The Role of Dental Hygienists in Providing Access to Oral Health Care

Executive Summary

Basic oral health care is an important determinant of overall health, yet access to it remains a challenge for millions of Americans. To address barriers to access, particularly in underserved and vulnerable populations, states are considering expanding the oral health care workforce, especially dental hygienists, who typically perform preventive oral health services, including fluoride and sealant applications and prophylaxis (cleanings). These services prevent cavities and gum disease, which, when left untreated, can result in more serious health conditions. Although the curriculum and training requirements for dental hygienists are based on national accreditation standards, the policies and regulations affecting dental hygienists vary widely among states. To increase access to basic oral health care, some states have explored deploying dental hygienists outside of dentists' offices. States also have explored altering supervision or reimbursement rules for existing dental hygienists as well as creating new professional certifications for advanced-practice dental hygienists. Although limited domestic research exists on the safety and efficacy of an expanded scope of practice for dental hygienists, studies of pilot programs have shown safe and effective outcomes. International research provides stronger evidence that advanced-practice dental hygienists deliver safe, high-quality care. As states face more demand for oral health, they should examine the role that dental hygienists can play in increasing access to care by allowing them to practice to the full extent of their education and training.

This issue brief summarizes variations in policies affecting dental hygienists and describes some of the alternative provider models and legislation that states have enacted to leverage dental hygienists in an expanded capacity.

Background

Oral health is an important component of physical health and well-being. Oral diseases, which range from dental carries (cavities) to more widespread infections, are problematic for millions of Americans and lead to serious consequences, including complications of major chronic conditions, debilitating pain, absenteeism from work and school, nutrition issues, loss of teeth, impacts on children's growth and social development, adverse pregnancy outcomes, inefficient use of emergency department services, and even death.[1] Fortunately, dental disease and poor oral health can be easily prevented with regular access to dental care and effective patient education. Professional prophylaxis and fluoride or sealant application are proven interventions that prevent cavities and gum disease. Without treatment, gum disease may ultimately destroy bone, connective tissue, and teeth, requiring surgery.[2]

Despite being almost entirely preventable, Americans

[1] Institute of Medicine and National Research Council, *Improving Access to Oral Health Care for Vulnerable and Underserved Populations* (Washington, DC: The National Academies Press, 2011), http://www.hrsa.gov/publichealth/clinical/oralhealth/improvingaccess.pdf (accessed October 1, 2013): 51; and Pew Center on the States, "A Costly Dental Destination: Hospital Care Means States Pay Dearly" (February 2012), http://www.pewtrusts.org/our_work_report_detail.aspx?id=85899372468 (accessed October 1, 2013)

[2] Centers for Disease Control and Prevention, "Oral Health: Preventing Cavities, Gum Disease, Tooth Loss, and Oral Cancers: At a Glance 2011," http://www.cdc.gov/chronicdisease/resources/publications/aag/doh.htm (accessed October 1, 2013); and Valeria C. C. Marinho, Stuart Logan, Julian P. T. Higgins, and Aubrey Sheiham, "Systematic Review of Controlled Trials on the Effectiveness of Fluoride Gels for the Prevention of Dental Caries in Children," *Journal of Dental Education* 67 no. 4 (2003): 448–458, http://www.ncbi.nlm.nih.gov/pubmed/12749574 (accessed October 1, 2013).

have high rates of untreated tooth decay and other oral health problems. Approximately 25 percent of nonelderly Americans have untreated tooth decay, which is also the most common chronic illness among school-aged children.[3] Low-income people of any age, including children, are more likely to have had cavities and are more than twice as likely to go without treatment.[4] Furthermore, the rate of tooth decay is higher for minority ethnic groups and low-income Americans.[5] Data show that African Americans, Hispanics, American Indians, and Alaskan Natives generally have the poorest oral health among U.S. racial and ethnic groups and face the greatest barriers to receiving care.[6]

Factors Contributing to Oral Health Problems

The reasons some Americans fail to receive adequate oral health care are complex. One important factor limiting access to dental services is income. Approximately 22 percent of people earning up to 200 percent of the federal poverty level had forgone a needed dentist visit in 2010 because they could not afford the service.[7] In contrast, only 13 percent of people earning between 200 percent and 399 percent of the poverty level and about 6 percent of people earning 400 percent of the poverty level reported the same (see Table 1).[8]

Individuals who have dental coverage are significantly more likely to receive dental services than individuals without such coverage; therefore, access to dental health insurance can be another important factor affecting access to basic dental services.[9] The most recent data available from the Medical Expenditure Panel Survey found that 57 percent of people with private insurance had visited a dental provider over the past year. In contrast, only 27 percent of people without coverage and 32 percent of people with public coverage had a dental visit over the past year.[10]

Table 1. Percent Forgoing Needed Dental Care in 2010 by Percent of the Federal Poverty Level

Earnings up to Federal Poverty Level, by Percent	Percent Forgoing Needed Dental Care
Up to 200	22
200–399	13
400 and over	6

Source: American Dental Association.[11]

Moreover, states are not required to offer dental services through Medicaid for adults, and fewer than half of states choose to cover preventive oral health care services through their Medicaid program.[12] Medicare, which covers both the elderly and people who have disabilities, does not cover dental procedures outside of tooth extractions, some oral examinations performed by surgeons before surgery (but not treatment for any oral health problems the physician uncovers), and oral surgeries that are needed because of a medical problem originating elsewhere.[13] In 2012, the Kaiser Family Foundation reported that 44 percent of Medicare beneficiaries reported no dental visit in the previous year.

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[3] Henry J. Kaiser Foundation, Oral Health in the U.S.: Key Facts (June 2012), http://www.kff.org/uninsured/upload/8324.pdf (accessed October 1, 2013).
[4] Institute of Medicine and National Research Council, 51.
[5] Ibid.
[6] Ibid, 57–59.
[7] Ibid.
[8] Ibid.
[9] Ibid, 10.
[10] American Dental Association, Breaking Down Barriers to Oral Health for All Americans: The Role of Finance (April 2012), http://www.ada.org/sections/advocacy/pdfs/7170_Breaking_Down_Barriers_Role_of_Finance-FINAL4-26-12.pdf (accessed October 1, 2013).
[11] Ibid.
[12] Medicaid.gov, "Dental Care," http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Benefits/Dental-Care.html (accessed October 1, 2013).
[13] Institute of Medicine and National Research Council, 210.

