

CRITICAL ISSUES IN DENTAL HYGIENE

Access to Oral Health Care: A National Crisis and Call for Reform

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ABSTRACT

Purpose: According to the report Healthy People 2020, oral health is integral to overall health and access to dental services is essential to promoting and maintaining good oral health. Yet, those who need dental care the most are often the least likely to receive it. The dental hygiene profession is poised to play a pivotal role in the resolution of oral health disparities. The purpose of this manuscript is to examine the critical issue of access to oral health care in the United States from various perspectives and consider potential implications for dental professionals and the oral health care system. This report focuses on major underserved and vulnerable populations and highlights several barriers that significantly affect the ability to access and navigate the oral health care system. These include low socioeconomic status; the shortage and maldistribution of dentists; a lack of professional training regarding current evidence-based oral health guidelines; deficient continuity of care due to inadequate interdisciplinary collaboration; low oral health literacy; and patient perceptions and misconceptions about preventive dental care. This report also contains an update on provider participation in Medicaid; the state of children's oral health; and emerging workforce models, state initiatives, and legislative reforms. Recommendations increasing access to care require local, state, and federal stakeholders to combine forces that take advantage of the existing dental hygiene workforce, utilize innovative delivery models, improve license reciprocity, reduce prohibitive supervision, and expand the dental hygiene scope of practice. The major focus of future research will be on the implementation of mid-level oral health care providers. Dental hygienists are an integral part of the access to care solution and have a great opportunity to lead the call to action and fulfill the American Dental Hygienists' Association's mandate that oral health care is the right of all people.

Keywords: oral health, overall health, access to care, vulnerable populations, oral health literacy, interdisciplinary collaboration, emerging workforce models

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Introduction

Access to dental care is a critical and complex problem in America. The position of the American Dental Hygienists' Association (ADHA) is that oral health care is a right of all people and dental hygienists must play a vital role in the solution to eliminate the barriers associated with access to care.¹ There are many vulnerable and underserved populations in the United States(US).² According to statistics compiled by the US Senate Subcommittee on Primary Health and Aging (USPHA), groups that have the most difficulty accessing oral health care include young children, pregnant women, and older adults.² Many factors influence the ability to access dental care; they form a complex, multidimensional matrix in which multiple barriers may occur simultaneously.² There are external barriers which include the prohibitive costs associated with dental care; inability to obtain dental insurance; shortage and maldistribution of dentists; low rate of Medicaid provider participation; insufficient professional training regarding evidence-based guidelines; lack of interdisciplinary collaboration; inadequate dental safety nets, and a complex oral health system that can be difficult to navigate.² There are also internal

barriers to oral health care related to low oral health literacy; fear and anxiety associated with dental care; and perceptions and misconceptions about preventive oral health care. Both the external and internal barriers are further complicated by problems with transportation, child care, work release, scheduling, and personal mobility.² This report explores the major challenges and current solutions, such as direct access, increased scope of practice, and various state and federal legislative responses to incorporate dental therapists as mid-level oral health providers as a means to increase access for underserved populations.

Poverty

Low-income populations of all ages experience the lowest access to oral health care.² A 2012 large-scale Senate investigation revealed that 17 million children from low-income families did not receive any preventive dental care and 130 million Americans lacked dental insurance coverage in 2009.² While Medicaid dental coverage assists children up to the age of 21, it is very limited for adults and Medicare does not provide any dental coverage for older citizens.³ The working poor live from paycheck

to paycheck and face maximum difficulties when attempting to obtain dental care.^{2,4} They work hard, often holding multiple jobs, yet are unable to buy dental insurance or self-pay for the actual care.² They contribute into the system as taxpayers, yet don't qualify for government-assisted programs.² A dental emergency means loss of wages and can present a significant financial burden.

Shortage and Maldistribution of Dentists

A disproportionate number of those living in poverty and the working poor reside in geographically isolated areas with a maldistribution of dentists and a limited number of Medicaid providers.⁴ Rural areas often have inadequate public transportation systems, making it very difficult to access dentists outside the proximal area.^{4,6} When compared to metropolitan populations, rural populations have a higher prevalence of caries and tooth loss and a lower degree of private dental insurance combined with limited access to public dental services.^{5,7} As a result, those who need dental care the most are often the least likely to receive it.²

More than 49 million Americans live in places that are dentally underserved.⁶ According to the Health Resources and Service Administration and the Kaiser Family Foundation, approximately 5,000 areas in the United States are designated as Dental Health Professional Shortage Areas (DHPSAs) based on a population to provider ratio of 5,000 to 1 and 4,000 to 1 in geographic and geographic high need areas.^{8,9} They are also designated DHPSA based on population; Native American tribes and American Indian/Alaska Native (AI/AN) are automatically included.^{8,9} Approximately 75% of the DHPSAs in the United States are located in rural areas.⁵ Additional factors include an overall reduction in the number of new graduates entering the workforce; dentists retiring at a faster pace than graduates entering the workforce; increased trends toward dental specialization; and gravitation to densely populated areas.^{7,10}

