



THE STATE OF

LITTLE TEETH



AMERICA'S PEDIATRIC DENTISTS
THE BIG AUTHORITY on little teeth

EXECUTIVE SUMMARY

Tooth decay has become epidemic among our youngest children. A rapid form of tooth decay, known as early childhood caries (ECC), is the most common disease faced by young children—and it's on the rise. Research shows that ECC can cause lasting harm to a child's oral and general health, and social and intellectual development.

Children from low income and minority families are particularly vulnerable to ECC. One reason is that they are less likely to see a dentist than other children. Even though the Affordable Care Act (ACA) includes pediatric dental benefits, experts fear this trend may get worse rather than better.

What is most frustrating for our organization, the American Academy of Pediatric Dentistry (AAPD), is most tooth decay is preventable.

To address this nation-wide threat to children's health, the AAPD is launching an educational campaign to arm parents and caregivers with important tools and information to help fight tooth decay. As part of this initiative we are also introducing our first-ever "State of Little Teeth Report" that explores the key issues related to the oral health of our children.

The "State of Little Teeth Report" draws on the latest scientific research and best available expertise to examine the public health crisis of tooth decay among young children in the U.S., including a look at the impact of the ACA on children's oral health. The report also includes the results of a new survey of parents and caregivers conducted as part of our educational campaign. In addition to examining the problems and their causes, this report also explores what can be done to solve them.

In examining the tooth decay epidemic, its impact and causes, the report found:

- A troubling gap between parental knowledge and action.
- Early dental visits are strongly recommended but rarely made.
- Dental pain management is difficult and potentially dangerous in unskilled hands.
- Little-known "Dental Homes" are critically important.
- Too few dentists see children on Medicaid.
- A shortage of dentists skilled in treating children and the need to expand pediatric dentistry.

We hope this report supports our educational campaign by providing the basis for a meaningful discussion about the challenges facing the oral health of our children – and what we can do about them.

DANGERS OF TOOTH DECAY TO YOUNG CHILDREN

ORAL HEALTH

- Loss of baby teeth
- Pain
- Damage to permanent teeth
- Crooked teeth
- Vulnerable to caries and gum disease throughout life

GENERAL HEALTH

- Infections to ears, sinuses, cuts, brain
- Life-threatening infection
- Poor sleep habits
- Chewing difficulty /Malnutrition/ Insufficient Growth
- Disability



INTELLECTUAL DEVELOPMENT

- Poor speech articulation
- Poor school performance
- Missed school
- Inattention in school

SOCIAL DEVELOPMENT

- Reluctance to speak, smile, play
- Teasing from others
- Low self-esteem
- Social ostracism

I. THE EPIDEMIC OF

DENTAL CARIES IN OUR YOUNGEST CHILDREN



Caries is on the rise among very young children in the United States and around the world, especially children from poor families.^{1,2} It is a public health crisis that poses an immediate and long-term threat not just to the teeth of young children but to their overall health and development.³

The social and economic consequences of this epidemic extend far beyond the families of the affected children to engulf the medical, social and economic health of the greater community.²

“Caries,” which derives from the Latin word for “rotten” and is commonly referred to as “cavities” or “tooth decay,” is a disease that is chronic, infectious and transmissible.^{4,5} It results from exposure to bacteria through contact with saliva, often from the primary caregiver but sometimes from other caregivers or playmates.^{2,6,7,8,9} The bacteria metabolize sugars to produce acid which, over time, demineralizes tooth structure.¹⁰ The earlier children are exposed to these bacteria, the more likely they are to develop caries and the greater the risk to their oral health.⁴ Children infected while infants are far more likely to

develop immediate and long-term oral health issues than those who are not infected so young.²

Caries among young children, or early childhood caries (ECC), is a particularly rapid form of tooth decay.^{11,12} ECC was once called “baby bottle tooth decay,” since a key cause of the disease is putting children to bed with a bottle of juice or milk.^{4,13} ECC is now the most common chronic early childhood disease in the United States; for instance, ECC is five times more common than asthma.¹⁴ In addition to being highly prevalent and on the rise among young children, caries is often untreated in children under the age of three, according to national surveys.¹⁵

Due to the aggressive nature of ECC, cavities can develop quickly and, if untreated, can infect the tooth’s pulpal tissue. Such infections may result in a medical emergency that could require hospitalization and the extraction of the offending tooth.¹⁶ As already noted, children who are given pacifying bottles of juice, milk or formula to drink during the day or overnight are prone to developing ECC, as the sugar contents pool around the upper front teeth mix with caries-producing bacteria it gives rise to rapidly progressing tooth destruction. Other factors that put children at risk for caries include enamel defects, frequent consumption of sugary drinks and snacks, lack of dental hygiene, lack of fluoridation, chronic illness, certain medications, and mouth breathing.^{4,17,18}



BY THE AGE OF 3

5-10%

of U.S. children have oral health issues

BY AGE 5

ABOUT 60%

of U.S. children will have had caries at some point, including the 40 percent of children who have it when they enter kindergarten.

The statistics are alarming. The rate of tooth decay in primary (baby) teeth of children aged 2 to 5 years increased nearly 17 percent from 1988-1994 to 1999-2004. Based on the most recent data, 28 percent of children aged 2 to 5 years in the entire U.S. population are affected by tooth decay.¹⁹ By the age of 3, 5 percent to 10 percent of U.S. children have oral health issues.¹⁹ By age 5, about 60 percent of U.S. children will have had caries at some point, including the 40 percent of children who have it when they enter kindergarten.^{4,20}

The issue is not just that kids have caries – it's that, for many kids, caries is not being treated and turning into more serious problems. The Dental Health Foundation's report, *Mommy It Hurts to Chew*, indicated that 28 percent of California third-graders had untreated tooth decay.²¹ In many cases, the level of decay was so severe that the child needed general anesthesia before undergoing an extensive procedure to treat the decay.²² In a Washington State study, about 52 percent of all children aged 3 1/2 years and younger have their first health care encounter for a dental-related illness in the emergency room (ER).¹⁶ About half of these visits result in the extraction, rather than the repair, of the decayed tooth or teeth.²³

When treatment for ECC is delayed, a dangerous downward spiral of unmet needs develops: the longer that ECC remains untreated, the more time there is for the condition to worsen and become more difficult to treat; as a result, the costs of treatment go up, and the number of clinicians who can perform the increasingly complicated procedures required go down.²⁴ In other words, as treatment is delayed, the problem becomes more serious and more difficult to treat, and access and cost issues multiply.

The worst case scenario can be tragic. Deamonte Driver, a 12-year-old boy in Maryland, died in 2007 after bacteria from an abscessed tooth spread to his brain.^{25,26}

ECC AFFLICTS POOR AND MINORITY KIDS THE MOST

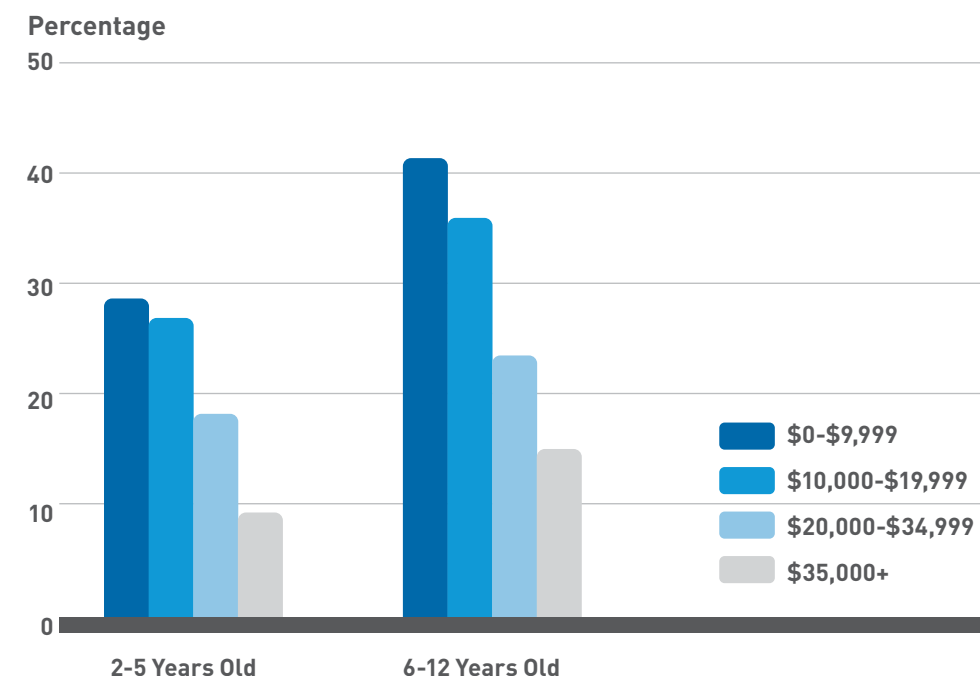
Few population groups are more vulnerable to oral health disease and its consequences than young children, who depend on others and have trouble communicating their needs. Although children represent 24 percent of the overall population, they represent 36 percent of the poor; children who are Hispanic, African-American or Native American are about three times more likely to be poor than Asian-American or white non-Hispanic children.^{27,28} These young children from poor or minority families are vulnerable to health and development issues, particularly oral health issues, according to the National Institutes of Health.²⁹ This includes children who are born to single mothers and whose parents have low education levels.²

Poverty has an especially strong correlation with ECC, as the percentage of young children with untreated tooth decay rises as family income declines.²⁴ Children

ages 2 to 9 living in poverty are twice as likely to suffer tooth decay than their more affluent peers; in addition, their disease is more than twice as likely to go untreated (36.8 percent of poor versus 17.3 percent of non-poor), according to *Oral Health in America: A Report of the Surgeon General*.⁴ For instance, the rate of tooth decay is five times more common among children below the poverty line (30 percent) than children in families 300 percent or more above the poverty line (6 percent).^{24,14}

Young Mexican-American and non-Hispanic black children are more likely to have tooth decay than young white children – a disparity that is increasing.¹ One study shows that among 2 to 5-year-olds, 40 percent of Mexican-American and 29 percent of black children have had ECC compared with 18 percent of white children.³¹ Another study showed that among children aged 2 to 4 years and aged 6 to 8 years, Mexican-American and non-Hispanic black children were more likely to suffer from tooth decay than were their white peers.³² As these children get older, the problems only get

Percentage of Children With Untreated Caries by Family Income



Source: General Accounting Office. *Dental Disease Is a Chronic Problem Among Low-Income Populations*. Report to U.S. Congress, April 2000. <http://www.gao.gov/new.items/he00072.pdf>



worse. Among children who are 5 to 17 years old, 80 percent of untreated tooth decay in permanent teeth is found in roughly 25 percent of the population, mostly from low-income and other vulnerable groups.^{33,34,35} For instance, untreated caries is significantly higher among Mexican-American and non-Hispanic black children and adolescents (23 percent) than it is among non-Hispanic white children and adolescents (13 percent).³⁶

Poor diet and lack of education play a part in these disparities. For instance, young children who consume a diet high in sugar, are of low socioeconomic status, and whose mothers have a low education level are 32 times more likely to have ECC than those who do not have these combined characteristics.^{37,38} Emergency dental care expenditures are consistently higher among children of low-literacy caregivers than other children.³⁹

They don't do well in school, they don't learn. It can affect their self-esteem. It can affect their entire lives and that of their families.