Oral Health Coverage for Children in the Patient Protection and Affordable Care Act

The Patient Protection and Affordable Care Act (ACA) included provisions to address the lack of dental coverage for children. Two provisions in the ACA aim to expand dental coverage in public and private health insurance plans for children in 2014. Section 1302 (b)(1)(J) of the ACA requires pediatric dental coverage as part of the essential health benefits offered in each qualified health plan, which can be included in the medical plan or as a stand-alone pediatric dental plan. Although the U.S. Supreme Court ruled that ACA-mandated Medicaid expansion for adults was optional for states, it left standing a section of the law that requires states to set Medicaid eligibility for those between age 6 and 19 at no lower than 133 percent of the federal poverty level (effectively 138 percent of the federal poverty level with income disregards in place). The 20 states that currently set eligibility below this threshold must make such children eligible for Medicaid by 2014, thereby qualifying them for Medicaid's mandatory children's dental coverage.[14]

Other factors beyond dental insurance significantly affect the likelihood that individuals will access dental services. For example, one recent study showed that children on Medicaid who had access to a dental care coordinator and whose caregivers were educated about dental benefits increased their use of these services.[15] Low health literacy is also associated with reduced use of dental care. One study found that 44 percent of individuals who have low overall health literacy reported visiting a dentist in the prior year, while 77 percent of people who have high health literacy visited dentists during the same period.[16]

Importantly, some Americans are unable to access care because they cannot find an available dentist; for instance, individuals on public insurance can find it hard to locate dentists who accept their coverage. Federal guidelines require pediatric dental coverage in state Medicaid and Children's Health Insurance Program (CHIP) programs, but small numbers of children enrolled in those programs receive oral health care, and research indicates that a likely contributing factor is that many dentists do not accept such insurance.[17] In fact, according to fiscal year 2011 Medicaid Early and Periodic Screening, Diagnostic, and Treatment program data, less than 40 percent of Medicaid enrollees 1 to 5 years old received any dental services, and even fewer received preventive dental services.[18] Dentists often cite low reimbursement rates and high administrative burdens as barriers to accepting Medicaid patients. One 2000 study estimated that only about 20 percent of private-practice dentists had billed Medicaid significantly

[14] National Conference of State Legislatures, "2011 Webinar: Oral Health and the Affordable Care Act: State Roles" (May 18, 2012), http://www.ncsl.org/issues-research/health/webinar-oral-health-and-the-affordable-care-act.aspx (accessed October 1, 2013).
[15] Catherine J. Binkley, Brent Garrett, and Knowlton W. Johnson, "Increasing Dental Care Utilization by Medicaid-Eligible Children: A Dental Care Coordinator Intervention," Journal of Public Health Dentistry 70 no. 1 (Winter 2010): 78–84.
[16] Sheida White, Jing Chen, and Ruth Atchison, "Relationship of Preventive Health Practices and Health Literacy: A National Study," American Journal of Health Behavior 32 no. 3 (2008): 227–342, http://www.ncbi.nlm.nih.gov/pubmed/19765202 (accessed October 1, 2013).
[17] U.S. Government Accountability Office, "Efforts Under Way to Improve Children's Access to Dental Services, but Sustained Attention Needed to Address Ongoing Concerns," Report to Congressional Committees, GAO-11-96 (2010), http://www.gao.gov/new.items/d1196.pdf (accessed October 1, 2013).
[18] Medicaid–CHIP State Dental Association and Centers for Medicare and Medicaid Services, Engaging More General Dentists to Care for Young Children: Access to Baby and Child Dentistry (ABCD) in Washington and South Dakota (May 8, 2013), 9, 10, http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Benefits/Downloads/LearningLabSlides4.pdf (accessed October 1, 2013).

(more than $10,000).[19] Research suggests that both increasing payments and streamlining Medicaid participation processes would modestly increase use of oral care and decrease the distance patients have to travel to get it.[20]

Like several other health professions, dentists are not distributed optimally across the country. The Health Resources and Services Administration (HRSA) designates dental health professional shortage areas (HPSAs) based on geography and population groups as well as within facilities.[21] Currently, the United States has about 4,600 dental HPSAs, and every state has at least one. Nationally, HRSA estimates that about 10 percent of the population is underserved. (See Appendix B for a state-by-state breakdown of dental HPSAs.) The number of dentists is projected to decline in coming years from a peak of 60 per 100,000 in 1994 to 55 per 100,000 in 2020.[22] The American Dental Association (ADA) posits that substantial increases in dentists' productivity resulting from increases in the employment of allied dental professionals will mitigate this decline.[23]

Expanding the Role of Dental Hygienists

Expanding the provision of affordable preventive services outside of dentists' offices might reduce the most serious consequences of limited access to dentists, and dental hygienists are potentially well suited to play an important role in expanding affordable access. The scope of practice of dental hygienists is established by state law and includes the procedures hygienists can perform, supervision levels, and locations in which dental hygienists can provide services. The services that are most effective in preventing serious dental disease are tasks that fall within dental hygienists' normal scope of practice—professional prophylaxis, the application of fluoride, and the application of sealants. In addition, the Bureau of Labor Statistics (BLS) reports that approximately 20 percent more dental hygienists are employed in the United States than dentists.[24]

One significant barrier to the increased use of dental hygienists is scope of practice and supervision requirements mandating that hygienists work directly with dentists to provide prophylactic services. Advocates for decreasing these mandatory supervision levels argue that dental hygienists are more likely to practice in shortage areas and provide more affordable services to high-need populations. To provide hygienists incentives to practice in those communities, some state proposals for expanding dental hygienist practice limit such expansion to hygienists practicing in shortage areas or underserved populations.

Scope of Practice and Education

Dental hygienists' scope of practice is determined by state laws and state regulatory boards. The majority of dental hygienists work in dentists' offices.[25] Dentists often hire hygienists for just a few days a week and so many hygienists work part time or for multiple dentists. Hygienists typically provide prophylaxis, take x-rays, and apply sealants or fluoride in dental practices. Other common tasks include applying local or topical anesthesia and placing or removing periodontal dress-

[19] Institute of Medicine and National Research Council, 206–207; and Burton Edelstein, "The Dental Safety Net, Its Workforce, and Policy Recommendations for Its Enhancement," Journal of Public Health Dentistry 70(Suppl. 1): S32–S39, http://www.ncbi.nlm.nih.gov/pubmed/20806473 (accessed October 1, 2013).
[20] Burton Edelstein, "The Dental Safety Net"; and Institute of Medicine and National Research Council, 206–209.
[21] U.S. Department of Health and Human Services, Health Resources and Service Administration, "Dental HPSA Designation Overview," http://bhpr.hrsa.gov/shortage/hpsas/designationcriteria/dentalhpsaoverview.html (accessed October 1, 2013).
[22] American Dental Association, Survey Center, Dental Workforce Model 2001–2025, www.adea.org/publications/tde/documents/dentistryslides.pdf (accessed November 15, 2013).
[23] Ibid.
[24] The Bureau of Labor Statistics reports that there are about 150,000 dentists and about 180,000 dental hygienists; U.S. Department of Labor, Bureau of Labor Statistics, "Dental Hygienists," Occupational Outlook Handbook, 2012–2013 Edition (March 29, 2012), http://www.bls.gov/ooh/Healthcare/Dental-hygienists.htm (accessed October 1, 2013); and U.S. Department of Labor, Bureau of Labor Statistics. Also see "Dentists," Occupational Outlook Handbook, 2012–2013 Edition (March 29, 2012), http://www.bls.gov/ooh/Healthcare/Dentists.htm (accessed October 1, 2013).
[25] Ibid.

ings. State law and regulations vary widely with regard to the level of supervision required for common tasks. For example, although all dental hygienists are trained to provide prophylactic services, some states require a dentist's presence or specific authorization from a dentist before a hygienist can actually provide those services.