It is estimated that over 7,200 dentists will be needed to provide the necessary oral health care services as older dentists retire.^{8,9} Graduates often gravitate to more densely populated areas because of heavy student debt; in 2014, the average debt burden for a dental school graduate was about \$250,000.¹¹ A 15-year fixed rate student loan with 6% interest adds \$130,000, making a total loan debt of \$380,000. Recently, government programs have been developed to help balance the debt.⁶ The National Health Service Corps offers a loan repayment program for both dentists and registered dental hygienists with an initial award of \$50,000 in exchange for a two-year commitment to a DHPSA.⁶

Increasing the workforce is not the only solution; strategic placement is equally important.¹⁰ Graduates must be interested and willing to go to underserved areas to reach vulnerable populations. The Dental Pipeline Program, a five-year initiative, studied altruism in dental students and its relationship to the willingness to work in underserved areas.¹⁰ The results

indicate that financial and professional expectations often take precedence over selfless concern and the welfare of others.¹⁰ A dental workforce that is able to respond to the needs of the community requires the engagement of dental educators in identifying candidates who are predisposed to altruism during the interviewing process. The institution must be able to provide a wide variety of opportunities for student engagement with vulnerable and underserved populations during their education experience.

Oral Health Literacy

Increasing the workforce, strategic placement to DHPSAs, and program acceptance initiatives are all important steps addressing external barriers. However, there are also internal influences surrounding access to care. Oral health literacy (OHL) has been identified as a major internal barrier.¹² It is vital to understand how OHL affects an individual's ability to access and navigate the oral health care system and implement preventive oral health practices.¹² The term OHL refers to the capacity to acquire, process, comprehend, and act upon basic oral health information.¹² Only 12 % of the general population and 3% of Medicaid or Medicare recipients are considered to be health literate, meaning that most people have literacy challenges somewhere within the defined spectrum.¹² Translated to activities of daily living implications, approximately 50% of Americans can't read or understand a prescription label.¹² Low OHL is also associated with decreased utilization of preventive dental services and increased utilization of emergency department services.¹³ Higher OHL levels are associated with better patient-dentist/dental hygienist communication, cooperative relationships, improved patterns of dental care, and patient appreciation for preventive measures.¹³ The relationship between OHL and oral health behaviors is complex; while it seems clear that there is a correlation, a direct causal relationship has not yet been established.¹³ In addition, there are significant dental public health implications in the area of OHL. Populations that are unable to access to care must be able to obtain educational materials regarding preventive dental care that are easy to process, comprehend, and utilize.¹³ Communication and advocacy are essential elements of OHL promotion and utilization; information must be user friendly, focus on all life stages, be culturally competent, widely accessible, and incorporate all forms of media and technology.¹³ Oral Health Literacy is an important area of research with potential for expanded professional school curricula, development of community and school-based programs, professional continuing education requirements and interdisciplinary training. Improved OHL may also decrease the strain on safety nets, such as hospital emergency departments, which are often limited to delivering palliative dental care.¹³

Safety Net

Untreated oral disease, such as caries, worsens with time and eventually requires more serious

and expensive treatment.¹⁴ Individuals without a personal dentist often seek emergency care at a hospital.¹⁴ According to the Nationwide Emergency Department Sample (NEDS), the number of dental-related emergency visits is increasing.¹⁴ In 2012, the U.S. health care system spent \$1.6 billion on dental-related visits with an average cost of \$745 per visit.¹⁴ Medicaid paid approximately 62% of these charges for children between the ages of 0-18 and 33% for adults between the ages of 18-64.¹⁴ The majority of dental-related emergencies are nontraumatic in nature.¹⁴

Emergency department (ED) physicians are not equipped to provide comprehensive dental care; they are more likely to prescribe pain medication and/or antibiotics and refer patients to a dentist.¹⁴ Many patients are unable to seek follow-up care, because they lack a consistent relationship with a dentist, which in turn creates a vicious cycle with many people falling between the cracks.^{2,14} Such was the case for 24-year-old Kyle Willis of Cincinnati, who died as the result of an infection from an untreated dental abscess spreading to his brain.¹⁵ Mr Willis had visited an ED and received prescriptions for antibiotics and pain medication. Unable to afford both drugs, he only filled the pain medication prescription. A few weeks later, after becoming delirious, he was rushed to a local hospital where he subsequently died.¹⁵ Sadly, this particular hospital housed a dental clinic that served vulnerable populations but there were no advocates to help Mr. Willis navigate the system.¹⁵ Opportunities to reduce dental-related ED visits and areas of future study include developing targeted programs to connect patients to dental homes; diverting ED Medicaid funds to increase reimbursement rates to primary providers; establishment of hospital-based dental clinics; and extending private dental office hours.¹⁴

Vulnerable and Underserved Populations:

Children

Children, because they are dependent upon a caregiver for dental care appointments, daily oral hygiene, and nutritional health, are particularly vulnerable. Dental caries, the most common chronic disease of childhood, affects 60% of children ages 5 to 17 and 25% of children under the age of 5 experience Early Childhood Caries (ECC).^{16,17} A higher prevalence of dental caries is associated with children living in poverty.¹⁷ Children with untreated dental caries experience adverse outcomes impacting their overall health and quality of life extending into adulthood.¹⁷ Short-term effects may include pain, tooth loss, chewing difficulty, speech impediment, sleep disruption, inability to concentrate, school absence, behavioral problems, compromised self-esteem and social development, emergency visits, and extensive treatment requiring general anesthesia.¹⁷ Long-term effects may include a higher risk of new carious lesions, malocclusion due to premature tooth loss, nutritional problems, diminished physical growth, dental anxiety or fear, and poor oral health.¹⁷