A key reason poor and minority children have more oral health problems than their peers is they are less likely to see a dentist. Children ages 2 to 9 living in poverty are twice as likely to suffer untreated tooth decay as their more affluent peers – 36.8 percent of poor versus 17.3 percent of non-poor.⁴ In 2003, only 38 percent of low income children aged 2 to 17 years had a routine dental checkup as compared with 60 percent of all middle- and high-income children in the same age group.⁴⁰

As a result, it is not surprising that children seen in the emergency room for caries-related dental pain are predominantly poor, minority children from single-parent families.⁴¹

Oral health researchers expect growing income disparities and demographic trends to exacerbate these disparities.⁴²

THE SHORT- AND LONG-TERM IMPACT OF CARIES

Caries compromises the health, development and quality of life of young children both in the short run and over the long term.⁴³ Acute caries pain affects the health and well-being of young children as much as or more than acute asthma.⁴⁴ Caries also makes the child more vulnerable to various infections in other parts of their body, such as the ears, sinuses and the brain, and could have a harmful long-term impact not only on their oral health but also on their overall health.^{45,46}

“When kids have dental pain, it affects their growth and development,” said Dr. Warren Brill, 2013-14 president of the American Academy of Pediatric Dentistry. Studies have shown that ECC, especially if left untreated, can result in:^{2,20,47,48,49,50,51,52,53,54,55,56,57}

- Life-threatening infection;
- Significant pain;
- Chewing difficulty (due mostly to pain) leading to malnutrition and gastrointestinal disorders that can result in a failure to thrive or delayed or insufficient growth; and
- Poor speech articulation; poor sleep habits; low self-esteem, social ostracism and poor school performance that leads to a diminished overall quality of life.

HEALTH IMPACT

A child with unhealthy teeth is at risk for future oral health problems as an adult. For instance, if the tissue in the central portion of the tooth is infected, the abscess can potentially damage permanent teeth.⁵⁸ Also, if baby teeth are lost early or broken down, the

child's permanent teeth are more likely to erupt out of proper position or be impacted, leaving them more susceptible to caries and gum disease and subjecting the child to years of twisted teeth or orthodontia.²⁸ ECC puts children at elevated risk for oral health problems throughout their lifetimes, studies suggest.^{2,59}

Additionally, undetected and untreated tooth decay can lead to infection, loss of teeth, and expensive and mostly preventable emergency and restorative interventions; in extreme cases, ECC and its treatment can lead to serious disability and even death.^{52,53,57}

Finally, a child's oral health can affect their overall health because the mouth is the gateway to a person's overall health.⁶⁰ Kids with tooth decay are prone to repeated infections in their ears, in their sinuses and in the cuts and abrasions that are common in childhood.^{45,46} As the child grows older, an unhealthy mouth can be associated with obesity, diabetes and even heart disease.^{4,59}

About 1 in 10 kids with ECC suffers pain from caries.²⁴ For these kids, chewing food is painful enough to keep them from eating properly and getting adequate nutrition, and the result can be a failure to thrive, or reduced growth and weight, due to insufficient consumption of nutritious food. For instance, children with ECC are twice as likely to be of below average weight as are their peers without ECC – about 1 in 5 children with ECC weighed in the lowest 10 percent of their age groups.⁴⁵ Painful teeth keep children from getting enough sleep which, as with lack of nutrition, can hurt their overall health and development.²⁴

DANGERS OF TREATING DENTAL PAIN

Treating dental pain is as important as it is difficult and risky. Pain is difficult to measure due to its subjectivity. Children may not have the language skills to communicate the level of pain they are feeling, and assessing pain levels often depends on the report of parents or pain scale indicators.⁶² As a result, it's possible to undertreat or overtreat the pain, each

of which carries its own set of health risks. In some populations that experience difficulty accessing care, children may suffer for weeks in pain before families are successful at finding resolution.⁶³

Some providers are worried about giving the child too high a dose of pain medication, or they are hesitant to prescribe opioid painkillers due to fears of addiction.⁶⁴ In addition to the unnecessary suffering a child endures, failure to adequately treat dental pain has repercussions for the child, such as developing a fear or anxiety about visiting the dentist that may persist well into adulthood. Medical studies of pain in children suggest that inadequate management of pain results in lower pain thresholds and sensitization to pain in the future.^{65,66} Up to 1 in 5 Americans say they avoid going to the dentist due to anxiety or fear.^{67,68,69} Full-blown dental phobia sometimes develops—a serious condition in which a person avoids the dentist at all costs. People suffering from the phobia usually only show up at the dentist when forced by excruciating pain.

Pain treatments pose their own risks, especially if the child is given too much or the wrong combination of pain drugs. Children undergoing general anesthesia may suffer vomiting and nausea and, in rare cases, brain damage or death.²² Using anti-anxiety drugs also has risks, including the possibility of an overdose that could suppress breathing.⁶⁸

Even common drugs such as acetaminophen can harm children's health and endanger their lives. For instance, research using data from the Centers for Disease Control estimates that each year about 150 people in the U.S. die from liver failure due to the accidental overuse of acetaminophen.⁷¹ Another study puts the all-causes death rate due to accidental overuse of acetaminophen at 358 deaths per year.^{72,73} The vast majority of acetaminophen-related liver injury events reported in children were caused by medication errors due to improper measuring devices, dosing the wrong concentration, or lack of dosing information for children under 2 years old.⁷⁴ As a result, there is a rising concern about the incidence of pediatric dental patients overdosing on pain medication.

SOCIAL IMPACT

Caries may restrain a child’s physical growth and diminish overall quality of life. For instance, the pain from tooth decay may hinder many young children from eating, speaking, sleeping, playing and from going to school or paying attention while they’re in class.⁴ Discolored, damaged or missing teeth may hurt a child’s self-esteem and social development by making them afraid to smile or subjecting them to teasing.⁴

Children with dental problems are more likely to have problems at school and to miss school and are less likely to do all required homework. In the U.S., oral disease causes kids to miss 51 million school hours a year.^{75,76} Children with oral health problems are three times more likely to miss school due to dental pain than children who did not have oral health problems, according to one study.⁷⁷ In addition, children who lacked excellent or very good oral health were more likely to perform poorly in school than those who did have excellent or very good oral health.⁷⁵

In addition to their problems at school, children with oral health issues are likely to feel worthless, shy, unhappy, and are less friendly than those who do not have oral health problems.⁷⁸

Given that poor and minority children are especially subject to untreated tooth decay, these social and quality-of-life repercussions pose yet another barrier to achieving parity.

ECONOMIC IMPACT

ECC not only exacts a toll on children, affecting their development, school performance and behavior, but it can also affect families and society.

Treatment of severe ECC can cost \$10,000 per child, especially if children need to be hospitalized and treated under general anesthesia, and can go up to \$25,000 in severe cases.^{21,79} The average cost per visit for the treatment of dental caries and pulpal conditions in emergency departments and ambulatory

surgical facilities was \$5,501 in 2008, and emergency department management of ECC infection and pain often does not result in definitive care for the decayed teeth.^{80,81} Add in mostly preventable emergency and restorative interventions and, in the United States alone, it is estimated that more than \$40 billion per year is spent on the treatment of dental caries.⁸² The Health Care Financing Administration states that the Medicaid program alone pays between \$100 million and \$400 million each year to treat ECC in children.⁸³

In addition to the cost of treating this preventable disease, missed school and work (among parents) due to the disease have an impact on the economy. Clearly, missing work hurts household income. By affecting a child’s school performance, oral health issues are likely to affect the child’s job and earning prospects later in life. Research has shown that job candidates who do not smile or have missing or crooked teeth are less likely to win the job than those who have attractive smiles.⁸⁴

DELAY IN FIRST DENTAL VISIT

One of the key reasons a preventable disease, like caries, is becoming an increasingly significant threat to the health, welfare and future of the youngest members of our society is that children are not seeing the dentist early enough.

Tooth decay can be difficult to diagnose in infants and toddlers since it often starts with a dull ache that may be mistaken for teething. Often not until the pain becomes acute or the teeth break do parents realize that their child has caries.⁶⁸ Much pain and damage could be avoided if the child visits the dentist earlier.

Baby teeth are vulnerable to tooth decay from their very first appearance, which occurs on average between the ages of 6 and 12 months. That’s why the first examination is recommended at the time of the eruption of the first tooth and no later than 12 months of age.^{85,86,87} In fact, most major dental and pediatric organizations, including the American Dental Association, the American Academy of Pediatrics, the Academy of General Dentistry and the American Academy of Pediatric Dentistry, are on record supporting the need to get children to the dentist by the time they are 1-year-old.^{88,89,90,91}

Aside from diagnosing the child’s oral health, the early visit is an important opportunity for dental providers to underscore the importance of establishing good dental habits and dietary practices. Such habits and practices are established early in the child’s life, and they can have a significant impact on the child’s future oral health. For instance, high-risk dietary practices, especially consumption of sugary drinks (including many fruit juices) that are bad for teeth, appear to be established by the time the child is 1-year-old, and they are often maintained throughout early childhood.⁵⁷

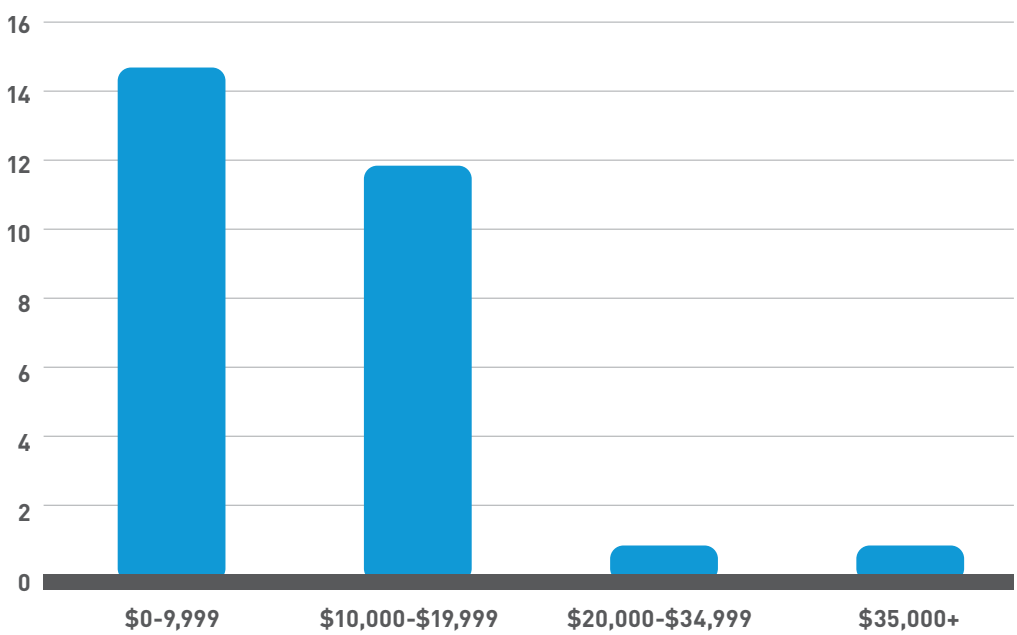
Waiting until the child is older – even if it’s just to the age of 2 or 3 – can have an adverse impact on the child’s oral health. In fact, children who wait to have their first dental visit until age 2 or 3 are more likely to require restorative and emergency visits, according to a scientific paper in the journal Pediatric Dentistry.⁷²