Dental hygienist training programs are widely available. There are 332 accredited certificate or associate's degree programs in dental hygiene across the nation, and programs exist in every state.[26] Most dental hygienists in the workforce have an associate's degree, which requires an average of 2,860 hours of instruction including an average of 535 hours of supervised clinical instruction.[27] Some proposals advocating the expansion of dental hygienist practice suggest that hygienists should receive additional training (certification, continuing education, or a more advanced degree) before practicing with less supervision. Only 58 programs provide a bachelor's degree in dental hygiene,[28] which requires on average 3,073 hours of instruction. It is much less costly to open and operate new dental hygiene programs than dental schools (which, on average, are more costly to open and operate than medical schools).[29]

Current Supervision Requirements Vary Widely

Supervision requirements for dental hygienists are central to their ability to practice in expanded roles. Throughout the country, a great deal of variation exists in state law and regulations defining those supervision requirements in both public and private settings. Supervision requirements are commonly categorized into three levels: direct supervision, general supervision, and direct access. *Direct access* is an umbrella term denoting a practice that has less supervision and more access to patients.[30] Other categories of supervision that states use are *public health supervision* and *collaborative practice.* Most states also differentiate among supervision requirements for dental hygienists based on whether services are provided in private practice or a public setting (e.g., schools and nursing homes). Typically, states require more supervision in private settings than in public settings. No state requires more stringent oversight in public settings than in private settings.

Direct Supervision

Dental hygienists operating under direct supervision requirements can provide services only when a dentist is physically present. Seven states require direct supervision for all three major preventive tasks—prophylaxis, application of fluoride, and sealants—although some make an exception for at least one of those tasks in public settings with a dentist's authorization; one other state requires direct supervision for sealants only (see Appendix A).

General Supervision

Unlike direct supervision requirements, dental hygienists operating under general supervision requirements must receive authorization from a dentist to perform services for specific patients; however, dentists are not required to be physically present to provide such authorization. In some states, that requirement also includes an examination by a dentist before a hygienist is allowed to provide services. Other states allow the dentist to authorize services for a specific patient without an exam. Six states require general supervision for prophylaxis, fluoride, and sealants in all settings (see Appendix A).

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[26] American Dental Hygienists' Association, "Number of Dental Hygienist Education Programs Offered by State" (August 2, 2013), http://www.adha.org/resources-docs/7525_Map_of_DH_Programs_Per_State.pdf (accessed November 7, 2013).
[27] Ibid.
[28] Ibid.
[29] Karen Fox, "Special Report: An In-depth Look at New Dental Schools," American Dental Asociation (September 5, 2011), http://www.ada.org/news/6173.aspx (accessed October 1, 2013).
[30] American Dental Hygienist's Association, "Direct Access States" (October 2012), http://www.adha.org/resources-docs/7513_Direct_Access_to_Care_from_DH.pdf (accessed October 1, 2013).

More commonly, in private practices, states require general supervision for all three tasks but allow less supervision in at least one public setting—for example, residences of the homebound, schools, and residential facilities. That is the case for 28 states across all three tasks (see Appendix A).

Direct Access

Dental hygienists operating under direct-access requirements have the greatest autonomy. They are allowed to initiate treatment based on their assessment of a patient's needs without the specific authorization of dentists, treat the patient without the presence of a dentist, and maintain a "provider–patient relationship." In most states, to provide direct-access services, hygienists are required to complete additional continuing education courses or demonstrate specific levels of experience. In addition, some states require formal, written agreements between hygienists and dentists or require that dental hygienists carry their own liability insurance. In total, 36 states allow direct access for at least one of the three preventive tasks in at least one setting, which is most commonly the public setting (see Appendix A).

In **Oregon**, for example, dental hygienists can work without supervision or authorization in a broad range of public settings, including nursing homes, adult foster homes, residential care facilities, adult congregate living facilities, mental health residential programs, correctional and juvenile detention facilities, nursery schools, day care programs, Job Corps, primary and secondary schools, public and nonprofit community health clinics, in the homes of homebound adults, and directly for people eligible for Women, Infants, and Children programs. These hygienists must complete 2,500 hours of supervised experience, meet additional continuing education requirements, and carry their own liability insurance.

Supervision Levels Defined

- **Direct Supervision.** The dentist is physically present.
- **General Supervision.** The dentist has seen the patient or specifically authorized the hygienist to provide service to that patient.
- **Direct Access.** The hygienist initiates the service without authorization from the dentist. In some cases, the hygienist is required to have a relationship with the dentist; in two states, he or she can practice independently.

States vary greatly in the number of public settings in which they allow dental hygienists to provide services on a direct-access basis. Some states allow direct access in only one or two settings. Of particular importance for children is that not all direct-access states allow it in public schools, which prevents dental hygienists from independently participating in school-based efforts to increase access to dental care. The Pew Center on the States examined sealant programs in schools and found that in 19 states, dentists must examine students before hygienists are allowed to apply sealants. They concluded that those policies limit the number of students who can be served through such programs.[31]

Two states, **Colorado** and **Maine**, allow for an independent scope of practice for hygienists, with no requirements for oversight by dentists. In Colorado, for example, hygienists are authorized to open their own

[31] Pew Center on the States, "A Costly Dental Destination."

practices and provide a set of basic services, including prophylaxis treatments, administering fluoride, taking x-rays, and applying sealants.[32] There is no requirement that those hygienists form a relationship with or receive supervision from dentists, and they are not required to undergo additional training or demonstrate additional clinical experience. Hygienists in Colorado also are allowed to purchase dental equipment but not to provide restorative dental services (see the description of the Maine model below).[33]

State-Specific Examples of Innovations in Supervision Requirements

As described above, several states have taken innovative actions to provide greater autonomy to dental hygienists. Many states that allow such autonomy place extra education requirements on hygienists. In addition, hygienists may undergo a lengthier licensure process and often receive a new, professional title. The remainder of this section describes the models being employed to expand the autonomy of dental hygienists in **California**, **Maine**, **Massachusetts**, and **Minnesota** (also summarized in Table 2 on page 14). Most of those models have not undergone rigorous evaluation and are being implemented on a small scale.

California

In 1986, the California Office of Statewide Health Policy and Development created the registered dental hygienist in alternative practice (RDHAP).[34] Legislation passed in 1993 made the professional designation permanent.[35] RDHAPs must be licensed as dental hygienists and have a bachelor's degree. They also must complete 150 hours of additional education courses (approved by the Dental Hygiene Committee of California) and pass a written examination in the California Dental Practice and ethics by the Dental Hygiene Committee of California.[36] RDHAPs are allowed to perform the same tasks as dental hygienists but without supervision or prior examination by dentists. They are permitted to practice only in underserved settings, such as dental HPSAs, nursing homes, or residential care facilities. They also are required to have a dentist of record for referral, consultation, and emergency services. In addition, California requires that patients obtain a prescription for services from a dentist or physician within 18 months of a visit with an RDHAP to be eligible to continue to receive basic services from an RDHAP.