Dental caries is almost completely preventable, but access to preventive care is out of reach for many families.² The Affordable Care Act mandated Medicaid dental enrollment for children; unfortunately, this has not necessarily correlated with an increase in access to care.² The national average of practicing dentists who accept Medicaid is 20%; only a fraction of those commit a substantial share of their practice to serving the poor, chronically ill, or residents of rural communities.^{2,3} Reasons cited for the limited involvement with Medicaid include low reimbursement rates, cumbersome administrative processes, high rates of appointment no-shows, and low compliance with recommended treatment.¹⁸ In looking at the financial barriers and the variations in reimbursement rates, in 2013 the average Medicaid fee-for-service reimbursement was about 50% of commercial insurance rates; Minnesota had the lowest reimbursement rate at 27% and Delaware had the highest at 81%.¹⁹ Medicaid dentist participation ranges from a low 10% in Florida to a high 95% in Vermont.³ However, this does not mean that 95% of the Medicaid recipients in Vermont have the ability to access care. While the utilization in Vermont is about 57%, this is still better than the national average of 35%.³ The difficulty with this type of data is that dentists who file even one Medicaid claim are counted as provider participants.³

A well-known example of the pediatric access to care crisis is the case of twelve-year-old Deamonte Driver from Maryland. In 2007, Driver, among the unfortunate two-thirds of the population unable to access a Medicaid dentist, died from complications of an untreated dental abscess.²⁰ This tragedy made national headlines and exposed a fragmented dental-care system, prompting representatives from across the country to address the state of children's dental care. As a result of Driver's death, the state established the Maryland Dental Action Coalition and now a leader in oral health reform initiatives.²⁰

In 2011, the Pew Children's Dental Campaign assessed the level of care for children in the United States and graded all 50 states based on eight benchmarks related to sealants, fluoridation, Medicaid, and expanded care delivery models.^{21,23} While no state accomplished all eight goals, Maryland led the nation, meeting seven of the eight benchmarks.²¹ Hawaii accomplished only one of the benchmarks, reflecting the lowest performance.²¹ Florida, Hawaii, and New Jersey received two consecutive "F" grades.²¹

Dental sealants are one of the most vital weapons in the arsenal to combat caries.^{21,23} Sealants are 30% the cost of a filling; they provide 80% caries reduction during the two years after placement and 60% over a five-year period.^{22,23} In spite of the caries reduction and cost effectiveness of sealants, approximately 80% of states lack school sealant programs for high-risk populations and only eleven states have implemented sealant programs in 50% or more of the schools with high-risk populations.^{22,23} Alaska, Oregon, New Hampshire, Maine, and Maryland achieved at least 75% implementation.²² The most

successful school-based sealant programs maintain stakeholder support and cooperation on local, state, and federal levels; adhere to evidence-based best practices; and permit a hygienist to place sealants without requiring a dentist's prior examination.^{22,23}

Pregnant Women

Pregnant women, especially those of low socioeconomic status, are a vulnerable population.^{2,24-26} Access to dental services during pregnancy benefits maternal oral health and provides teachable moments that may impact birth outcomes as well as the oral health of future generations.²⁴⁻²⁶ During the perinatal period, women are particularly motivated to learn infant care, so it is vital to reach them early to prevent possible adverse birth outcomes associated with periodontal disease along with strategies to prevent ECC.²⁴⁻²⁶ Opportunities during pregnancy include addressing current dental needs; discussing oral health changes during pregnancy; providing dental hygiene instructions; discussing prenatal nutritional requirements; reviewing feeding practices contributing to ECC; teaching infant oral hygiene techniques; and educating on the importance of the primary teeth.²⁴⁻²⁶ Yet, most women do not access dental care during pregnancy and only 25-50% of those who perceive that they have a dental problem actually seek treatment.²⁴⁻²⁶ This is an unfortunate statistic, since many low-income pregnant women are eligible for dental care through Medicaid during the prenatal period.²⁵

Maternal oral health is integrally connected to pediatric oral health in a variety of ways. First, an estimated 30-40% of pregnant women have some form of periodontal disease and current research indicates an association between periodontal disease and adverse birth outcomes including low birth weight, preterm birth, preeclampsia, and gestational diabetes.²⁴⁻²⁶ Secondly, pregnant women with poor oral health often have high levels of streptococcus mutans and carry the risk of vertically transmitting this cariogenic bacteria to their infants. Children are five times more likely to experience oral health problems if their mothers have poor oral health.²⁶ Misconceptions and wives tales, such as gain a baby, lose a tooth, pregnancy depletes calcium from teeth and gingivitis is normal during pregnancy, result in a decreased understanding of the importance of dental care during pregnancy.