II. CHILDREN VISIT DENTISTS TOO LATE

DUE TO LACK OF UNDERSTANDING, ACTION AND ACCESS



Children from Poor Families More Likely to Miss School Due to Dental Problems
Restricted Activity Days per 100 Children by Family Income



Source: General Accounting Office. Dental Disease Is a Chronic Problem Among Low-Income Populations. Report to U.S. Congress, April 2000. <http://www.gao.gov/new.items/he00072.pdf>

Children having their first dental visit at 4 years of age or older had mean dmft scores (a way to measure the impact of caries by assessing the condition of the teeth) twice that of children younger than age 4 who were screened.⁹³ Once ECC takes root in the child’s mouth, the longer the wait before diagnosis and treatment and the more extensive and costly the required care will be.^{90,94,95,96,97,98} For instance, lack of dental care among infants is a main reason for early emergency visits related to teeth problems.⁹⁹

Unfortunately, visiting the dentist by age 1 is a practice that is far from common.^{88,89} Despite the importance of the first dental visit, just 6 of 10 parents and caregivers (60 percent) agreed it is important for children to see the dentist by their first birthday, according to the AAPD survey.¹⁰⁰ Even more surprising: only 1 in 4 parents and caregivers surveyed (25 percent) actually took their children to see the dentist in the first year.¹⁰⁰

Other surveys paint an even bleaker picture. Only 16 percent of parents took their child to see the dentist before they turned 2, according to a 2012 nationwide survey by Met Life.¹⁰¹ Children in Illinois don’t see their family dentist on average until they are 3 1/2 years old, according to 2011 claims data from Delta Dental of Illinois.¹⁰²

There are a number of reasons that so few children are seeing the dentist in their first year of life. One reason is that there appears to be a lack of understanding of the importance of the early dental visit among parents, caregivers and medical professionals. Another reason is that a variety of factors have contributed to restrict access to dental care, especially for poor and minority children.

A LACK OF UNDERSTANDING AMONG PARENTS – AND PROVIDERS

Parents play a critical role in the oral health of their children. Yet despite growing awareness of the importance of children’s oral health, many parents do not follow good dental practices when it comes to their children because they do not understand how to evaluate their child’s oral health or they do not understand the importance of their child’s oral health.³⁰

Research shows that parents are poor judges of their children’s oral health, especially when the children are very young.^{30,61} This problem is particularly true among families headed by parents with low incomes, low education levels or lack dental insurance.⁷⁰

A recent survey conducted on behalf of the AAPD found that more than 8 in 10 parents and caregivers surveyed know that their child’s oral health is important even before they get their adult teeth.¹⁰⁰ This awareness is reflected in the rise in the rate at which children are seeing the dentist. Among children 2 to 20 years old, dental visits have increased from 71.6 percent in 1997 to 77.0 percent in 2010.¹⁰³

But while parents may acknowledge the importance of their children’s oral health, they may not fully understand it. For instance, more than 9 in 10 parents and caregivers in the AAPD survey failed to correctly identify tooth decay as the most common chronic disease among children, ranking it dead last among five choices, including obesity, ear infections, allergies and asthma.¹⁰⁰ Even when the children are older, such as aged 2 to 5, parents and caregivers often do not take the child to the dentist even though oral health issues are already developing. Although about 19 percent of these children needed to see the dentist, only 9 percent of them had parents or caregivers who recognized this need, according to one study.⁶⁰

The lack of understanding of the importance of infant oral health care is not restricted to parents – it is also all too common among providers in the medical and dental communities.¹⁰⁴ Despite the recommendation from their own professional societies that children see a dentist by age 1, a majority of pediatricians and general dentists do not pass this recommendation on to their patients.^{42,104,105,106} For pediatricians, the fact that less than 25 percent had received oral health education in medical school, residency, or continuing education is likely driving this trend.¹⁰⁷ Educational shortcomings, such as fear of treating young children and lack of information about the importance of doing so, may also contribute to this trend. Clearly, dental schools could do better: while 86 percent of U.S. dental schools taught infant oral exams in 2001, only 51 percent provided hands-on experience.¹⁰⁴

THE GAP BETWEEN KNOWLEDGE AND ACTION

Even when parents and caregivers appear to recognize the importance of their child’s oral health and the various practices that support and protect that health, they don’t always follow through. In the AAPD survey, nearly 8 out of 10 parents and caregivers responded that they engage in practices they acknowledged were bad for their children’s teeth.¹⁰⁰

We saw earlier that while 60 percent agreed that children should see the dentist by their first birthday, only 25 percent actually brought their infants to the dentist.¹⁰⁰ This dichotomy between knowledge and action is alarmingly common, according to the survey:

- 78 percent agreed that juice is not a healthy drink for their kids’ teeth, but 34 percent frequently served juice to their children.
- 85 percent of parents and caregivers agreed it is not okay to put their child or children to bed with a bottle of milk or juice, but 20 percent did so anyways.
- 91 percent agree that poor diets can harm teeth development, but more than half (57 percent) of parents and caregivers surveyed allow their children to snack multiple times a day.

The survey did not probe the reasons for these gaps, but it seems likely that promoting a better understanding among parents and providers of the risks and benefits of various dental practices would be a good start.

“Our parents and caregivers need more education, but more education is not enough unless parents act on what they know,” said Dr. Brill.

“Dental providers can help parents do the right thing by reminding them about the potential harm caused by poor oral health habits.”

AFFORDABLE CARE ACT

The Affordable Care Act (ACA) marks a potential advance for children’s oral health by making dental insurance available to millions of uninsured children by 2018.

The ACA increases the number of people eligible for Medicaid and makes pediatric dental insurance available through the state insurance exchanges. Ultimately, the more children who have dental insurance, the more access they will have to dental services and the better their oral health will be. The ACA also includes additional initiatives that would support care, education and prevention early in the child’s life, which should provide oral health benefits throughout the child’s life and reduce costs, too.^{2,3}

“We expect this could improve children’s oral health for generations to come,” said Dr. Paul Reggiardo, D.D.S., a past-president of the American Academy of Pediatric Dentistry who is a pediatric dentist in Huntington Beach, CA.

But while the ACA is an important first step in expanding access to dental care among children, it is just a first step. Much more needs to be done if we are to achieve our goal of wide access to dental care for children.

Many families will still have a hard time finding or paying for dental benefits for their children because the ACA, unlike its provisions for health care, does not: require consumers to buy stand-alone pediatric dental insurance as part of state health care exchanges; offer subsidies to help consumers pay for dental insurance; or make improvements to Medicaid to increase dentist participation. In addition, the ACA does not fund the provisions it proposes to improve oral health.

There are two ways to remedy these shortcomings: reformation of the ACA, or each state can exercise its significant control over expanding access to pediatric dental care among their populations.

Benefits of ACA for Pediatric Dental Health
By making pediatric dental services one of the 10 essential health benefits that all plans in the individual and small-group markets must offer, the ACA requires dental benefits to be offered for everyone under age 19 through individual and small employer plans, whether or not the plans are sold within or outside state health insurance exchanges. As an essential health benefit, the ACA will help ensure basic coverage for both preventive and restorative care beginning early in a child’s life for children who would otherwise not have dental insurance.

The initial projection was that up to 8.7 million children would gain some form of dental benefits by 2018 as a result of the ACA, an increase of 15 percent

relative to 2010. If achieved, this would reduce the number of children without dental benefits by about 55 percent.⁵ The increase in children with dental benefits would come from the following sources:⁵

- 3.2 million children could gain dental benefits through the Medicaid expansion, a 9.9 percent increase over 2010 Medicaid levels. While the Medicaid expansion primarily increases adult-eligibles by raising the floor of eligibility to 138 percent of the Federal Poverty Level, it is expected to increase the number of eligible but unenrolled children in the program.
- 3 million children could gain dental benefits through the health insurance exchanges by 2018, more than doubling the number of children with dental benefits purchased through the individual market.
- 2.5 million children could gain dental benefits through employer-sponsored insurance as a result of the mandate for pediatric dental benefits in small employer plans, an increase of about 10 percent compared to 2010 levels.

QUICK TIP:

Questions to ask about pediatric dental benefits when comparing health insurance plans.

Health insurance options vary and not all plans are created equal. Parents should be sure to ask several key questions when selecting the health insurance plan and dental benefits that are right for their family.

- How much will my deductibles, out-of-pocket maximums and co-pays cost?
- Does the plan's network include pediatric dentists near my home or children's school?
- Based on my benefit level, how much will my premium costs be?

The key to understanding a dental benefit plan's design is recognizing that most oral disease, especially in children, is largely preventable. Unlike the traditional utilization of health insurance as a benefit to be used infrequently as a way of paying for the very high cost of unpredictable illness, accident or disease, a dental benefit plan is intended to be accessed regularly for preventive services to affect oral health positively.

ACCESS RESTRICTED BY LACK OF BOTH INSURANCE AND AVAILABLE DENTISTS

The rise in children who see the dentist has been aided by a 29 percent decline in the percentage of children who are uninsured – from 14.4 percent in 2000 to 10.2 percent in 2010.¹⁰³ Although the percentage of children covered by private insurance fell from 66.2 percent in 1997 to 54.2 percent in 2010, during that same period the percentage of children covered by public insurance (Medicaid/CHIP) doubled from 16.1 percent to 32.2 percent.¹⁰³

Yet, while visits to the dentist have gone up in recent years, not all population groups – poor and minority families in particular – are benefitting from this trend. And whether or not they have insurance is not the only reason why – sometimes it's hard, especially for families who have insurance through Medicaid, to find a dentist who will treat their child.

First, despite the rise in children covered by dental insurance, more than 22 percent of children in the U.S. are uninsured.¹⁰⁹ Lack of dental insurance has been shown to be a compelling reason that families do not seek dental care for children. In fact, children without dental insurance are three times more likely to have an unmet dental care need than children with dental insurance.⁴

Children from racial minority groups had significantly more difficulty in finding access to dental care, as did those who live in rural areas or counties with fewer dentists per population.¹¹⁰

But lack of insurance alone cannot explain why the use of dental services remains unacceptably low among the most vulnerable to poor oral health, children from poor and minority families.⁴ That's because many of these families are on Medicaid.¹¹¹

Poor and minority families are discouraged to take their young children to the dentist due to exclusionary practices such as: being treated disrespectfully by the

clinic staff, discrimination, long wait times, limitation in provider choice and difficulties with transportation to the appointments.^{112,113} Other reasons may be lack of health literacy, limited English proficiency and cultural and societal barriers.¹¹⁴

Yet for many families, the key problem is finding a dentist who will see their child. There are not enough dentists to treat very young children, especially those on Medicaid.