By 2012, 294 RDHAPs were licensed in the state.[37] A 2009 survey of California RDHAPs found that more than two-thirds of their patients had no other source of oral health care.[38] Most of the RDHAP practices used mobile equipment to serve patients in nursing homes or who are homebound. Survey data indicate that RDHAPs charged lower fees than dentists.[39] Importantly, the data also indicate that RDHAPs struggled to find referrals to dentists for patients in need of more advanced restorative care.

Maine

Since 2008, Maine has licensed a new category of dental hygienists who practice independently in all public and private settings and can provide most services within traditional dental hygienists' scope

[32] Colorado Revised Statutes, Title 12, Professions and Occupations Health Care, Article 35, Dentists and Dental Hygienists, Part 1, General Provisions, C.R.S. 12–35–124(2013).
[33] Colorado Revised Statutes.
[34] Elizabeth Mertz and Paul Glassman, "Alternative Practice Dental Hygiene in California: Past, Present, and Future," Journal of the California Dental Association 39 no. 1 (2011): 37–46.
[35] Ibid.
[36] California Department of Consumer Affairs, Dental Hygiene Committee of CA, "How to Become a Licensed Dental Auxiliary Registered Dental Hygienist in Alternative Practice," http://www.dhcc.ca.gov/applicants/becomelicensed_rdhap_appinst.shtml (accessed October 1, 2013).
[37] Elizabeth Mertz and Paul Glassman, "Alternative Practice Dental Hygiene in California."
[38] Ibid.
[39] Ibid.

of practice.[40] Requisites for that license include either an associate's degree and 5,000 hours of clinical experience or a bachelor's degree and 2,000 hours of experience.[41] Maine also allows those hygienists to open their own practice and employ other independent-practice dental hygienists. As of 2013, the state reported that 58 dental hygienists have been licensed as independent practitioners but that fewer than 20 actually practice independently.[42]

Massachusetts

In 2009, in response to the difficulty MassHealth (Medicaid) and CHIP enrollees encountered in obtaining dental services, the Massachusetts legislature created public health dental hygienists (PHDHs).[43] PHDHs are authorized to deliver preventive dental care without direct supervision or direction from a dentist in a number of public settings, including schools, long-term care facilities, and community health centers.[44] PHDHs must have at least three years of full-time clinical experience and must meet training requirements as determined by the Board of Registration in Dentistry. They also are required to hold collaborative agreements with dentists. PHDHs are allowed to perform any task the state allows under general supervision for dental hygienists. PHDHs also are allowed to bill Medicaid for their work but cannot bill commercial insurers. Thirty-one PHDHs have been authorized under this program, and in fiscal year 2012, PHDHs treated 6,900 Medicaid enrollees.[45]

Minnesota

From 1993 to 2000, Minnesota had the lowest dentist-to-patient ratio in the nation.[46] To address this shortage, the state established in 2009 dental therapists as a new category of oral health care provider. Dental therapists can earn either a bachelor's degree or a master's degree from a dental therapy education program. A master's degree and completion of additional clinical practice hours allows for certification as an advanced dental therapist and the ability to practice with less supervision.[47] Dental therapists and advanced dental therapists provide restorative services beyond the scope of preventive services traditionally provided by dental hygienists. For dental therapists, those restorative services are provided under what the state calls "indirect supervision," in which the dentist is onsite and specifically has authorized the service. Advanced dental therapists provide the same services under general supervision. In order to practice, dental therapists must have a collaborative management agreement in place with a supervising dentist.

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[40] Independent practice hygienists licensed in Maine can perform the following duties without dentist supervision: (1) Interview patients and record complete medical and dental histories; (2) take and record the vital signs (blood pressure, pulse, and temperature); (3) perform oral inspections, recording all conditions that should be called to the attention of a dentist; (4) perform complete periodontal and dental restorative charting; (5) perform all procedures necessary for a complete prophylaxis, including root planning; (6) apply fluoride to control caries; (7) apply desensitizing agents to teeth; (8) apply topical anesthetics; (9) apply sealants; (10) smooth and polish amalgam restorations, limited to slow-speed application only; (11) cement pontics and facings outside the mouth; (12) take impressions for athletic mouth guards and custom fluoride trays; (13) place and remove rubber dams; (14) place temporary restorations in compliance with the protocol adopted by the board; and (15) apply topical antimicrobials—excluding antibiotics and including fluoride—for the purposes of bacterial reduction, caries control, and desensitization in the oral cavity. The independent practice dental hygienist must follow current manufacturers' instructions in the use of these medicaments.

[41] Laws and Rules Relating to the Practice of Dentistry, Dental Hygiene, and Denturism, Maine Revised Statutes, Title 32, Chapter 16, Subchapter 3 B: Independent Practice Dental Hygienists, http://www.mainedental.org/forms/DentalPracticeAct.pdf (accessed October 15, 2013).

[42] Paul Koenig, "Gardiner Hygienist Sees Dental-Care Expansion Bill as Key to His Future," Kennepec Journal (June 17, 2013), http://www.kjonline.com/news/Gardiner-hygienist-sees-dental-care-expansion-bill-as-key-to-his-future.html?pagenum=full (accessed October 1, 2013).

[43] Massachusetts Department of Health and Human Services, "Public Health Dental Hygienist Overview," http://www.mass.gov/eohhs/gov/departments/dph/programs/community-health/primarycare-healthaccess/healthcare-workforce-center/oral-workforce-dev/dental-hygienist/public-health-dental-hygienist-overview.html (accessed October 1, 2013).

[44] Chelsea Conaboy, "Program Brings Dental Care to Children Without Dentists," The Boston Globe (January 28, 2013), http://www.bostonglobe.com/lifestyle/health-wellness/2013/01/28/dental/Q50fxo2b7SPqYSdPdVb5kK/story.html (accessed October 1, 2013).

[45] Ibid.

[46] National Governors Association, "Minnesota's Dental Therapy Program," http://statepolicyoptions.nga.org/casestudy/minnesota's-dental-therapy-program (accessed October 1, 2013).

[47] Minnesota Statute 150A.106, "Advanced Dental Therapist" https://www.revisor.mn.gov/statutes/?id=150A.106&year=2009 (accessed December 5, 2013).

The law does not require a dental hygienist's license prior to becoming a dental therapist, but one of two dental therapy master's programs does require applicants to have the license.[48] Similar to dental hygienists who have collaborative agreements, dental therapists are authorized to work in nursing homes, community health centers, Head Start programs, and U.S. Department of Veterans Affairs clinics.[49] They can also work in other settings, including private practices, as long as more than 50 percent of patients are low-income, disabled, chronically ill, or uninsured.

Advanced Dental Hygiene Practitioner

In 2008, the American Dental Hygienists' Association (ADHA) promulgated standards for an Advanced Dental Hygiene Practitioner (ADHP) curriculum to prepare dental hygienists to practice at an advanced level.[50] The curriculum provides master's level training and builds on the existing foundation of dental hygiene education at the bachelor's level.[51] Under the ADHA proposal, ADHPs would not be permitted to work independently. Instead, they would be required to work in partnership with dentists to provide diagnostic, preventive, therapeutic, and restorative services to underserved populations in a variety of settings. They also are intended to serve as liaisons to dentists and oral specialists for patients who require a higher level of expertise. Using this collaborative, multidisciplinary framework, ADHA posits that ADHPs would be able to serve populations in settings where there is a shortage of dentists.