Many women are concerned that dental treatment during pregnancy will somehow harm their unborn child.²⁶ This is a fallacy that most health professionals do little to assuage even though evidence-based best practices support and encourage regular dental care during pregnancy.^{25,26} While a variety of professional associations have issued policy statements and consensus statements on the importance of oral care, over 80% of obstetricians do not include oral health screening questions as part of their intake health history and as many as 94% do not routinely provide dental referrals.²⁵ Medical and dental schools do not adequately address dental care delivery

during pregnancy; the majority of medical residents only receive a few hours of oral health training.²⁴ Likewise, many dentists are hesitant to provide care during pregnancy due to concerns about liability, misconceptions about maternal or fetal safety, lack of knowledge about current evidence-based guidelines, and lack of training for this population.^{24,25} Change must include interdisciplinary collaboration ensuring that the public receives consistent information from many access points and the incorporation of oral health screening questionnaires during the initial prenatal appointment.²⁵ Current scientific, evidence-based treatment guidelines require curricular revisions and continuing education requirements so that the workforce is equipped to serve people in all stages of life. Two innovative programs to directly reach pregnant women include Text4baby, an education campaign of the National Healthy Mothers, Healthy Babies Coalition, and New York state's Maternal Oral Health project.²⁴ Text4baby offers a texting service that promotes maternal and child health; messages are in English and Spanish and focus on a variety of topics, including oral health.²⁴ More than 35,000 users have registered and numerous health plans have become official outreach partners.²⁴ The Maternal Oral Health project is an education, referral, and dental care system established by a public-private partnership between two hospitals and a private periodontal practice for low-income pregnant women in New York.²⁴

Older Adults

Older adults are particularly vulnerable because many of their dental perceptions and oral hygiene habits originate in childhood and continue to influence them throughout life.¹⁷ In addition, Medicare does not include dental coverage and many older adults live on fixed incomes with a limited ability to pay the high costs associated with dental care.^{2,3} In the United States, 25% of adults, aged 65 and older, are edentulous.² Dental caries and periodontal disease represent increased risks for this age group, and active decay has been demonstrated to be more prevalent than in the pediatric population.²⁷ There are numerous misconceptions concerning oral health within the geriatric community.²⁷ One study focusing on the older adults revealed that while many believe oral health is important, they do not receive regular dental care. Major influences include outdated dental health information; diminished dental perceptions; fear; lack of a relationship with a dentist; and mobility difficulties.²⁷ While there is a predominant belief among older adults that a strong relationship exists between oral health and general health, many equate the lack of perceived pain with good health.²⁷ Systemic diseases and medications often impact oral health; 80% of older adults have one chronic condition; 50% have two or more health conditions.²⁸ Poor oral health also adds additional burdens for those already afflicted with multiple chronic health conditions, such as diabetes or heart disease.

Social Reforms for the Delivery of Oral Health Care

Disparities in the delivery of services have reached a critical level requiring social reform and legislative changes. Access to oral health care is a not only a health issue; it reflects the ability of a profession to respond to the needs of the public and exhibit the principles of social justice and moral responsibility.²⁹ While the American Dental Association (ADA) and the American Dental Hygienists' Association (ADHA) agree that the dental profession has a responsibility to improve the oral health status of all Americans, they do not necessarily agree on how best to answer this call to action to solve the disparities in the oral health care system.²⁹

The position of the ADA concerning oral health care reform cites that underfunding and bureaucracy within the Medicaid system are principle barriers to access.¹⁸ They supported the Essential Oral Health Care Act of 2009, which ensured that dentists participating in the Medicaid program get paid market rate fees and eliminate administrative barriers.¹⁸ In addition, the ADA has advocated for the development of Community Dental Health Coordinators to focus on prevention and education.³⁰ The ADA officially opposes the development of the Advanced Dental Hygiene Practitioner and proposed the legislation for a Dental Therapist, mid-level provider.¹⁸

The ADHA supports the Comprehensive Dental Reform Act, which extends dental coverage and expands the workforce by including a mid-level oral health care provider.³¹ The ADHA supports the Advanced Dental Hygiene Practitioner (ADHP) mid-level provider model and maintains that individuals who graduate from accredited dental hygiene programs are competent to provide care without supervision, should qualify to participate in loan forgiveness programs and the National Health Service Corps Scholarship, and be recognized as Medicaid providers by federal and state governments.³¹

Mid-Level Providers

Mid-level oral health providers were introduced as an oral health care delivery model designed to increase access to populations with critical oral health care needs.³² The mid-level provider is not a new concept; dental therapists are utilized in 52 countries around the world and are especially trained to focus on the needs of children.³² Some of the largest countries exclusively employ this delivery model to reach millions of children who would otherwise go untreated.³² Many programs are based on the Dental Therapy curriculum at the University of Otago, a well-respected international dental school in New Zealand with 88 years of experience training dental therapists.³²

One of the most outspoken proponents for the mid-level provider is David Nash, DMD, MS, EdD, Professor of Dental Education and Pediatric Dentistry for the College of Dentistry at the University of Kentucky.³² Nash conducted an exhaustive literature

review involving 1,100 worldwide documents that support the assertion that dental therapists provide valuable, safe, high-quality care.³² The curriculum is easily accessible, flexible, economical, and could be implemented expeditiously utilizing existing dental hygiene programs and faculty.³² There are multiple mid-level provider models with varying levels of supervision and scopes of practice. These literature reviews focused predominately on the oral health care of children. The expansion of mid-level oral health care providers to serve other populations presents a significant area for future study.