Some researchers see a correlation between the low use of dental services by children enrolled in Medicaid and persistently low rate of participation in Medicaid among general dentists.^{115,116,117} Only about 1 in 4 dentists who responded to a 2007 survey administered by the American Dental Association said they treated Medicaid patients.¹¹⁸ Many general dentists do not accept Medicaid patients, or are unwilling or unable to treat young children given their unique needs.^{60,112,119} Even those who take Medicaid patients may decline to take children. In a 2010 survey of dentists in New York City, only 47 percent of general dentists affiliated with Medicaid managed care saw children aged 0 through 2 years enrolled in Medicaid managed care.¹²⁰ Dentists who decline to take Medicaid patients cite multiple factors for not participating; chief among them are low reimbursement rates and burdensome administrative procedures.¹¹⁸

Although 70 percent of pediatric dentists see Medicaid patients (representing about 25 percent of their patients), there are not enough pediatric dentists to serve the entire population of young children.^{121,122} With on average 3,390 patient visits per year per pediatric dentist, in aggregate pediatric dentists handle about 4.58 million Medicaid dental visits per year.¹²³

As a result, those who are uninsured or who have Medicaid are less likely to have access to dental services than those who have private insurance. In addition, there appears to be a shortage of dentists who are willing and able to treat young children, due in large part to low Medicaid fees.

DRAWBACKS OF ACA FOR PEDIATRIC ORAL HEALTH

Despite these advances, the ACA falls short on expanding dental insurance and in providing access to essential dental care for our most vulnerable families. Here is why:

No mandate to buy. While the ACA requires most consumers to buy health insurance or face a penalty, it does not require consumers to buy stand-alone pediatric dental insurance as part of state health care exchanges. As a result, many parents will not buy dental insurance for their children because they don't have to. Ironically, there is a mandated purchase for those seeking coverage in individual and small group markets outside of exchanges.

Lack of subsidies. While the ACA offers need-based subsidies to help consumers buy health insurance, it does not offer subsidies to help consumers buy stand-alone dental insurance plans.

No Medicaid improvements. Unlike the higher Medicaid reimbursements for primary care doctors, the ACA makes no improvements to Medicaid for dentists. While most pediatric dentists see Medicaid patients, only a fraction of general dentists participate in Medicaid due to low reimbursement and high administrative burden. The ACA also extended the Medicare Recovery Audit Contractor program to Medicaid with little guidance, resulting in inefficiencies in the audit process and further dissuading reluctant dentists from participating in the program.

Access will be more difficult. Even the limited Medicaid expansion is expected to increase demand 10.4 million dental visits per year. As a result, the ACA will bring a large influx of children into Medicaid, an already overburdened and underfunded public insurance program with too few participating dentists.⁸ The result could make it even more difficult for Medicaid patients to find a dentist, and could decrease care coordination as well.^{10,9}

Website issues. The complexities of navigating healthcare.gov, the ACA website, as well as many of the state health insurance exchanges, and the many glitches associated with that site, has made it difficult for consumers to sign up; enrollment is far lower than expected as a result.⁴ "Navigating the (healthcare.gov) website is hugely complicated and the people who are supposed to help are not very well trained in explaining the oral health benefits," said Dr. Reggiardo.

As a result of these factors, the initial projection that 8.7 million children will gain dental benefits appears to be overly optimistic. Now many experts project the number of children gaining dental benefits will be closer to 5 million, more than 42 percent lower than expected.^{5,11}

SOLUTION: IN LIEU OF FEDERAL REFORM, STATES MUST ACT

While the intent of the ACA was to improve the oral health of our nation's children, the law falls far short of doing that.

Here are four ways to improve the ACA:

- Revamp Medicaid to provide fair reimbursement rates and fewer administrative burdens for dentists.
- Set standards for what dental insurance covers.
- Require all children to have dental insurance.
- Help low income families pay for dental benefits through the state exchanges.

In lieu of federal reform, however, there are more immediate solutions available to the states. That's because states have wide leeway in what dental services are covered, what deductibles and copays are required and whether dental insurance is offered as a stand-alone policy or bundled into a health policy. While the result is a hodgepodge of dental plans and costs that vary widely from state to state, it also means that states can improve access to pediatric dental care on their own.

Only two states, Washington and Nevada, require consumers to buy pediatric dental insurance, filling a gap left open by the ACA.¹⁴ However, the solution is not as easy as that. The way in which dental plans are offered in the state exchanges can greatly affect access and affordability.

Traditionally, dental insurance has operated separately from medical insurance. The health care exchanges can offer pediatric dental in one of three ways: embedded in a qualified health plan, in a stand-alone dental plan bundled with a qualified health plan, or in a separate stand-alone dental plan. Some states, such as Massachusetts and California, will only offer stand-alone dental plans for 2014. Rhode Island, in contrast, will offer both dental plans both independently and embedded in health plans.¹²

Consumers who buy dental plans embedded into the medical plan may face higher than expected combined medical and dental services deductibles and out-of-pocket costs, and that could dissuade families from seeking preventive care for their children during the year until the deductible is met.^{13,14}

When purchasing separate stand-alone dental coverage, federal premium subsidies do not apply, despite efforts by the AAPD, American Dental Association (ADA) and others to change federal regulations on this point. In the interim, states should consider ways to help subsidize such dental coverage for lower income families who purchase stand-alone dental plans for their children in addition to medical insurance.

Clearly, consumers face some complex issues in choosing dental insurance.

"I believe the system will be much simpler and more transparent in five years," said Dr. Reggiardo. "But at this point, parents have to be very proactive in seeking out the dental benefits."

Meanwhile, some states have tried to address the growing imbalance between demand for dental services and supply of dentists, especially those who take Medicaid. While pediatric dentists, who are significantly more likely to take Medicaid than general dentists, are critical to caring for the influx of children who will gain dental insurance coverage under the ACA, there are not enough pediatric dentists to treat the Medicaid population. As a result, states are trying to attract more dentists to Medicaid by streamlining administrative procedures and paying providers closer to market rates.¹⁰ States such as Maryland, Virginia and Connecticut have increased dental care among children by taking this approach and ramping up patient outreach.¹⁶

CONCLUSION

Although the ACA holds great promise to improve pediatric dental care, there is much work remaining to be done to realize that promise. In lieu of federal reform, however, each state has significant latitude to address the issues.

REFERENCES

1. US Department of Health and Human Services. Oral Health in America: A Report of the Surgeon General. National Institute of Dental and Craniofacial Research website. <http://www.nidcr.nih.gov/DataStatistics/SurgeonGeneral/sgr/home.htm>. Accessed Oct. 5, 2013.
2. National Association of Dental Plans. ACA's Impact on Dental Coverage: Quick Reference Guide. NADP website. http://www.nadp.org/Libraries/HCR_Documents/NADP_PPACA_Quick_Ref_Guide_April_2011.sflb.ashx. Accessed Sept. 5, 2013.
3. National Association of Dental Plans, Delta Dental Plans Association white paper. Offering Dental In Health Exchanges: A Roadmap for State and Federal Policymakers. Delta Dental website. <http://www.deltadental.com/ExchangeWhitepaper.pdf>. Accessed Oct. 1, 2013.
4. ObamaCare Facts. Dental Insurance. ObamaCare website. <http://obamacarefacts.com/dental-insurance/dental-insurance.php>. Accessed Dec. 5, 2013.
5. Nasseh K, Vujicic M, O'Dell A. Affordable Care Act Expands Dental Benefits for Children But Does Not Address Critical Access to Dental Care Issues. American Dental Association Health Policy Resources Center Research Brief. http://www.ada.org/sections/professionalResources/pdfs/HPRCBrief_0413_3.pdf. Accessed Dec. 5, 2013.
6. Patient Protection and Affordable Care Act; Standards Related to Essential Health Benefits, Actuarial Value, and Accreditation; Final rule. 45 CFR Parts 147, 155, and 156 [Internet]. Department of Health and Human Services; 25 Feb 2013 [cited 2013 Apr 3]. Available from: <http://www.gpo.gov/fdsys/pkg/FR-2013-02-25/pdf/2013-04084.pdf>. Accessed Nov. 3, 2013.
7. Vujicic M, Nasseh K. Reconnecting Mouth And Body: ACA Fails To Meet Dental Care Needs But States Can Pick Up Slack. Health affairs. <http://healthaffairs.org/blog/2013/08/26/reconnecting-mouth-and-body-aca-fails-to-meet-dental-care-needs-but-states-can-pick-up-slack/>. Accessed Sept. 10, 2013.
8. Skorupskas E. Keep on Dancing. Pediatric Dentistry Today. 2012;48(3). <http://www.pediatricdentistrytoday.org/2012/May/XLVIII/3/news/article/73/>
9. Booth M. Flood of new dental patients in Colorado meets trickle of caregivers. The Denver Post. Nov. 29, 2013.
10. Phillip AD. Healthcare.gov Enrollment Falls Far Short of Expectations, Only 26,794 Sign Up. ABS News. <http://abcnews.go.com/Politics/healthcare-enrollment-falls-short-expectations-26794-sign/story?id=20879607>. Accessed Nov. 15, 2013.
11. Gerencher K. Getting a Grip on Dental Expenses: Health Law Should Help Children and Some Low-Income Adults. Nov. 16, 2013.
12. Stahl EM. Healthy Teeth, Healthy Children: Making Sure Families Can Afford Pediatric Dental Benefits Under the ACA. Community Catalyst website. <http://www.communitycatalyst.org/blog/archive?month=july-2013>. Accessed Nov. 18, 2013.
13. Harrison L. Dental Plan Costs Range Widely on New Exchanges. Medscape. <http://www.medscape.com/viewarticle/812764>. Accessed Oct. 17, 2013.
14. Delta Dental. Health Care Reform for Individuals. Delta Dental website. <http://www.deltadentalins.com/hx/healthcare-reform-for-individuals.html>. Accessed Nov. 18, 2013.
15. AAPD 2013 Legislative Fact Sheet. HRSA Title VII Pediatric Dentistry Appropriations.
16. Thuku NM, Carulli K, Costello S, Goodman H. Breaking the cycle in Maryland: oral health policy change in the face of tragedy. J Public Health Dent. 2012;72: S7-S13. <http://onlinelibrary.wiley.com/doi/10.1111/j.1752-7325.2012.00328.x/pdf>

III. EARLY DENTAL VISITS, DENTAL HOMES AND MORE

PEDIATRIC DENTAL PROVIDERS CAN HELP ADDRESS THE THREAT OF ECC



BENEFITS OF THE EARLY VISIT

The early dental visit, combined with good dental habits and dietary practices, can slow or even reverse the caries epidemic among our children. The goals of an early visit are to establish a dental home for the infant, introduce healthy habits and prevent early childhood caries.¹²⁴ In children at increased risk of poor oral health, early intervention and prompt referral to a dentist is cost-effective and can improve a child's quality of life.