Alaska Dental Health Aide Therapist

In 2003, tribal governments in Alaska collaborated to create a new dental provider category—the dental health aide therapist (DHAT)—that does not require initial training as a dental hygienist.[52] This provider model is part of the Alaskan Dental Health Aide Initiative, developed by tribal governments in the Alaska Native Tribal Health Consortium. DHATs provide preventive and restorative dental services with remote or in-person supervision by dentists. The DHATs are certified by the Community Health Aide Certification Board, whose members are appointed by the Indian Health Service. To be certified, DHAT candidates must have a high school diploma and complete a two year training program that includes 3,160 training hours and field work. The certification must be renewed every two years. The federal government and private foundations provided funding to develop the program.

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[48] Metropolitan State University, "Master of Science in Advanced Dental Therapy," http://www.metrostate.edu/applications/drep/files/MSOHCP_Fact_Sheet.pdf (accessed December 3, 2013).

[49] Like other states discussed in this report, Minnesota has allowed dental hygienists to practice in community settings outside of a traditional dental office since 2001, although this option is not widely used.

[50] American Dental Hygienists' Association, "Competencies for the Advanced Dental Hygiene Practitioner" (2008): 8, http://www.adha.org/resources-docs/72612_ADHP_Competencies.pdf, (accessed October 1, 2013).
(accessed May 29, 2013)

[51] Ibid.

[52] National Governors Association, "Alaskan Dental Health Aide Initiative," http://statepolicyoptions.nga.org/sites/default/files/casestudy/pdf/Alaska Dental Health Aide Program.pdf (accessed October 4, 2013); and Scott Wetterhall et al., "Evaluation of the Dental Health Therapist Workforce Model in Alaska: Final Report" (October 2010), W. K. Kellogg Foundation, http://www.wkkf.org/knowledge-center/resources/2010/10/alaska-dental-therapist-program-rti-evaluation-report.aspx (accessed October 16, 2013).

Barriers Limiting Dental Hygienist Practices

Reimbursement Policies

Reimbursement policies can create significant barriers to direct-access and independent dental hygienist practices. For example, state laws delineating the scope of practice of dental hygienists are not always aligned with state Medicaid reimbursement policies. In such instances, even though the state may allow dental hygienists to provide preventive services on a direct-access or independent basis, the hygienist might not be able to bill Medicaid directly for those services. In turn, that lack of reimbursement affects the likelihood that dental hygienists will be able to provide access in low-income settings. For example, one hygienist interviewed from such a state began her own direct-access practice, traveling to different nursing homes to provide prophylaxis to nursing home patients, but until the state changed its Medicaid billing rules, her only form of reimbursement for those services was directly from nursing home patients or through donations.[53]

Only 15 states have adopted explicit statutory or regulatory language to permit Medicaid to reimburse hygienists directly (see Appendix A). For example, **Minnesota** adopted a policy in 2002 to permit dental hygienists who have a collaborative practice agreement with dentists to apply for Medicaid provider coverage and bill directly for their services.[54] Hygienists in **Connecticut** are authorized to receive reimbursement by the Medicaid program only in specific settings, including nursing homes, group homes, schools, hospitals, and community health centers without dental clinics.[55] **Colorado** law generally prohibits hygienists employed by dentists to file individual claims but permits reimbursement for employed hygienists who provide direct services to children.[56] Those hygienists can bill for preventive services such as fluoride, sealants, oral hygiene instructions, and other prophylactic treatments. The other states that have adopted policies allowing direct Medicaid reimbursement to dental hygienists also impose varying conditions on hygienists when billing for services.[57]

Implications of Placing Dental Hygienists in Underserved Areas

Some experts question the equity of limiting the work of hygienists based on practice settings and argue that expanding their practice areas will help hygienists fulfill unmet oral health care needs for underserved populations. More than half the states allow direct-access hygienists to work with underserved populations in some public settings but explicitly bar them from practicing in private settings.

The rationale that state dental boards most commonly use for restricting hygienists from practicing in unsupervised settings focuses on concerns about quality and safety, even though no clear evidence exists to support such restrictions. Furthermore, if the basis for restricting the expanded scope of practice is a concern about safety and efficacy (as unfounded as this concern may be), these concerns should apply regardless of the income level of the recipient or the site of care.

Some also argue that barring dental hygienists from providing direct-access services for subsets of patients can be considered an unfair trade restriction.[58] For example, the Federal Trade Commission (FTC) provided comments on a proposal by the Georgia dentistry

[53] Deb Astroth, private correspondence, February 20, 2013.
[54] Minnesota Department of Human Services, "Critical Access Dental Program—Results and Recommendations" (2008), http://www.health.state.mn.us/healthreform/oralhealth/dhsreportmay08.pdf (accessed October 1, 2013).
[55] American Dental Hygienists' Association, "States Which Directly Reimburse Dental Hygienists for Services Under the Medicaid Program," http://www.adha.org/resources-docs/7519_Direct_Reimbursement_Medicaid_by_State.pdf (accessed October 1, 2013).
[56] Ibid.
[57] Ibid.
[58] Susan S. DeSanti, Richard A. Feinstein, and Joseph Farrell, Federal Trade Commission Office of Policy Planning, Bureaus of Competition and Economics, letter to Randall Vaughn, Division Director, Georgia Secretary of State, Professional Licensing Boards Division, Georgia Board of Dentistry, December 30, 2010, http://www.ftc.gov/os/2010/12/101230gaboarddentistryletter.pdf (accessed October 1, 2013).

Business and Administrative Barriers

Hygienists who can legally start their own practices have reported a need for more business and financial management training and cited administrative functions as top barriers to independent practice.[59] They typically face many of the same challenges as small business owners and require strong business acumen in addition to clinical education to maintain those practices over time. Business skill deficits most frequently cited by hygienist are insurance billing, marketing and outreach, general business planning, and financial practice management.[60]

An important first step for hygienists opening an independent practice is to create a comprehensive business plan. An effective plan contains a market analysis with segmentation of potential customers; outlines the services that will be provided, with a fee schedule; details a marketing strategy to reach the target customer base; and defines practice financials, including income forecasts and cash flow projections. In addition, office systems must be in place, including billing and accounting systems and customer service processes that ensure high-quality care.[61] A key challenge to billing is prohibitive state laws that limit direct reimbursement by Medicaid for services that dental hygienists provide. Even when hygienists are able to bill directly for their services, they still need to establish and manage an administrative process for obtaining billing and vendor numbers as well as processing claims.