Alaska was the first state to establish a mid-level practitioner, the Dental Health Aide Therapist (DHAT), to address severe dental disease and failed efforts to recruit dentists to practice in rural Alaskan villages.³² In 2005, the first Alaskan graduates from the University of Otago in New Zealand, were certified to practice in remote areas regulated by the Indian Health Service and the Indian Health Care Improvement Act Amendments of 2005.³³ Shortly after DHATs began to practice, the ADA initiated a lawsuit contending the illegal practice of dentistry. However, the case was unsuccessful because DHATs practice under a federal mandate.^{32,34} In 2007, the University of Washington, in collaboration with the Alaska Native Tribal Health Consortium, established the DENTEX program to educate Alaska's DHATs in Anchorage and Bethel, Alaska.³⁴ In 2008, the first pilot study assessing 640 procedures performed by DHATs demonstrated that the irreversible dental treatment provided by DHATs was comparable to similar treatments provided by dentists.³⁴ While DHATs are not dental hygienists, they work in discrete, high-need populations and are permitted to perform many dental hygiene scope of practice duties including periodontal probing, scaling, and root planing.³⁴ Non-reversible DHAT procedures include: fillings, stainless steel crowns, pulpotomies, and simple extractions.³⁴ DHATs have increased access to more than 40,000 patients in 81 remote villages who were previously unable to obtain dental care.³⁵ Other states are beginning to respond to the access to care crisis with their own mid-level provider initiatives as a result of successes with the Indian Health Service in Alaska.

Minnesota became the first state to pass landmark oral health reforms that permitted mid-level oral health providers to work with all underserved populations in the general public in 2009.³⁶ The Minnesota Legislature approved two delivery models; the Advanced Dental Therapist (ADT) and the Dental Therapist (DT).³⁶ Minnesota's Metropolitan State University established the first ADT master's degree program modeled after the ADHA's Advanced Dental Hygiene Practitioner (ADHP) curriculum that had been adopted by the ADHA in 2008.³⁶ Registered dental hygienists who have attained a bachelor's degree and two years of experience are qualified to apply for the Metropolitan State University program.³⁶ Advantages of the ADT provider model include the ability to directly address the critical needs of children who are not receiving care; the utilization of an existing dental hygiene workforce that has greatly surpassed the number of

actively practicing dentists; and the opportunity to build on the skills of practitioners who are already highly trained.³² At the same time, the University of Minnesota School of Dentistry adopted the Minnesota Dental Association's (MDA) model to develop curricula for the Dental Therapist. Dental Therapy students are not required to be dental hygienists. As practitioners, they are limited to performing basic preventive procedures that do not include probing, scaling, or root planing and will have limited restorative procedures in their scope of practice.³⁶ In 2015, the Commission on Dental Accreditation (CODA), the national accrediting body for dental, allied health, and advanced dental programs, adopted educational standards for mid-level dental providers.³⁵ This major advancement confirms mid-level dental providers as a qualified and necessary workforce model.³⁵

State Initiatives

While organized dentistry effects change in policies and positions, a number of states over the years have developed solutions superseding the political posturing of organized dentistry. Colorado has been a pioneer in the expansion of practice opportunities for dental hygienists with the ability to work independently since 1987. California established the Registered Dental Hygienist in Alternative Practice (RDHAP) workforce model in 1998, allowing for specially licensed hygienists to work in a variety of independent settings via a dentist prescription.³⁷ Many other state legislators have introduced bills based on innovative programs and alternative workforce models that decrease levels of supervision; expand dental hygiene scope of practice; increase access to vulnerable and underserved populations; or expand the strategic placement of the workforce to high-need locations.³⁵ Currently, thirty-nine states have laws allowing for various levels of direct access to patients and permitting dental hygienists to initiate treatment based on their assessment of need(s) without the specific authorization or presence of a dentist and maintain a provider/client relationship.¹ Hygienists may receive direct Medicaid reimbursements for procedures performed in 18 states, and all but six states allow dental hygienists to administer local anesthetics.^{38,39}

The W. K. Kellogg Foundation, in partnership with Community Catalyst, a broad-based, nonprofit health care advocacy organization, created the Dental Therapist Project in 2011 to affect changes to increase access to oral healthcare services.³⁵ This joint initiative empowers consumers and community leaders to raise awareness and facilitate dialogue regarding oral health care access disparities; educate stakeholders about dental therapists; and promote innovative workforce models.³⁵ The Dental Therapist Project began with five pilot states; Kansas, New Mexico, Ohio, Vermont, and Washington.³⁵ The project's efforts are gaining momentum as nineteen more states have indicated an interest in the addition of mid-level providers and many stakeholders begin to work together to strengthen the dental care delivery system.^{35,39} Since the Dental Therapist

Project began, the pilot states as well as others have introduced bills that have advanced to varying levels in the legislative process.^{39,40}

Mid-level provider legislation has had challenges as well as successes. Among the five Dental Therapist Project pilot states, New Mexico, actively pursued the dental therapy workforce model with two bills that were introduced and while they did not move forward in the legislative process, the possibility another bill for a mid-level provider may be proposed in the near future.^{39,40} In Kansas, the Kansas Action for Children, a lead organization in the Kansas Dental Project, has supported initiatives facilitating statewide dialogue regarding increased access to oral health care and expanded dental hygiene scope of practice along with the addition of a mid-level provider, Registered Dental Practitioners, to the dental team.^{40,41} As a result of this collaboration, two Registered Dental Practitioner bills were introduced in the legislature, HB 2079 and SB 49. Both bills progressed to the hearing stage before being tabled.⁴⁰ However, in 2012, the Kansas Expanded Care Permit III was enacted into law allowing dental hygienists to work in community settings and perform expanded function procedures, such as temporary relines and fillings, denture adjustments, and extractions of primary teeth.³⁵ In 2015, Washington State made a bold move to follow Alaska's DHAT delivery model and practice pursuant to the Indian Health Care Improvement Act Amendments of 2005.^{33,35,40} The decision to exercise sovereignty was reached due to a growing sense of urgency regarding the critical dental needs of the Swinomish Indian Tribal Community in Washington State and as a result of multiple failed attempts to move a mid-level provider model through the state legislature.^{39,40}