In addition to understanding and promoting the benefits of the early dental visit and the dental home among parents and providers, access to dental care can be improved by increasing the number of pediatric dental care providers.

Pediatric dentists are skilled in managing a child's behavior while in the dental chair – skills not taught to general dentists and other providers.¹²⁵ Recent research has shown that changes in child development, family function and societal trends have made that challenge even more imposing, especially for those who come from low-income families and have tooth decay. In poor and underserved populations, children suffering from stress and deprivation are more likely to experience permanent psychological effects that can compromise dental treatment.¹²⁶ As a result, the special training and skills of the pediatric dentist are much needed to address the behavioral needs of children most afflicted by ECC.

The potential health, social and economic benefits to the child of early visits to the dentist are significant. During the infant visit to the pediatric dentist, the dentist will assess oral health risks, including the risk for or presence of caries.¹²⁷ The dentist will often talk to the parent about oral hygiene for the child, including brushing, flossing and fluoride; avoiding high-risk dietary practices, such as sugary foods and drinks and leaving a juice or milk bottle with the child at night; and the importance of oral hygiene for parents and caregivers.¹²⁵

Here are some of the key benefits of the early visit to the dentist:

Better oral health: The early visit to the dentist improves the oral health of the child by assessing and treating oral health, including caries, thereby reducing the child's future risk of dental disease and enhancing oral health throughout childhood.¹²⁷ In addition to the caries assessment, the dentist will address any growth and development issues that may be specific to a particular child, such as delayed eruption of teeth or rare structural abnormalities or habits that may predict future needs.¹²⁸

Establishing regular care: The early visit establishes the routine of regularly visiting the dentist; for instance, pre-school Medicaid kids who had an early preventive dental visit were more likely to use subsequent preventive services and experience lower dentally related costs.¹⁰³ In addition, a dental home can be established for the child, which is critical for maintaining good oral health in the child.^{90, 103}



Educating caregivers: One way to prevent the transmission of the bacteria that causes ECC is to educate the primary caregiver about the dangers of transmitting these bacteria to the child. By improving the oral hygiene of the primary caregiver, the risk of the child developing ECC becomes lower.² Caregivers can learn how to limit the child’s exposure to potential caries-carrying bacteria from other children (avoid sharing drinks, touching mouths, licking pacifier, etc.).² In addition, caregivers can be educated about the risks associated with sugary drinks and foods, frequent or overnight bottles of juice or milk and other dietary practices, as well as brushing and flossing their children’s teeth.

Better overall health: In particular, early detection and management of oral conditions can improve a child’s oral health, general health and well-being, and school readiness.^{31,75,95,129,130} Children with caries who were underweight quickly gained weight once their dental issues were treated.¹³¹

Improved social development: Dental treatment makes a very significant difference to the psychological and social aspects of the child’s life, eliminating pain, improving the ability to eat and sleep, and leading to more smiling, improved school performance and increased social interaction.¹³²

Lower costs: Evidence increasingly suggests that preventive intervention within the first year of life is not only critical, but cost effective.⁹⁰ Preventive visits to the dentist among children are associated with improved oral health and fewer trips to the dentist for non-preventive reasons.^{126,133}

DENTAL HOME

While it is difficult to overestimate the importance of the early visit to the dentist, it is equally important that the visit is not a one-time or rare event. A child’s oral health depends on regular visits to the dentist.

One of the key developments in promoting regular, preventive dental care is the dental home. A dental home is the ongoing relationship between the dentist and the patient in which all aspects of oral health care are delivered in a comprehensive, continuously-accessible, coordinated and family-centered way.¹¹⁴ Such care takes into consideration the patient’s age, developmental status and psychosocial well-being, and it is appropriate to the needs of the child and family. A dental home provides a network of practitioners specializing in everything from preventive oral care and education to the advanced dental care required to treat emergencies.

“It’s critically important for parents to establish a dental home for their children in their first year of life,” Dr. Brill said. “This is a way for all children, and especially those who are vulnerable to oral health concerns due to their condition or background, to stay healthy.”¹⁰²

The concept is just beginning to catch on. In the recent AAPD survey, few parents and caregivers (less than 1 in 10) had heard of the “Dental Home” concept; after hearing about it, most (more than 9 in 10) found the concept appealing and wanted to know more about it.¹⁰⁰

Here are some of the key benefits of the dental home:

Better oral health: There is growing evidence to show that early establishment of the dental home can reduce ECC.^{90,103} There also is evidence that early preventive visits can reduce the need for restorative and emergency care, therefore reducing dental costs among high-risk children.⁹⁰

Establishing regular care: Children who have dental coverage are more likely to seek care and receive preventive and therapeutic oral healthcare

from dentists.¹³⁴ Dental homes help parents to feel comfortable with the entire dental office, which is particularly important if the child has a dental emergency, according to experts.¹²⁶

Reducing disparities: Simple, effective infant preventive oral care programs for all children can help stem recent increases in caries prevalence in young children, especially among minorities and the economically disadvantaged.¹⁹

EXPANDING THE SUPPLY OF PEDIATRIC DENTAL PROVIDERS

The benefits of early visits and the dental home are not available to those who cannot find a dentist. We have already seen that there appears to be a shortage of dentists who are willing and able to treat young children.

Overall, the shortage appears to be more of a problem of accessibility than of overall supply.¹¹⁸

After all, the overall dentist workforce is growing: Eight dental schools have opened since 2002;¹³⁵ three additional schools are seeking accreditation for admission of students in 2013 and 2014; and four to five universities are contemplating opening dental schools in the next few years.¹¹⁴ By 2020, with the addition of new dental schools, there will be 5,600 dentists graduating every year, 800 more than in 2010.¹³⁶

One solution is for more general dentists to accept Medicaid patients, including children. However, general dentists will first need to see significant reforms to Medicaid that result in better reimbursements and fewer administrative burdens, among other things. There are indications, however, that if these reforms do take place, participation will improve. For instance, in Connecticut, higher Medicaid reimbursement rates and improved administrative structure encouraged many more private practice dentists to treat children insured under HUSKY A (Healthcare for Uninsured Kids and Youth), the state’s Medicaid program for low-income families. Utilization rates of children continuously enrolled in HUSKY A increased from 46 percent in 2006

to nearly 70 percent in 2011, which is a percentage often used as a benchmark for adequate access to care.

Another solution is to use Expanded Function Dental Assistants (EFDAs) to increase help for dental offices that serve populations who have trouble accessing dental care.¹³² An EFDA is a dental assistant or dental hygienist who receives additional education to enable them to perform reversible, intraoral procedures, and additional tasks (expanded duties or extended duties), services or capacities, under the supervision of a licensed dentist. Since the EFDA practices under the supervision of a licensed dentist, within the dental home, children are ensured access to comprehensive care, including restorative services to eliminate pain and restore function.

Some organizations have advocated for the creation of dental therapists, a midlevel provider somewhat analogous to that of a nurse practitioner in that they perform many of the same functions as a dentist. A recent study of midlevel providers such as dental therapists, however, concluded that their introduction into a community does not reduce rates of dental caries or oral health disparities.¹³⁷ A number of dental organizations, including the American Dental Association and the AAPD, oppose the introduction of dental therapists because, among other reasons, it would create a two-tiered standard of care in which the nation’s most vulnerable children would receive services by providers with less education and experience.^{133,138,139} Policy makers must also be aware that by school age, almost half of children have experienced tooth decay, and many within the first few years of life. The behavior of these children often precludes management in the dental office or requires treatment using pharmacologic methods or use of a hospital, both skills and certification not available to proposed mid-level providers. Perhaps the strongest arguments against use of mid-level providers to fix the damage of decay are the avoidance of significant investment in early prevention, the cost of repair, and the lifelong infection of those afflicted and their ongoing restorative dental burden.



THE NEED FOR MORE PEDIATRIC DENTISTS

There is evidence, however, that we have too few pediatric dentists. We have already seen that although 70 percent of pediatric dentists see Medicaid patients (representing about 25 percent of their patients), there are not enough pediatric dentists to serve the entire population of young children.^{119, 122} There are an estimated 6,134 professionally active dentists practicing in the area of pediatric dentistry in the U.S.¹⁴⁰ “Pediatric dentists understand children and how to make sure they get – and continue to get – the best possible dental care,” Dr. Brill said. “Perhaps the most critical element in this is establishing strong communications with the children and their parents.”

Pediatric dentists are specially trained to treat children and limit their practices to treating children. For instance, pediatric dentists are trained to allay children’s fears, treat special-needs children, create a kid-friendly environment and adjust anesthesia dosages.¹⁴¹ There also is an effort to better identify and assist those with poor health literacy skills.¹¹³

There is evidence that children who go to a pediatric dentist get better care and their parents learn more about pediatric oral health and dental care. For instance, Medicaid-enrolled children in New Hampshire with a dental visit and treated by a pediatric dentist were significantly more likely than those seen by a general dentist to have had preventive dental care.¹⁴² Among children with a dental home, those seen by a pediatric dentist were significantly more likely than children seen by a general dentist to have received preventive dental care.¹⁴¹

Parents who take their children to a pediatric dentist are more knowledgeable about pediatric oral health and dental care than those parents who take their children to a general dentist, according to the AAPD survey.¹⁰⁰ Questions regarding brushing children’s teeth, putting a baby to bed with a bottle and the importance of an early trip to the dentist were all answered correctly more often by parents taking their children to pediatric dentists.¹⁰⁰

In addition to their low participation level in Medicaid, many general dentists are unwilling or unable to treat young children given their unique needs.²⁴ General dentists, in general, often do not see the importance of the early dental visit.¹⁰⁵ General dentists are much less likely to treat infants and toddlers and had more negative attitudes toward infant oral health exams than pediatric dentists, according to a 2010 study in Michigan.¹⁴³ While most general dentists reported treating children, few provided care for children age 3 or younger, according to a study in Kentucky.¹⁴⁴

As a result, pediatric dentists are much more likely and better equipped to see and treat a very young patient than a dentist who does not specialize in pediatric dentistry.

Many parents and caregivers do not understand that pediatric dentists received special training in treating children, and received more training than general dentists, according to the AAPD survey.¹⁰⁰ Once they learned about this specialized training, 3 out of 4 parents and caregivers surveyed said that they would be likely to seek out a pediatric dentist for their child.¹⁰⁰

One area of specialized training that pediatric dentists receive is in treating special needs children, who are more likely than others to have unmet dental needs.¹⁴⁵

In fact, for special needs children, dental care is the most prevalent unmet health care need, exceeding the need for either preventive or specialty medical care.¹⁴⁶ Untreated tooth decay can exacerbate the already fragile condition of children with special health care needs.² Pediatric dentists not only are trained to treat special needs patients, but they often retain these patients until adulthood due to the relationship that they have built with them.¹⁴⁷

Training more pediatric dentists should go a long way toward addressing the concentration of early childhood caries (ECC) in very young and in special needs patients by improving access to their specialized skills.¹⁴⁸

The AAPD has worked for over 15 years to increase the supply of pediatric dentists, and this has resulted in a doubling of residency positions. However, over 40 percent of all applicants for pediatric dentistry training are still turned away each year.¹⁴⁹

As a result, in order to increase the supply of dental providers able to see young children, there need to be more pediatric dentists, more Expanded Function Dental Assistants (EFDAs), and more general dentists willing to accept Medicaid patients and willing and able to treat very young patients.