Another challenge for hygienists practicing independently is the money required to open a new practice. Although start-up costs are significantly lower than those required to start a dental practice, hygienists typically need to secure a loan for the cost of equipment. Those who do can confront lenders who, unfamiliar with a new, independent practice model, may not be willing to provide such capital.[62] To reduce the need for start-up capital, some hygienists rent space from dentists who work either part time or with alternate schedules. Other hygienists choose to operate mobile practices that provide on-site services in settings such as nursing homes, long-term care facilities, or schools. Regardless of the model, it remains clear that if independently practicing hygienists are to be successful, they must be comfortable functioning as both clinician and business owner.

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[59] Cynthia Wades, Tim Bates, and Elizabeth Mertz, "Registered Dental Hygienists in Alternatives Practice in California, 2009 Descriptive Report," Center for Health Professions (December 2011), http://futurehealth.ucsf.edu/Content/11660/2011_12_Registered_Dental_Hygienists_In_Alternative_Practice_in_California.pdf (accessed October 21, 2013).
[60] Ibid.
[61] Esther Andrews, Practice Management for Dental Hygienists (Philadelphia: Lippincott Williams & Wilkins, 2007).
[62] Elizabeth Mertz, "Registered Dental Hygienists in Alternative Practice: Increasing Access to Dental Care in California" (San Francisco: Center for Health Professions, University of California, San Franciso, 2008).

board to bar hygienists from providing preventive services in public settings without direct supervision.[63] The FTC argued that there was no evidence that allowing hygienists to provide preventive services without supervision was a safety issue.[64] The FTC further argued that restricting the practice without evidence that the restriction limits public safety unnecessarily reduces competition.[65]

In addition, although there are indications that independently practicing dental hygienists are more likely to provide services to underserved populations, it remains uncertain whether independent-practice dental hygienists will address the shortage of oral health care workers.[66] Dental hygienists practicing independently could face the same economic disincentives as dentists, whose professional boards argue that low reimbursement levels, high administrative burdens, and the expensive nature of the equipment and insurance required to run a dental office are the main barriers to treating low-income or uninsured populations.[67] In some instances, those same barriers could apply to dental hygienists.

Dental Therapists

Dental therapists, also known in some countries as dental nurses, have been prevalent in New Zealand and Australia since the early 20th century and have spread to more than 40 countries around the world.[68] Those providers are required to have additional training and education above that of a dental hygienist. They also operate under an expanded scope of practice that includes the ability to diagnose and perform restorative services. International studies find that these therapists provide safe, quality dental care.[69]

Research and Evaluation

Experts suggest that dental hygienists have the ability to provide safe preventive services and can increase access to care for low-income populations. However, U.S. studies examining the impact of expanded roles for dental hygienist on quality, cost, and access to care are limited. International studies provide stronger evidence that advanced-level dental hygienists provide safe, high-quality care.[70]

A 2001 study examining the quality and efficiency of dental hygiene care in the United States focused on a school-based program in **Oregon** in which hygienists provided sealants without supervision.[71] The study found that the hygienists' services met all quality

[63] Ibid.
[64] Ibid.
[65] Ibid.
[66] Elizabeth Mertz and Paul Glassman, "Alternative Practice Dental Hygiene in California."; MCD Public Health, "Oral Health Care in Maine: Report in Response to Resolves 2011 Chapter 92 (LD1105)" (December 2012), http://www.maine.gov/legis/opla/oralhealthcareMCDreport.pdf (accessed October 21, 2013); L. Jackson Brown, Donald R. House, and Kent D. Nash, "The Economic Aspects of Unsupervised Private Hygiene Practice and Its Impact on Access to Care," American Dental Association Dental Health Policy Analysis Series (2005), http://www.ada.org/sections/professionalResources/pdfs/report_hygiene.pdf (accessed October 21, 2013); and Matthew Stone, "Bill to Allow Hyginists to Open Clinics Wins Bipartisan Support, but Dentists Question the Strategy," BDN Maine (April 10, 2013), http://bangordailynews.com/2013/04/10/news/state/bill-to-allow-hygienists-to-open-clinics-wins-bipartisan-support-but-dentists-question-the-strategy (accessed October 21, 2013).
[67] Institute of Medicine and National Research Council, 206–209.
[68] Institute of Medicine and National Research Council, 133.
[69] Ibid.
[70] J. Timothy Wright, et. al., "A systematic review of oral health outcomes produced by dental teams incorporating midlevel providers," T*he Journal of the American Dental Association*, (January 1, 2013) 144 no. 1: 75-91.
[71] Susan Sanzi-Schaedal, Bonnie Bruerd, and Gordon Empry, "Building Community Support for a Dental Sealant Program," *Journal of Dental Hygiene* 75 no. 4 (2001): 305–309, http://www.ncbi.nlm.nih.gov/pubmed/11813677 (accessed October 1, 2013). In 2001, Oregon required a dentist to screen a patient before a hygienist could place sealants. This requirement was removed in 2007.

standards.[72] Another, older study evaluated the effect of hygienists in a 1986 **California** demonstration project that allowed dental hygienists to open independent practices and provide prophylaxis, examinations, fluoride, and deep cleaning (i.e., root planning).[73] Researchers compared the seven independent dental hygienist practices to six dentist-owned practices and found that hygienists provided the same or better quality of care than dentists in most areas, including infection control.[74] In addition, the hygienists' offices kept more accurate medical records (including following up on important findings in a patient's medical history with the patient or his or her physician) and more completely recorded patients' periodontal status and the results of soft-tissue examinations.[75] The hygienists also performed better at removing tartar from patients' teeth. Finally, the study found that the hygienists provided services to more Medicaid patients than dentists provided.[76]

Conclusion

Lack of access to adequate oral health care services is an ongoing problem in the United States, and complex barriers to accessing those services exist for many populations. Dental hygienists often are at the center of proposed strategies to increase access to oral health care. Such strategies include changing supervision rules and reimbursement policies so that dental hygienists are able to provide preventive services outside of dentists' offices or creating advanced-provider models that involve training hygienists to perform under new titles with an expanded scope of practice and less supervision. Some of the barriers to access for underserved populations will be the same, regardless of whether services are provided by a dentist or a dental hygienist. Those barriers include low health literacy, low reimbursement rates for the publicly insured, and high administrative burdens for reimbursement from public payers.

Innovative state programs are showing that increased use of dental hygienists can promote access to oral health care, particularly for underserved populations, including children. Such access can reduce the incidence of serious tooth decay and other dental disease in vulnerable populations, which suffer disproportionally from untreated dental problems. There is evidence indicating that these practices can be both safe and effective.

As demand for oral health services rises—in part due to changing demographics and expanded access to dental insurance—states can consider doing more to allow dental hygienists to fulfill these needs by freeing them to practice to the full extent of their education and training.

Amanda Dunker
Policy Analyst
Health Division
NGA Center for Best Practices
202-624-5978

Esther Krofah
Program Director
Health Division
NGA Center for Best Practices
202-624-5395

Frederick Isasi
Division Director
Health Division
NGA Center for Best Practices
202-624-7872

January 2014

This publication was made possible by grant number 110–450–4505 from the Health Resources and Services Administration (HRSA). Its contents are solely the responsibility of the authors and do not necessarily represent the official views of HRSA.