Maine became the third state, following Alaska and Minnesota, to successfully establish a Dental Hygiene Therapist (DHT) mid-level provider when LD 1230 was signed into law in 2014.³⁵ Maine's DHT is a dental hygienist who must graduate from an accredited dental hygiene therapy program, pass a state licensing board exam, and complete 2,000 hours of supervised clinical practice.³⁹ Maine's DHTs provide preventive, restorative, and therapeutic services for children under direct supervision and with a written practice agreement with a licensed dentist.³⁹

Vermont became the most recent state to have their mid-level provider legislation adopted when SB20 was signed into law in 2016. The Vermont Dental Therapist (DT) received strong support from the Vermont Oral Health Care for All coalition in addition to other grassroots organizations and allows for a registered dental hygienist, upon successful completion of a dental therapy education program, to perform preventive and restorative procedures under general supervision of a dentist with a collaborative agreement. In addition to the new mid-level provider, dental benefits for pregnant and nursing mothers in the state of Vermont have been expanded to 60 days postpartum.⁴¹

Mid-level providers are successfully increasing access to oral health care for vulnerable and underserved populations. As states begin to implement

their own versions of a mid-level workforce model, surveillance of the program outcomes will be a critical area for future research. Key areas of additional focus will include the implementation of CODA guidelines in the various education programs and the preparation of additional faculty.

Conclusion

America is in the middle of a dental access crisis for which there is no single solution. Disparities impacting access to care require local, state, and federal stakeholders to join forces to take advantage of the existing dental hygiene workforce, utilize innovative delivery models, improve license reciprocity, reduce prohibitive supervision, and expand the dental hygiene scope of practice. It is essential for states to focus resources on more cost effective preventive services instead of providing expensive palliative emergency services; establish school-based fluoride and sealant programs; integrate oral health education with prenatal care; reduce the complexities of the Medicaid system; and increase reimbursement fees so more providers will participate. Oral health is an essential component of overall health of individuals, communities, and the nation. It is not enough to increase access alone without also promoting strategies that will increase oral health literacy and affect meaningful changes in attitudes and beliefs that will lead to behavioral changes. The dental profession has the responsibility to promote oral health for all people, empower individuals to maintain optimum oral health, and advocate for those most vulnerable. Dental hygienists play an integral role in the solution and have the opportunity to lead the call to action and fulfill the American Dental Hygienists' Association's mandate that oral health care is the right of all people.

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References

1. American Dental Hygienists' Association: advocacy [Internet]. Chicago: American Dental Hygienists' Association; c2012-2017. Direct access; Updated 2017 Jan [cited 2017 Jan 30]; [1 screen]. Available from: <http://www.adha.org/direct-access>
2. U.S. Senate Committee on Health, Education, Labor & Pensions, Subcommittee on Primary Health and Aging [Internet]. Washington, DC: Government Printing Office; 2012 Feb 29. Dental crisis in America: The need to expand access. [cited 2015 Jul 18]; [14 screens]. Available from: <http://www.sanders.senate.gov/imo/media/doc/DENTALCRISIS.REPORT.pdf>
3. Bailit H, D'Adamo J. State case studies: improving access to dental care for the underserved. J Public Health Dent [Internet]. 2012 Jul 2 [cited 2015 Jul 18]; 72(3):221-234.
4. Skillman SM, Doescher MP, Mouradian, WE, Brunson DK. The challenge to delivering oral health services in rural America. J Public Health Dent [Internet]. 2010 Jun 23 [cited 2015 Jul 18]; 70(Suppl):S49-S57.
5. U.S. Department of Health and Human Services, Health Resources and Service Administration [Internet]. Washington DC: Government Printing Office; 2014 Jun 19. Shortage designation: health professional shortage areas & medically underserved areas/populations. [cited 2015 Aug 25]; [1 screen]. Available from: <http://www.hrsa.gov/shortage/>
6. National Organization of State Offices of Rural Health [Internet]. Michigan: National Organization of State Offices of Rural Health; c2006-2015. Oral health in rural America. [cited 2015 Aug 27]; [4 screens]. Available from: <https://nosorh.org/wp-content/uploads/2013/08/Oral-Health-Fact-Sheet-and-Resources.pdf>
7. U.S. Department of Health and Human Services, Health Resources and Service Administration [Internet]. Washington DC: Government Printing Office. Oral health workforce. [cited 2015 Aug 25]; [1 screen]. Available from: <http://www.hrsa.gov/publichealth/clinical/oralhealth/workforce.html>
8. Rural Assistance Center [Internet]. Grand Forks, ND: Rural Assistance Center; c2002-2015. Oral health in rural communities; [cited 2015 Aug 25]. Available from Rural Assistance Center
9. Henry J. Kaiser Family Foundation [Internet]. California; Kaiser Family Foundation; c2015. Dental care health professional shortage areas; Updated 2014 Apr 28; [cited 2015 Aug 25]; [1 screen]. Available from: <http://kff.org/other/state-indicator/dental-care-health-professional-shortage-areas-hpsas/>
10. American Student Dental Association. Chicago: American Student Dental Association; c2015. Dental student debt; [cited 2015 Sep 11]; [1 screen]. Available from: <http://www.asdanet.org/debt.aspx>
11. Carreon D, Davidson P, Andersen R, Nakazono T. Altruism in dental students. J Health Care Poor Underserved [Internet]. 2011 Feb [cited 2015 Sep 11]; 22(1):56-70.
12. U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion [Internet]. Washington DC: Government Printing Office; 2008; America's health literacy: why we need accessible health information [Issue Brief]; [cited