CONCLUSION

The increase in caries among our youngest and most vulnerable children could have profound repercussions for our society. Not only do ECC and other oral diseases threaten the immediate dental and overall health of these children, but they could have a lifelong impact on their dental and overall health and development. In addition, this public health threat will burden our society with substantial dental and healthcare costs, as well as social and economic costs. ECC, once established, is difficult to eradicate, and often leads to future caries and permanent tooth decay in the child.



The most encouraging – and frustrating – aspect of this health care crisis is that it is preventable. An early visit with a dentist specializing in young children can help minimize the threat of ECC. Establishing a dental home for the child will help prepare the child for a lifetime of robust oral health. Early education and intervention are the keys to preventing caries.¹²⁷

To be sure, the solution is not as easy as it sounds. We need to better educate the public, as well as the medical community, about the importance of these early dental visits. We need to involve allied health professionals, community organizations and other health professionals in efforts focused on preventing oral disease in young children and on educating parents about the importance of good oral health for their child’s well-being.¹⁴⁸

And we need to pave the way for these early visits by improving access to dental care by ensuring that more people have dental insurance. We also need to ensure there are an adequate number of dentists available to meet increased demand – dentists who are trained in treating children who are very young, from poor or minority families or who have special needs.

REFERENCES

1. Dye BA, Arevalo O, Vargas CM. Trends in pediatric dental caries by poverty status in the United States, 1988-1994 and 1999-2004. *Int J Pediatr Dent.* (2010);20(2):132-143.
2. Çolak H, Dülgergil CT, Dalli M, Hamidi MM. Early childhood caries update: A review of causes, diagnoses, and treatments. *J Nat Sci Biol Med.* (2013); 4(1): 29–38. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3633299/>
3. Bagramian RA, Garcia-Godoy F, Volpe AR. The global increase in dental caries. A pending public health crisis. *Am J Dent.* (2009);22(1):3-8.
4. US Department of Health and Human Services. Oral Health in America: A Report of the Surgeon General. National Institute of Dental and Craniofacial Research website. <http://www.nidcr.nih.gov/DataStatistics/SurgeonGeneral/sgr/home.htm>. Accessed Oct. 5, 2013.
5. Caufield PW, Li Y, Dasanayake A. Dental caries: an infectious and transmissible disease. *Compend Contin Educ Dent.* (2005);26(5)(Suppl 1):10-16.
6. Kanasi E, Johansson J, Lu SC, et al. Microbial risk markers for childhood caries in pediatrician's offices. *J Dent Res.* 2010;89(4):378-83.
7. Karn T, O'Sullivan DA, Tinanoff N. Mutans streptococci levels in 8-15 month-old children. *J Public Health Dent.* 1998;58(3):248-9.
8. Berkowitz RJ. Mutans streptococci: Acquisition and transmission. *Pediatr Dent.* 2006;28(2):106-9.
9. Poureslami HR, Van Amerongen WE. Early Childhood Caries (ECC) An Infectious Transmissible Oral Disease. *The Indian Journal of Pediatrics.* 2009;76(2): 191-194.
10. Loesche WJ. Role of Streptococcus mutans in human dental decay. *Microbiol Rev* 1986;50(4):353-80.
11. The disease of early childhood caries (ECC) is the presence of 1 or more decayed (noncavitated or cavitated lesions), missing [due to caries], or filled tooth surfaces in any primary tooth in a child 71 months of age or younger, according to the American Academy of Pediatric Dentistry. http://www.aapd.org/assets/1/7/D_ECC.pdf
12. Mishra A, Pandey R, Pandey N, Jain E. A pedoprosthetic rehabilitation in patients with severe early childhood caries (S-ECC). *BMJ Case Rep.* 2013 (published online July 9, 2013).
13. American Association of Pediatric Dentistry. Policy on Early Childhood Caries (ECC): Classifications, consequences, and Preventive Strategies. Revised 2011. http://www.aapd.org/media/Policies_Guidelines/P_ECCClassifications.pdf
14. Vargas CM, Crall JJ, Schneider DA. Sociodemographic distribution of pediatric dental caries: NHANES III, 1988–1994. *J Am Dent Assoc.* 1998;129:1229–38.
15. Tinanoff N, Reisine S. Update on early childhood caries since the Surgeon General's Report. *Academic Pediatr.* 2009;9(6):396-403.
16. Sheller B, Williams BJ, Lombardi SM. Diagnosis and treatment of dental caries-related emergencies in a children's hospital. *Pediatr Dent.* 1997;19(8):470-5.
17. Davies GN. Early childhood caries: A synopsis. *Community Dent Oral Epidemiol.* 1998;26(suppl):106-16.
18. Seow WK. Biological mechanisms of early childhood caries. *Community Dent Oral Epidemiol.* 1998;26(suppl): 8-27.
19. Dye BA, Tan S, Smith V, et al. Trends in oral health status: United States, 1988–1994 and 1999–2004. *Vital Health Stat.* 2007;11(248):1– 92. http://www.cdc.gov/nchs/data/series/sr_11/sr11_248.pdf
20. Pierce KM, Rozier RG, Vann WF Jr. Accuracy of pediatric primary care providers' screening and referral for early childhood caries. *Pediatrics.* 2002;109(5):E82-2.
21. Dental Health Foundation. Mommy, It Hurts to Chew. The California Smile Survey: An Oral Health Assessment of California's Kindergarten and 3rd Grade Children. Feb. 2006. http://centerfororalhealth.org/images/lib_PDF/dhf_2006_report.pdf. Accessed Nov. 18, 2013.
22. Saint Louis C. Preschoolers in Surgery for a Mouthful of Cavities. *The New York Times.* March 6, 2012. <http://www.nytimes.com/2012/03/06/health/rise-in-preschool-cavities-prompts-anesthesia-use.html?pagewanted=all>
23. Wilson S, Smith GA, Preisch J, Casamassimo PS. Nontraumatic dental emergencies in a pediatric emergency department. *Clin Pediatr.* (1997)36(6):333-7.
24. Vargas CM, Ronzio CR. Disparities in Early Childhood Caries. *BMC Oral Health.* (2006); 6(Suppl 1):S3. <http://www.biomedcentral.com/1472-6831/6/S1/S3>
25. Saint Louis C. Oral infections causing more hospitalizations. *The New York Times.* Aug. 30, 2013.
26. Otto M. For Want of a Dentist. *Washington Post.* Feb. 28, 2007. <http://www.washingtonpost.com/wp-dyn/content/article/2007/02/27/AR2007022702116.html>
27. National Poverty Center. Poverty in the United States. http://www.npc.umich.edu/poverty/#_ftn3. Accessed Dec. 3, 2013.
28. Wight VR, Chau M, Aratani Y. Who are America's poor children? The official story. New York: The National Center for Children in Poverty, Mailman School of Public Health, Columbia University, March 2011. http://www.nccp.org/publications/pub_912.html
29. National Institutes of Health. Dental Caries (Tooth Decay) in Children (Age 2 to 11). Prevalence of caries in primary teeth (dft) among youths 2–11 years of age, by selected characteristics: United States, National Health and Nutrition Examination Survey, 1999–2004. <http://www.nidcr.nih.gov/DataStatistics/FindDataByTopic/DentalCaries/DentalCariesChildren2to11>. Accessed Dec. 17, 2013.
30. Divaris K, Vann WF Jr, Baker AD, Lee JY. Examining the accuracy of caregivers' assessments of young children's oral health status. *J Am Dent Assoc* (2012);143(11):1237-47 Vargas CM, Crall JJ, Schneider DA. Sociodemographic distribution of pediatric dental caries: NHANES III, 1988–1994. *J Am Dent Assoc.* 1998;129:1229–38.
31. Dye BA, Shenkin JD, Ogden CL, Marshall TA, Levy SM, Kanellis MJ. The relationship between healthful eating practices and dental caries in children aged 2-5 years in the United States, 1988-1994. *J Am Dent Assoc.* 2004; 135:55-66.
32. Centers for Disease Control and Prevention. Disparities in Oral Health. http://www.cdc.gov/OralHealth/oral_health_disparities/. Accessed Nov. 5, 2013.