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[72] Ibid.

[73] James R. Freed , Dorothy A. Perry, and John E. Kushman, "Aspects of Quality of Dental Hygiene Care in Supervised and Unsupervised Practices," *Journal of Public Health Dentistry* 57 no. 2 (1997): 68–75, http://www.ncbi.nlm.nih.gov/pubmed/9195498 (accessed October 1, 2013). Prior to opening an independent practice, hygienists received 118 hours of training in management, business, and updates to hygiene practice; 300 hours of supervised residency; and 52 hours of in-service management practice; and E. Mertz and P. Glassman, "Alternative Practice Dental Hygiene in California."

[74] James R. Freed et al., "Aspects of Quality of Dental Hygiene Care."

[75] Ibid.

[76] Ibid.

Table 2. Innovations in Providing Oral Health Care Services

Title	State or Sponsor	Practice Settings	Supervision Requirements	Educational and Licensing Requirements
Registered Dental Hygienist in Alternative Practice	California	**Public:** Residences of the homebound, schools, residential facilities and other institutions, and dental health professional shortage areas (HPSAs) as certified by the California Office of Statewide Planning and Development (OSHPD).[a] **Private:** Includes dental health professional shortage areas certified by OSHPD.	Can own a practice and practice without supervision.[b] No prior exam by a dentist is required, but patients must get a prescription for services from a dentist or physician every 18 months after initial services are provided. Must have documentation of an existing relationship with at least one dentist for referral, consultation, and emergency services.[c]	A bachelor's degree and completion of a Dental Hygiene Committee of California–approved continuing education course and a written exam prescribed by the Dental Hygiene Committee of California.
Independent Practice Dental Hygienist	Maine	All public and private settings.[d]	Can own a practice and provide services encompassing most of a dental hygienist's scope of practice without supervision.[e] No referral from a dentist or documented relationship with a dentist is required. Must provide a referral to a dentist for patients indicating needed services.	A bachelor's degree and 2,000 clinical hours or an associate's degree plus 5,000 clinical hours.
Public Health Dental Hygienist	Massachusetts	**Public:** Include residences of the homebound, schools, nursing homes, community health centers, and Head Start programs, with reimbursement limited to Medicaid or other state insurance programs.[f] **Private:** None.	Cannot own a practice. No supervision or prior examination by a dentist is required.[g] Must provide a written recommendation that the patient visit a dentist within 90 days.[h] Must have a collaborative practice agreement with a dentist, local or state agency, or institution.[i]	Associate's degree as part of initial dental hygienist licensure. At least 3 years of experience and training in a public health setting.[j]

Title	State or Sponsor	Practice Settings	Supervision Requirements	Educational and Licensing Requirements
Dental Therapist (DT)	Minnesota	**Public:** Include residences of the homebound, U.S. Department of Veterans Affairs hospitals, and dental HPSAs as designated by the U.S. Department of Health and Human Services.[k] **Private:** May practice in any setting as long as more than 50 percent of patients served by the dental therapist are enrolled in a state insurance program, have a disability or chronic condition that creates a barrier to care, or have no dental health coverage.[l]	Cannot own a practice. Can provide restorative services under indirect supervision. Advanced dental therapists can provide restorative services under general supervision. Must have a collaborative practice agreement with a dentist describing practice settings and populations.[m]	Bachelor's degree. Master's degree allows certification as an advanced dental therapist. The Central Regional Dental Testing Services examination is taken as a licensure requirement towards completion of the program.
Advanced Dental Hygiene Practitioner	Model curriculum developed by the American Dental Hygienists' Association	Public and private settings are determined by states adopting the model.[n]	Ability to own a practice depends on state law. General supervision is required for an expanded list of services (including some restorative services). States adopting the model would impose other requirements.	Minimum of a master's degree, with other requirements set by the states adopting the model.

[a] California State Statutes, Business and Professions Code, Section 1926.
[b] California State Statutes, Business and Professions Code, Section 1925.
[c] California State Statutes, Business and Professions Code, Section 1930; and California State Statutes, Business and Professions Code, Section 1930(a,1).
[d] Maine Revised Statutes, Title 32, Chapter 16, Subchapter 3 B.
[e] Ibid.
[f] Commonwealth of Massachusetts, General Laws, Part I, Title XVI, Chapter 112, Section 51, https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXVI/Chapter112/Section51 (accessed October 15, 2013).
[g] Ibid.
[h] Ibid.
[i] Ibid.
[j] "Public Health Dental Hygienist: A New Category of Dental Professional," http://www.mass.gov/eohhs/docs/dph/com-health/oral-health/phdh-fact-sheet.pdf (accessed October 15, 2013).
[k] 2013 Minnesota Statutes, Chapter 150A, Section 105 Dental Therapist, https://www.revisor.mn.gov/statutes/?id=150a.105 (accessed October 15, 2013).
[l] Ibid.
[m] Ibid.
[n] American Dental Hygienist's Association, "Competencies for the Advanced Dental Hygiene Practitioner (ADHP)" (2008), http://www.adha.org/resources-docs/72612_ADHP_Competencies.pdf (accessed November 20, 2013).

Appendix A. Current State Dental Hygienist Scope-of-Practice Rules

Methodology. State legislation and regulations were reviewed to determine whether state Medicaid rules explicitly authorized hygienists to be eligible for reimbursement under Medicaid. The American Dental Hygienists' Association provided scope-of-practice information.[a] When more than one supervision level is provided, the two levels refer to private or public. *Private settings* refer to privately owned and operated dental offices. *Public settings* refer to public health clinics, public schools, nursing homes, or correctional facilities.

Symbol	Definition
Y	The condition as established by state legislative or regulatory guidelines has been met.
N	The criteria have not been met.
A	The dental hygienist can provide services as he or she determines appropriate without specific authorization or direct dentist supervision (direct access) in at least one setting.
G	A dentist must authorize the dental hygienist's practice but need not be present.
D	Direct dentist supervision of the dental hygienist practice is required.

State	Percentage of Residents Underserved[b]	Can Be Directly Reimbursed by Medicaid[c]	Prophylaxis (Cleanings)	Fluoride	Pit/Fissure Sealants
Alabama	24	N	D	D	D
Alaska	10	N	G/A	G/A	G/A
Arizona	15	Y	G/A	G/A	G/A
Arkansas	5	N	G/A	G/A	G/A
California	3	Y	G/A	G/A	G/A
Colorado	7	Y	A	A	A
Connecticut	10	Y	G/A	G/A	G/A
Delaware	22	N	G	G	G
Florida	18	N	G/A	G/A	G/A
Georgia	11	N	D	D	D
Hawaii	11	N	D/G	D/G	D/G
Idaho	18	N	G/A	G/A	G/A
Illinois	13	N	G	G	G
Indiana	4	N	D/G	D/G	D
Iowa	7	N	G/A	G/A	G/A
Kansas	17	N	G/A	G/A	G/A

[a] American Dental Hygienists' Association, "Dental Hygiene Practice Act Overview: Permitted Functions and Supervision Levels by State," https://www.adha.org/resources-docs/7511_Permitted_Services_Supervision_Levels_by_State.pdf (accessed November 12, 2013); and American Dental Hygienist's Association, "Direct Access States."