2015 Sep 2]; [1 screen]. Available from: <http://health.gov/communication/literacy/issuebrief/>

02-15/local/35444526_1_maryland-dental-action-coalition-dental-care-deamonte-driver

13. Guo Y, Logan HL, Dodd VJ, Muller KE, Marks JG, Riley JL. Health literacy: a pathway to better oral health [Internet]. *Am J Public Health*. 2014 Jul [cited 2015 Sep 2]; 104(7):e85-e91.
14. Wall T, Vujicic M. Emergency department use for dental conditions continues to increase. Health Policy Institute Research Brief [Internet]. Chicago: American Dental Association; 2015 Apr [cited 2015 Sep 4]; [12 screens]. Available from: http://www.ada.org/~media/ADA/Science%20and%20Research/HPI/Files/HPIBrief_0415_2.ashx
15. Gavett G. Tragic results when dental care is out of reach [Internet]. Boston: WGBH Educational Foundation; c1995-2015 [revised 2012 June 26; cited 2015 Sep 4]. Available from: <http://www.pbs.org/wgbh/pages/frontline/health-science-technology/dollars-and-dentists/tragic-results-when-dental-care-is-out-of-reach/>
16. National Institute of Dental and Craniofacial Research, National Institutes of Health [Internet]. Bethesda, MD: National Institute of Dental and Craniofacial Research, National Institutes of Health; Dental caries (tooth decay); [Updated 2014 May; cited 2015 Jun 18]. Available from: <http://www.nidcr.nih.gov/datastatistics/Finddatabytopic/dentalcaries/>
17. Çolak H, Dülgergil ÇT, Dalli M, Hamidi MM. Early childhood caries update: a review of causes, diagnoses, and treatments. *J Nat Sci Biol Med* [Internet]. 2013 Jan [cited 2015 Jun 18]; 4(1):29-38.
18. American Dental Association [Internet]. Washington DC: American Dental Association; HR 2220 Essential Oral Health Care Act of 2009 [Position Paper]; 2009 [cited 2015 Jul 20]; [1 screen]. Available from: http://www.ada.org/~media/ADA/Advocacy/Files/hcr_hr2220_position_paper.ashx
19. Nasseh K, Vujicic M, Yarbrough C. A ten-year, state-by-state, analysis of Medicaid fee-for-service reimbursement rates for dental care services [Research Brief]. Chicago: American Dental Association Health Policy Institute [Internet]; 2014 Oct [cited 2015 Jul 20]. Available from: http://www.ada.org/~media/ADA/Science%20and%20Research/HPI/Files/HPIBrief_1014_3.ashx
20. Driessen, K. 5 years after boy dies from toothache, Maryland Medicaid dental care is on mend. *The Washington Post* (Maryland Ed); [Internet]. 2012 Feb 15 [cited 2015 Jul 20]; Local: [1 page]. Available from: http://articles.washingtonpost.com/2012-02-15/local/35444526_1_maryland-dental-action-coalition-dental-care-deamonte-driver
21. The Pew Charitable Trusts [Internet]. Washington DC: The Pew Charitable Trusts; c1996-2015. The state of children's dental health: making coverage matter; Updated 2011 May 24 [cited 2015 Jul 20]; [1 screen]. Available from: <http://www.pewtrusts.org/en/research-and-analysis/reports/0001/01/01/the-state-of-childrens-dental-health>
22. The Pew Charitable Trusts [Internet]. Washington DC: The Pew Charitable Trusts. c1996-2015. States stalled on dental sealant programs; 2015 Apr 23 [cited 2015 Jul 20]; [25 screens]. Available from: http://www.pewtrusts.org/~media/Assets/2015/04/Dental_SealantReport_Final.pdf
23. The Pew Charitable Trusts [Internet]. Washington DC: The Pew Charitable Trusts; c1996-2015. Grades and benchmarks; Updated 2011 May; [cited 2015 Jul 20]; [7 screens]. Available from: http://www.pewtrusts.org/~media/legacy/uploadedfiles/pes_assets/2011/dentalpolicybenchmarks2011pdf.pdf
24. National Institute for Health Care Management, Children's Dental Health Project [Internet]. Washington DC: National Institute for Health Care Management Foundation; c2015. Improving access to perinatal oral health: strategies and considerations for health plans; 2010 Jul [cited 2015 Sep 5]; [16 screens]. Available from <http://www.nihcm.org/pdf/NIHCM-OralHealth-Final.pdf>
25. American Congress of Obstetricians and Gynecologists [Internet]. Washington DC: American Congress of Obstetricians and Gynecologists; c2015. Oral health care during pregnancy and through the lifespan [Committee Opinion #569]; 2013 Aug [cited 2015 Sep 5]. Available from: <http://www.acog.org/Resources-And-Publications/Committee-Opinions/Committee-on-Health-Care-for-Underserved-Women/Oral-Health-Care-During-Pregnancy-and-Through-the-Lifespan#32>
26. National Maternal and Child Oral Health Policy Center [Internet]. Washington DC: National Maternal and Child Oral Health Policy Center; c2015. Improving the oral health of pregnant women and young children: opportunities for policymakers; 2012 Aug 30 [cited 2015 Sep 5]. Available from: <http://www.astdd.org/docs/improving-the-oral-health-of-pregnant-and-young-children-aug-2012.pdf>
27. Slack-Smith L, Lange A, Paley G, O'Grady M, French D, Short L. Oral health and access to dental care: a qualitative investigation among older people in the community. *Gerodontology* [Internet]. 2010 Jun [cited 2015 Sep 13]; 27(2):104-113.