33. General Accounting Office. Dental Disease Is a Chronic Problem Among Low-Income Populations. Report to U.S. Congress, April 2000. <http://www.gao.gov/new.items/he00072.pdf>
34. National Institute of Dental Research. Oral Health of United States Children: The National Survey of Dental Caries in U.S. School Children, 1986-7. Bethesda MD: U.S. Department of Health and Human Services, 1989.
35. DeNavas-Walt C, Proctor BD, Smith JC. U.S. Census Bureau, Current Population Reports, P60-245, Income, Poverty, and Health Insurance Coverage in the United States: 2012, U.S. Government Printing Office, Washington, DC, 2013. <http://www.census.gov/prod/2013pubs/p60-245.pdf>
36. Dye BA, Li X, Beltran-Aguilar ED. Selected oral health indicators in the United States, 2005–2008. NCHS data brief, no 96. Hyattsville, MD: National Center for Health Statistics. 2012. <http://www.cdc.gov/nchs/data/databriefs/db96.pdf>
37. Drury TF, Horowitz AM, Ismail AA, et al. Diagnosing and reporting early childhood caries for research purposes. *J Public Health Dent.* 1999;59(3):192-7.
38. Mobley C, Marshall TA, Milgrom P, Coldwell SE. The contribution of dietary factors to dental caries and dis- parities in caries. *Acad Pediatr.* 2009;9(6):410-4.
39. Vann Jr. WF, Divaris K, Gizlice Z, Baker AD, Lee JY. Caregivers' Health Literacy and Their Young Children's Oral-health–related Expenditures. *Journal of Dental Research.* 2013; 92(7): S55-S62.
40. Chu M, Sweis LE, Guay AH, Manski RJ. The dental care of U.S. children: access, use and referrals by nondentist providers. *J Am Dent Assoc.* 2007;138(10):1324-1331.
41. Von Kaenel D, Vitangeli D, Casamassimo P, Wilson S, Preisch J. Social factors associated with pediatric emergency department visits for caries-related dental pain. *Pediatr Dent.* (2001) 23:56–60. <http://www.aapd.org/assets/1/25/Kaenel-23-01.pdf>
42. Edelstein BL, Chinn CH. Update on disparities in oral health and access to dental care for America's children. *Acad Pediatr.* 2009;9(6):415-9.
43. Filstrup SL, Briskie D, da Fonseca M, Lawrence L, Wandera A, Inglehart MR. Early childhood caries and quality of life: child and parent perspectives. *Pediatr Dent.* 2003;25(5):431-40.
44. Thikkurissy S, Glazer K, Amini H, Casamassimo P, Rashid R. The Comparative Morbidities of Acute Dental Pain and Acute Asthma on Quality of Life in Children. *Pediatr Dent.* 2012; 34(4): 77E-80E.
45. Li X, Tronstad L, Olsen I. Brain abscesses caused by oral infection. *Endod Dent Traumatol.* 1999; 15: 95-101.
46. Melén I, Lindahl L, Andréasson L, Rundcrantz H. Chronic Maxillary Sinusitis: Definition, Diagnosis and Relation to Dental Infections and Nasal Polyposis. *Acta Oto-laryngologica.* 1986;101(3–4):320-327.
47. Acs G, Lodolini G, Kaminsky S, Cisneros GJ. Effect of nursing caries on body weight in a pediatric population. *Pediatr Dent.* 1992;14(5):302-5.
48. Ayhan H, Suskan E, Yildirim S. The effect of nursing or rampant caries on height, body weight, and head circumference. *J Clin Pediatr Dent.* 1996;20(3):209-12.
49. Fleming P, Gregg TA, Saunders ID. Analysis of an emergency dental service provided at a children's hospital. *Int J Paediatr Dent.* 1991;1(1):25-30.
50. Schwartz S. A one-year statistical analysis of dental emergencies in a pediatric hospital. *J Can Dent Assoc.* 1994; 60(11):959-62, 966–8.
51. Low W, Tan S, Schwartz S. The effect of severe caries on the quality of life in young children. *Pediatr Dent.* 1999; 21(6):325-6.
52. Acs G, Pretzer S, Foley M, Ng MW. Perceived outcomes and parental satisfaction following dental rehabilitation under general anesthesia. *Pediatr Dent.* 2001;23(5): 419-23.
53. Thomas CW, Primosch RE. Changes in incremental weight and well-being of children with rampant caries following complete dental rehabilitation. *Pediatr Dent.* 2002;24(2):109-13 .
54. Cunnion DT, Spiro A III, Jones JA, et al. Pediatric oral health-related quality of life improvement after treatment of early childhood caries: A prospective multi-site study. *J Dent Child.* 2010;77(1):4-11.
55. Sheller B, Churchill SS, Williams BJ, Davidson B. Body mass index of children with severe early childhood caries. *Pediatr Dent.* 2009;31(3):216-21.
56. American Academy of Pediatrics. Policy on oral health risk assessment timing and establishment.
57. Hale KJ; American Academy of Pediatrics Section on Pediatric Dentistry. Oral health risk assessment timing and establishment of the dental home. *Pediatrics.* 2003;111[5 Pt 1]:1113-6.
58. Fung MHT, Wong MCM, Lo ECM, Chu CH. Early Childhood Caries: A Literature Review. *Oral Hyg Health.* 2013;1(1). <http://www.esciencecentral.org/journals/early-childhood-caries-a-literature-review-johh.1000107.php?aid=14869>
59. Li Y, Wang W. Predicting Caries in Permanent Teeth from Caries in Primary Teeth: An Eight-year Cohort Study. *J Dent Res.* (2002)81: 561-566.
60. Partnership for Healthy Mouths Healthy Lives. Accessed Sept. 11, 2013. <http://www.healthymouthshealthylives.org/>
61. Talekar BS, Rozier RG, Slade GD, Ennett ST. Parental perceptions of their preschool-aged children's oral health. *JADA* (2005);136: 362-372. Vargas CM, Ronzio CR. Disparities in early childhood caries. *BMC Oral Health.* 2006; 6(Suppl 1):S3. doi:10.1186/1472-6831-6-S1-S3
62. Barrêto EPR, Ferreira EF, Pordeus IA. Evaluation of toothache severity in children using a visual analog scale of faces. *Pediatr Dent;* (2004);26(6):485-91.
63. Thikkurissy, S., Allen, P., Smiley, M., Casamassimo, P.S. Waiting for the Pain to Get Worse: Caregiver Behaviors and Knowledge Toward Pain Medication and Acute Dental Pain in Children. *Pediatr Dent.* 2011;34: 289-94.
64. American Academy of Pediatric Dentistry. Policy on Pediatric Pain Management. 2012. http://www.aapd.org/media/Policies_Guidelines/P_PainManagement.pdf
65. Taddio A, Chambers CT, Halperin SA, et al. Inadequate pain management during routine childhood immunizations: the nerve of it. *Clin Ther.* 2009;31(Suppl 2):S152–67.
66. Wong C, Lau E, Palozzi L, Campbell F. Pain management in children: Part 1 — Pain assessment tools and a brief review of nonpharmacological and pharmacological treatment options. *Can Pharm J.* 2012; 145(5): 222–225. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3567578/>
67. Sine R. Don't Fear the Dentist. *WedMD* 2008. <http://www.webmd.com/oral-health/features/dont-fear-the-dentist>. Accessed Nov. 20, 2013.
68. Eitner S, Wichmann M, Paulsen A, Holst S. Dental anxiety – an epidemiological study on its clinical correlation and effects on oral health. *J Oral Rehabil.* 2006;33(8): 588–593.
69. Gatchel RJ, Ingersoll BD, Bowman L, Robertson MC, Walker C.J. The prevalence of dental fear and avoidance: a recent survey study. *Am Dent Assoc.* 1983;107(4):609-10.
70. Kenney MK, Kogan MD, Crall JJ. Parental Perceptions of Dental/Oral Health Among Children With and Without Special Health Care Needs. *Ambulatory Pediatrics* 2008;8:312–20. Saint Louis C. Preschoolers in Surgery for a Mouthful of Cavities. *The New York Times.* March 6, 2012. <http://www.nytimes.com/2012/03/06/health/rise-in-preschool-cavities-prompts-anesthesia-use.html?pagewanted=all>
71. Gerth J, Miller TC. Use Only as Directed. *Propublica* Sept. 20, 2013. <http://www.propublica.org/article/tylenol-mcneil-fda-use-only-as-directed>
72. Nourjah P, Ahmad SR, Karwoski C, Willy M. Estimates of Acetaminophen (Paracetomal)-associated overdoses in the United States. *Pharmacoepidemiol Drug Safety.* 2006; 15(6): 398-405.
73. U.S. Food and Drug Administration. FDA report to Drug Safety and Risk Management Committee, Anesthetic and Life Support Drugs Advisory Committee and Nonprescription Drugs Advisory Committee. Acetaminophen Overdose and Liver Injury — Background and Options for Reducing Injury. May 22, 2009. <http://www.fda.gov/downloads/AdvisoryCommittees/CommitteesMeetingMaterials/DrugsDrugSafetyandRiskManagementAdvisoryCommittee/UCM164897.pdf>