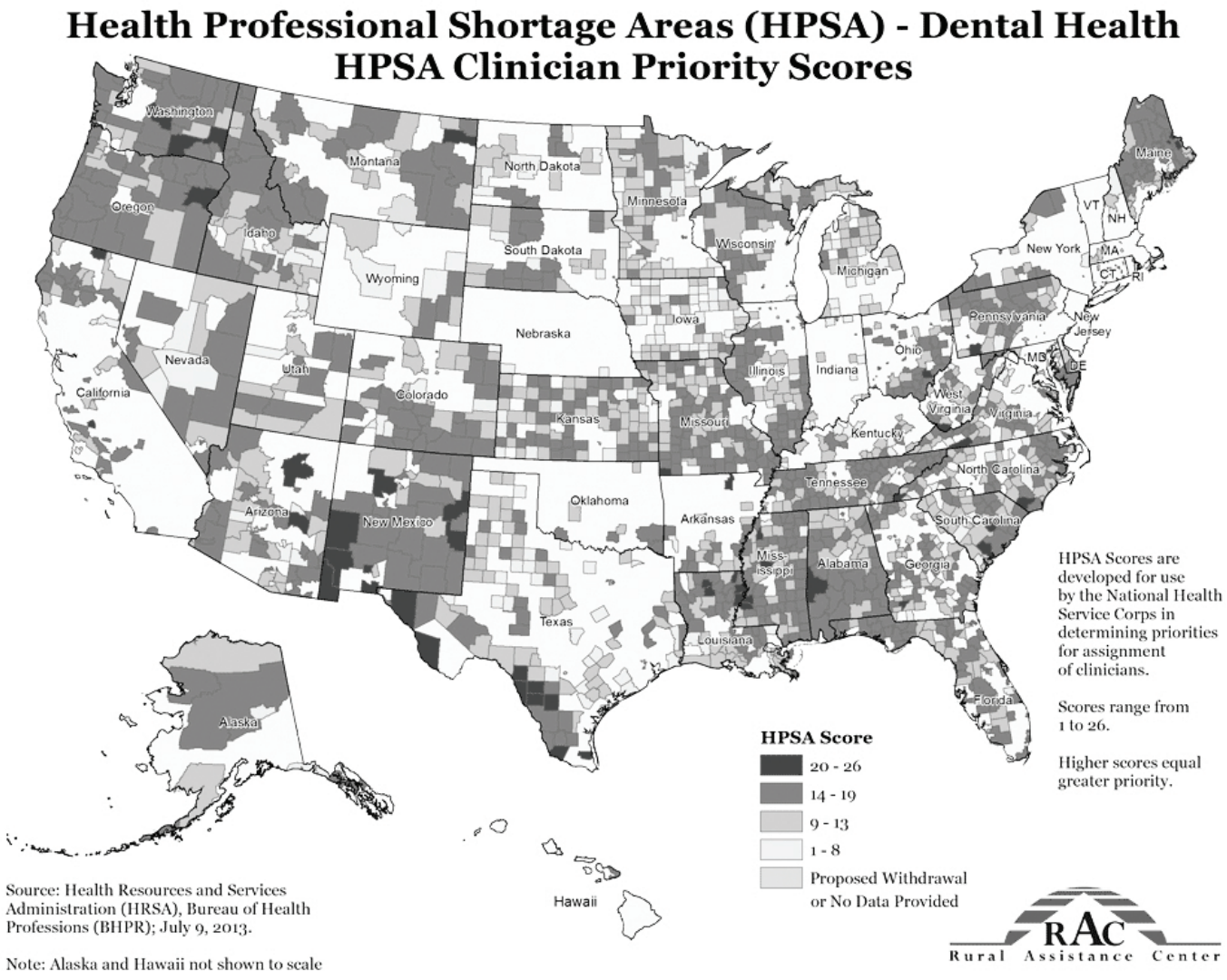
[b] The total state population divided by estimated underserved population in each state. Data provided by the Health Resources and Services Administration (HRSA), April 2013.This data is continually updated by HRSA and can be accessed here: http://datawarehouse.hrsa.gov/.

[c] State Medicaid dental hygienist reimbursement policies were obtained from the study, "States Which Directly Reimburse Dental Hygienists for Services under the Medicaid Program," conducted by the American Dental Hygienists' Association (2010).

State	Percentage of Residents Underserved[b]	Can Be Directly Reimbursed by Medicaid[c]	Prophylaxis (Cleanings)	Fluoride	Pit/Fissure Sealants
Kentucky	5	N	G/A	G/A	G/A
Louisiana	24	N	D/G	D/G	D/G
Maine	15	Y	G/A	G/A	G/A
Maryland	5	N	G	G	G
Massachusetts	5	Y	G/A	G/A	G/A
Michigan	5	N	G/A	G/A	G/A
Minnesota	7	Y	G/A	G/A	G/A
Mississippi	36	N	D	D/G	D
Missouri	18	Y	G/A	G/A	G/A
Montana	15	Y	G/A	G/A	G/A
Nebraska	0	Y	G/A	G/A	G/A
Nevada	11	Y	G/A	G/A	G/A
New Hampshire	1	N	G/A	G/A	G/A
New Jersey	0	N	G	G	G
New Mexico	26	Y	G/A	G/A	G
New York	5	N	A	A	A
North Carolina	13	N	D/G	D/G	D/G
North Dakota	8	N	G	G	G
Ohio	8	N	G/A	G/A	G/A
Oklahoma	2	N	A	A	A
Oregon	17	Y	G/A	G/A	G/A
Pennsylvania	10	N	G/A	G	G/A
Rhode Island	10	N	G/A	G/A	G/A
South Carolina	21	N	G/A	G/A	G/A
South Dakota	13	N	G/A	G/A	G/A
Tennessee	20	N	G	G/A	G/A
Texas	9	N	G/A	G/A	G/A
Utah	13	N	G	G	G
Vermont	0	N	G/A	G/A	G/A
Virginia	8	N	G/A	G/A	G/A
Washington	10	Y	G/A	G/A	G/A
West Virginia	11	N	G/A	A	G
Wisconsin	9	Y	G/A	G	G/A
Wyoming	7	N	G	G	D
Totals		**Y=15**	**D=3**	**D=2**	**D=5**
		N=35	**G=8**	**G=9**	**G=8**
			A=3	**A=4**	**A=3**
			G/A=32	**G/A=30**	**G/A=31**
			D/G=4	**D/G=5**	**D/G=3**

Appendix B. National Health Service Corps Dental Health HPSA Priority Scores

The Rural Assistance Center created the map below depicting health professional shortage area scores for dental providers.[a] The scores are used by the U.S. Department of Health and Human Services to set priorities for the assignment of recipients of the National Health Service Corps loan repayment assistance and are an indication of the geographic areas with the highest needs for more dental providers, according to federal criteria.



[a] Available at http://www.raconline.org/racmaps/mapfiles/hpsa_dentalscore.png.