28. Center for Disease Control and Prevention [Internet]. Atlanta: National Center for Chronic Disease Prevention and Health Promotion; c2015. Healthy aging: helping people to live long lives and enjoy a good quality of life. 2011 Jun 13 [cited 2015 Sep 13]. Available from: <http://stacks.cdc.gov/view/cdc/6114/>
29. Beemsterboer PL, Catalanotto F. Social responsibility and justice. In: Beemsterboer, P, editor. Ethics and the law in dental hygiene. 2nd ed. St. Louis, MO: Saunders Elsevier; 2010. Chapter 4; p. 58-60.
30. American Dental Association [Internet]. Chicago: American Dental Association; c2015. American Dental Association comment on the Kellogg Foundation report: a review of the global literature on dental therapists. 2012 Apr 10 [cited 2015 Sep 15]. Available from: <http://www.ada.org/en/press-room/news-releases/2012-archive/april/american-dental-association-comment-on-the-kellogg>
31. American Dental Hygienists' Association: news [Internet]. Chicago: American Dental Hygienists' Association; c2012-2015. ADHA supports comprehensive dental reform act of 2012; Updated 2012 Jun 6 [cited 2015 Sep 14]; [1 screen]. Available from: <http://www.adha.org/adha-supports-comprehensive-dental-reform-act-of-2012>
32. Nash D. Adding dental therapists to the health care team to improve access to oral health care for children. Acad Pediatr [Internet]. 2009 Oct 23; 9(6): 446-451.
33. U.S. Senate Committee on Health, Education, Labor & Pensions, Subcommittee on Indian Affairs. Indian Health Care Improvement Act Amendments of 2005, S. Rep. No. 109-122 (Mar. 16, 2006). Available from: <http://www.gpo.gov/fdsys/pkg/CRPT-109srpt222/pdf/CRPT-109srpt222.pdf>
34. Bolin KA. Assessment of treatment provided by dental health aide therapists in Alaska: a pilot study. J Am Dental Assoc [Internet]. 2008 Nov 3; 139(11), 1530-1535.
35. Community Catalyst [Internet]. Boston, MA: Community Catalyst; c2015. Dental access project; 2015 [cited 2015 Sep 11]. Available from: <http://www.communitycatalyst.org/initiatives-and-issues/initiatives/dental-access-project>
36. Gadbury-Amyot C, Brickle, C. Legislative initiatives of the developing advanced dental hygiene practitioner. J Dent Hyg [Internet]. 2010 Summer; 84(3): 110-113.
37. Hovliaras C. Career planning and professional development. In: Darby M, Walsh M, editors. Dental Hygiene theory and practice. 3rd ed. St. Louis, MO: Saunders Elsevier; 2010. Chapter 61; p. 1179-1180.
38. American Dental Hygienists' Association: advocacy [Internet]. Chicago: American Dental Hygienists' Association; c2012-2017. Reimbursement; Updated 2017 Jan [cited 2017 Jan 30]; [1 screen]. Available from: <http://www.adha.org/reimbursement>
39. American Dental Education Association [Internet]. Washington, D.C.: American Dental Education Association; c2017. ADEA state update. Updated 2017 [cited 2017 Jan 30]; [1 screen]. Available from: <http://www.adea.org/Blog.aspx?id=23932&blogid=20132>
40. American Dental Education Association [Internet]. Washington, D.C.: American Dental Education Association; c2016. United States interactive legislative tracking map. [cited 2016 Jan 28]; [1 screen]. Available from: <http://www.adea.org/legislativemap/>
41. Kansas Dental Project. [Internet]. Topeka, KS. Kansas Dental Project; c2011. Kansas dental project; Joint venture. [cited 2016 Jan 29]; [8 screens]. Available from <http://reachhealth.org/wp-content/uploads/2011/06/Kansas-Dental-ProjectCombined.pdf>
42. Voices for Vermont's Children [Internet]. Montpelier, VT.: Voices for Vermont's Children; c2016. Pregnant women on dr. dynasaur to get comprehensive dental coverage. [cited 2016 Jan 29]; [1 screen]. Available from: <http://www.voicesforvorkids.org/pregnant-women-on-dr-dynasaur-to-get-comprehensive-dental-coverage/>