 80 percent of each dentist's billed charges.
[3] Includes only 4 procedures, due to missing value (excludes tooth extraction).
[4] Includes only 4 procedures, due to missing value (excludes oral evaluation).
[5] Includes only 4 procedures, due to missing value (excludes oral evaluation).
[6] New York began reimbursement in October 2009. See New York State, Medicaid Update 25:11 (September 2009), http://www.health.state.ny.us/health_care/medicaid/program/update/2009/2009-09.htm#den (accessed October 12, 2009).



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