74. United States National Library of Medicine. Clinical and Research Information on Drug Induced Liver Injury. Accessed December 15, 2013. <http://livertox.nih.gov/Acetaminophen.htm>U.S. Food and Drug Administration. Acetaminophen Overdose and Liver Injury — Background and Options for Reducing Injury. Report to the Advisory Committee Members Drug Safety and Risk Management Committee, Anesthetic and Life Support Drugs Advisory Committee and Nonprescription Drugs Advisory Committee. [2009]. <http://www.fda.gov/downloads/AdvisoryCommittees/CommitteesMeetingMaterials/Drugs/DrugSafetyandRiskManagementAdvisoryCommittee/UCM164897.pdf>
75. Gift HC, Reisine ST, Larach DC. The Social Impact of Dental Problems and Visits. *American Journal of Public Health*. 1992; 82(12): 1663-1668.
76. Nadereh Pourat and Gina Nicholson, Unaffordable Dental Care is Linked to Frequent School Absences (Los Angeles, CA: UCLA Center for Health Policy Research, 2009) 1-6. <http://healthpolicy.ucla.edu/publications/Documents/PDF/Unaffordable%20Dental%20Care%20Is%20Linked%20to%20Frequent%20School%20Absences.pdf>
77. Jackson SL, Vann WF Jr, Kotch JB, Pahel BT, Lee JY. Impact of poor oral health on children's school attendance and performance. *Am J Public Health*. 2011;101(10):1900-6.
78. Guarnizo-Herreño CC, Wehby GL. Children's Dental Health, School Performance, and Psychosocial Well-Being. *Journal of Pediatrics*. 2012;16(6): 1153-1159.
79. IHS Division of Oral Health. IHS ECC Early Childhood Caries Initiative. 2010. <http://www.ihs.gov/phoenix/documents/services/dental/Early%20Childhood%20Caries.pdf>
80. Nagarkar SR, Kumar JV, Moss ME. Early childhood caries-related visits to emergency departments and ambulatory surgery facilities and associated charges in New York state. *J Am Dent Assoc*. 2012;143(1):59-65.
81. Casamassimo PS, Thikkurissy S, Edelstein BL, Maiorini E. Beyond the dmft: the human and economic cost of early childhood caries. *J Am Dent Assoc*. 2009;140:650-657.
82. Caufield PW, Griffen AL. Dental Caries : An Infectious and Transmissible Disease. *Pediatric Clinics of North America*. 2000; 47(5): 1001-1019.
83. Edelstein BL. The Cost of Caring: Emergency Oral Health Services. NCEMCH Policy Brief [May 1998]. National Center for Education in Maternal and Child Health. http://www.hawaii.edu/hivandaids/The_Cost_Of_Caring__Emergency_Oral_Health_Services.pdf
84. Allukian M Jr. The Neglected Epidemic and the Surgeon General's Report: A Call to Action for Better Oral Health. *Am J Public Health*. 2008; 98(Suppl 1): S82-S85.
85. American Academy of Pediatric Dentistry. Policy on the dental home. *Pediatr Dent*. 2012;34(special issue):24-5.
86. American Academy of Pediatrics. Oral health risk assessment timing and establishment of the dental home. *Pediatr*. 2003;11(5):1113-6. Re-affirmed 2009;124(2):845.
87. Berg JH, Stapleton FB. Physician and dentist: New initiatives to jointly mitigate early childhood oral disease. *Clin Pediatr*. 2012;51(6):531-7.
88. American Dental Association. Statement on Early Childhood Caries. <http://www.ada.org/2057.aspx>. Accessed Nov. 18, 2013.
89. American Academy of Pediatrics. Oral Health in Children. <http://www2.aap.org/oralhealth/>
90. Academy of General Dentistry. Tips for Tots' Teeth. Press release, Jan. 30, 2013. http://www.agd.org/media/123391/agd_press_release_1_30_13.pdf
91. American Academy of Pediatric Dentistry. Guideline on Periodicity of Examination, Preventive Dental Services, Anticipatory Guidance/ Counseling, and Oral Treatment for Infants, Children, and Adolescents. Revised 2013. Accessed Nov. 18, 2013. http://www.aapd.org/media/Policies_Guidelines/G_Periodicity.pdf
92. Lee JY, Bouwens TJ, Savage MF, Vann WF Jr. Examining the cost-effectiveness of early dental visits. *Pediatr Dent*. 2006;28(2):102-5, discussion 192-8.
93. Nainar S. Longitudinal analysis of dental services provided to urban low income (Medicaid) preschool children seeking initial dental care. *J Dent Child*. 1998;65: 339-343
94. Pahel BT, Rozier RG, Stearns SC, Quiñonez RB. Effectiveness of preventive dental treatments by physicians for young Medicaid enrollees. *Pediatr*. 2011;127(3):682-9.
95. American Academy of Pediatric Dentistry. Policy on early childhood caries: Unique challenges and treatment options. *Pediatr Dent*. 2012;34(special issue):53-5.
96. Davis EE, Deinard AS, Maiga EW. Doctor, my tooth hurts: The costs of incomplete dental care in the emergency room. *J Pub Health Dent*. 2010;70(3)205-10.
97. Kobayashi M, Chi D, Coldwell SE, Domoto P, Milgrom P. The effectiveness and estimated costs of the access to baby and child dentistry programs in Washington State. *J Am Dent Assoc*. 2005;136(9):1257-63.
98. American Academy of Pediatrics. Early childhood caries in indigenous communities. *Pediatr*. 2011;127(6):1190-8.
99. Agostini FG, et al. Dental emergencies in a university-based pediatric dentistry postgraduate outpatient clinic: a retrospective study. *ASDC J Dent Child*. 2001;68(5-6):316-21.
100. American Academy of Pediatric Dentistry Consumer Survey. October 2013.
101. Met Life. Equipping Parents with Importance Information about Children's Oral Health. February 2012. http://c9.go2dental.com/ml_content/pdf/parental-oral-health-literacy.pdf
102. Delta Dental of Illinois. Illinois Children Don't See Dentist Early Enough. April 26, 2012. <http://www.prnewswire.com/news-releases/illinois-children-dont-see-dentist-early-enough-149047885.html>
103. Wall TP, Vujicic M, Nasseh K. Recent Trends in the Utilization of Dental Care in the United States. *J Dent Educ*. 2012; 76(8): 1020-1027. <http://www.jdentaled.org/content/76/8/1020.full>
104. Malcheff S, Pink TC, Sohn W, Inglehart MR, Briskie D. Infant oral health examinations: Pediatric dentists' professional behavior and attitudes. *Pediatr Dent*. 2009;31(3): 202-9.
105. Brickhouse TH, Unkel JH, Kancitis I, Best AM, Davis RD. Infant oral health care: A survey of general dentists, pediatric dentists, and pediatricians in Virginia. *Pediatr Dent*. 2008;30(2):147-53.
106. Santos CL, Douglass JM. Practices and opinions of pediatric and general dentists in Connecticut regarding the age 1 dental visit and dental care for children younger than 3 years old. *Pediatr Dent*. 2008;30(4):348-51.
107. Lewis CW, Boulter S, Keels, et al. Oral health and pediatricians: results of a national survey. *Acad Pediatr*. 2009;9(6):457-61
108. Ismail AI, Nainar SM, Sohn W. Children's first dental visit: attitudes and practices of US pediatricans and family physicians. *Pediatr Dent*. 2003;25(5):425-30.
109. Liu J, Probst J, Martin A, Wang JY, Salinas, C. Disparities in Dental Insurance Coverage and Dental Care Among US Children: The National Survey of Children's Health. *Pediatrics*. 2007;119:S12-S21.
110. Savage MF, Lee JY, Kotch JB, Vann Jr WF. Early Preventive Dental Visits: Effects on Subsequent Utilization and Costs. *Pediatrics*. 2004;114:e418-e423. <http://www.aapd.org/assets/news/upload/2005/803.pdf>
111. Ku L, Sharac J, Bruen B, Thomas M, Norris L. Increased Use of Dental Services by Children Covered by Medicaid: 2000-2010. *Medicare & Medicaid Research Review* (2013);3(3): E1-E13. http://www.cms.gov/mmrr/Downloads/MMRR2013_003_03_b01.pdf
112. Mofidi M, Rozier RG, King RS: Problems with access to dental care for Medicaid-insured children: what caregivers think. *Am J Public Health*. 2002; 92(1):53-58.
113. Jackson R. Parental Health Literacy and Children's Dental Health: Implications for the Future. *Parental Health Literacy and Children's Dental Health*. 2006;28(1):72-75. <http://www.aapd.org/assets/1/25/Jackson-28-1.pdf>
114. Policy on workforce issues and delivery of oral health services in a dental home. American Academy of Pediatric Dentistry. Adopted 2011. http://www.aapd.org/media/Policies_Guidelines/P_WorkforceIssues.pdf
115. Stearns SC, Rozier RG, Kranz AM, Pahel BT, Quiñonez RB. Cost-effectiveness of preventive oral health care in medical offices for young Medicaid enrollees. *Arch Pediatr Adolesc Med*. 2012;166(10):945-51.
116. Felland L, Lauer J, Cunningham P. Community efforts to expand dental services for low-income people. *Cent Stud Health Syst Change*. 2008. Accessed Dec. 17, 2013. <http://www.hschange.org/CONTENT/1000/>
117. Bugis BA. Early Childhood Caries and the Impact of Current U.S. Medicaid Program: An Overview. *Int J Dent*. 2012. Article ID 348237, 7 pages. <http://www.hindawi.com/journals/ijd/2012/348237/>
118. American Dental Association Survey. Just the facts: Medicaid. *ADA News* [2009];40(11):1.
119. Pew Charitable Trusts. In Search of Dental Care: Two Types of Dentist Shortages Limit Children's Access to Care. June 2013. http://www.connectingbenefits.com/pdf/in_search_of_dental_care.pdf
120. Garg S, Rubin T, Jasek J, Weinstein J, Helburn L, Kaye K. How willing are dentists to treat young children? A survey of dentists affiliated with Medicaid managed care in New York City, 2010. *Journal of the American Dental Association*. 2013; 144: 416-425.
121. Skorupskas E. Keep on Dancing. *Pediatric Dentistry Today*. May 2012. <http://www.pediatricdentistrytoday.org/2012/May/XLVIII/3/news/article/73/>
122. Morris PJ, Freed JR, Nguyen A, Duperon DF, Freed BA, Dickmeyer, J. Pediatric dentists' participation in the California Medicaid program. *Pediatr*. 2004;26(1): 79.
123. AAPD 2013 Legislative Fact Sheet. HRSA Title VII Pediatric Dentistry Appropriations.
124. Bahuguna R, Jain A, Khan SA. Early Dental Visit-An Overview. *Asian Journal of Oral Health & Allied Sciences*. 2011;1(1): 58-60. <http://www.sdclucknow.com/ajohas/16.pdf>
125. American Academy of Pediatric Dentistry. Guideline on Behavior Guidance for the Pediatric Dental Patient. Revised 2011. http://www.aapd.org/media/Policies_Guidelines/G_BehavGuide.pdf
126. Shonkoff JP, Garner AS. The Lifelong Effects of Early Childhood Adversity and Toxic Stress. *Pediatrics* 2012;129:e232-e246. <http://pediatrics.aappublications.org/content/129/1/e232.full.pdf+html>
127. American Academy of Pediatric Dentistry. Guideline on Infant Oral Health Care. Last revised 2012. http://www.aapd.org/media/Policies_Guidelines/G_infantOralHealthCare.pdf
128. American Academy of Pediatric Dentistry. Guideline on management of the developing dentition and occlusion in pediatric dentistry. *Pediatr Dent*. 2012;34(special issue):239-51.
129. American Academy of Pediatric Dentistry. Policy on early childhood caries: Classifications, consequences, and preventive strategies. *Pediatr Dent*. 2012;34(special issue):50-2.
130. Clarke M, Locker D, Berral G, Pencharz P, Kenny DJ, Judd P. Malnourishment in a population of young children with severe early childhood caries. *Pediatr Dent*. 2006;28(3):254-9.
131. Acs G, Shulman R, Ng MW, Chussid S. The effect of dental rehabilitation on the body weight of children with early childhood caries. *Pediatr Dent*. 1999;21(2):109-13.
132. A Sheiham. Dental caries affects body weight, growth and quality of life in pre-school children. *British Dental Journal*. 2006; 201: 625 – 626. <http://www.nature.com/bdj/journal/v201/n10/full/4814259a.html>
133. Sen B, Blackburn J, Morrissey M, Kilgore M, et al. Effectiveness of Preventive Dental Visits in Reducing Nonpreventive Dental Visits and Expenditures. *Pediatrics*. 2013;131:1107-1113. <http://pediatrics.aappublications.org/content/131/6/1107.full.pdf>
134. American Academy of Pediatric Dentistry press release in response to Kellogg report on dental therapists.
135. Guthrie D, Valachovic R, Brown J. The impact of new dental schools on the dental workforce through 2022. *The Journal of Dental Education*, January 2009, pg 1354. *J Dent Educ*. 2009;73(12):1353-60.
136. American Dental Education Association, Dentists and Demographics. (Based on American Dental Association, Survey Center, Dental Workforce Model 2008-2030). Accessed Oct. 29, 2013. <http://www.adea.org/deansbriefing/documents/finalreviseddeans/dentistsdemographics.pdf>.
137. Wright JT, Graham F, Hayes C, Ismail AI, Noraian KW, Weyant RJ, et al. A systematic review of oral health outcomes produced by dental teams incorporating midlevel providers. *J Am Dent Assoc*. 2013;144(1):75-91.
138. National Dental Association. NDA Position Paper on Mid-Level Providers. Accessed Nov. 27, 2013. <http://www.dentistryiq.com/articles/2010/11/nda-position-paper-on-mid-level-providers.html>
139. American Dental Association. ADA Welcomes New Study on Dental Therapists, but Emphasizes Continued Focus on Eliminating Multiple Barriers to Oral Health. ADA press release issued Aug. 6, 2012. <http://www.ada.org/7474.aspx>
140. American Dental Association, Survey Center, 2009 Distribution of Dentists in the United States by Region and State.
141. AAPD 2013 Legislative Fact Sheet. HRSA Title VII Pediatric Dentistry Appropriations.
142. Chi D, Milgrom P. DDS Preventive Dental Service Utilization for Medicaid-Enrolled Children in New Hampshire: A Comparison of Care Provided by Pediatric Dentists and General Dentists. *J Health Care Poor Underserved* (2009); 20(2): 458-472.
143. Ananaba N, Malcheff S, Briskie D, Inglehart MR. Infant oral health examinations: attitudes and professional behavior of general and pediatric dentists in Michigan and pediatric dentists in the U.S. *J Mich Dent Assoc*. 2010;92(12):38-43.
144. Barker AM, Mathu-Muju, KR, Nash DA, Li HF, Bush HM. Practice Patterns of General Dentists Treating Children in Kentucky: Implications for Access to Care. *Pediatr Dent*. 2012;34(3): 220-225.
145. Lewis CW. Dental Care and Children with Special Health Care Needs: A Population-Based Perspective. *Acad Pediatr*. 2009;9(6):420-426.
146. Lewis C, Robertson AS, Phelps S. Unmet dental care needs among children with special health care needs: implications for the medical home. *Pediatrics*. 2005;116(3):e426-31.
147. Amercian Academy of Pediatric Dentistry. Definition of special health care needs. *Pediatr Dent*. 2012;34(special issue):16.
148. AAPD Responds to Kellogg Foundation Report on Dental Therapists http://www.aapd.org/aapd_responds_to_kellogg_foundation_report_on_dental_therapists/
149. American Academy of Pediatric Dentistry. 2005 Legislative Requests to Congress to Improve Children's Oral Health Care.

