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Dental therapy in the United States: Are developments at the state level a reason for optimism or a cause for concern?

Lisa Simon, MD, DMD^{1,2} ; R. Bruce Donoff, MD, DMD³; Bernard Friedland, BChD, MSc, JD⁴

1 Department of Oral Health Policy and Epidemiology, Harvard School of Dental Medicine, Boston, MA, USA

2 Department of Medicine, Brigham and Women's Hospital, Boston, MA, USA

3 Department of Oral and Maxillofacial Surgery, Harvard School of Dental Medicine, Boston, MA, USA

4 Department of Oral Medicine, Infection and Immunity, Harvard School of Dental Medicine, Boston, MA, USA

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Correspondence

Dr. Lisa Simon, Harvard School of Dental Medicine, 188 Longwood Avenue, Boston, MA 02115. Tel.: 310-508-4014; Fax: 617-432-2917; e-mail: lisa_simon@hms.harvard.edu. Lisa Simon is with the Department of Oral Health Policy and Epidemiology, Harvard School of Dental Medicine, and the Department of Medicine, Brigham and Women's Hospital. R. Bruce Donoff is with the Department of Oral and Maxillofacial Surgery, Harvard School of Dental Medicine. Bernard Friedland is with the Department of Oral Medicine, Infection, and Immunity, Harvard School of Dental Medicine.

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Abstract

Access to dental care continues to be a challenge for millions of vulnerable Americans. In more than 50 nations worldwide, dental therapists (DTs), mid-level providers who deliver a limited scope of dental care under the supervision of a dentist, have helped increase access to needed care. Since 2003, when the Alaska Native Tribal Health System introduced DTs as part of the Federally authorized Alaska Community Health Aide Program, a total of 13 states have adopted the role. However, as of April 2020, there are fewer than 150 DTs in practice throughout the country, and educational and licensing requirements as well as scope of practice vary between each state. Such heterogeneity makes the training and recruitment of future DTs a challenge. This article summarizes the current state of the DT workforce in the United States and discusses the possible future of the profession as other states contemplate adopting the model in the face of ongoing oral health disparities.

Background

The historical separation of oral health and medicine has led to long-lasting disparities in oral health outcomes within the United States.¹ Variations in insurance coverage and structure, which have kept dental payment systems almost entirely fee-for-service and have limited dental coverage within Medicaid and Medicare, have further compounded inequities in dental access and outcomes.²

The successful expansion of the medical workforce with advanced practice providers such as nurse practitioners and physician assistants provides a compelling argument for an equivalent provider role in the dental workforce – a role that already exists in more than 50 nations. Advocates note such a workforce expansion could increase access to dental care in the United States, especially for those most vulnerable to poor oral health outcomes.³ Dental therapists

(DTs; alternately referred to as Dental Hygiene Therapists, Advanced Dental Hygiene Providers, or Dental Health Aide Therapists in the United States) are providers with a scope of practice more restricted than that of a dentist but with the ability to provide preventive and restorative dental services in collaboration with a dentist.⁴ Originally embedded within New Zealand elementary schools following World War I, the model has since expanded globally, with a long track record of quality and safety in developed and developing nations and within both public and private health systems.⁵ However, the adoption of dental therapy in the United States has been slow. This article summarizes the current state of dental therapy in the United States, as well as current challenges to growth of this provider role.

The first foray into dental therapy in the United States occurred in 1949, when the Massachusetts legislature

passed a bill authorizing the Forsyth Dental Infirmary for Children to conduct a 5-year program of research in dental therapy, though opposition from organized dentistry resulted in the funding being rescinded in 1950. In 1970, the now-renamed Forsyth Dental Center initiated “The Forsyth Experiment” to train dental hygienists to perform restorative procedures on children.⁶ While preliminary results supported that hygienists could perform these procedures with similar quality to dentists, the program was terminated in 1974 on the basis that it contravened the Massachusetts Dental Practice Act. Programs training dental hygienists in basic restorative procedures were also undertaken at the University of Kentucky and at the University of Iowa in the 1970s, with similar outcomes.^{6,7}

The current momentum to introduce dental therapists into clinical practice in the United States owes its origins to the Alaska Native Tribal Health Consortium (ANTHC). In 2003, with a goal of increasing dental access in remote Alaska Native villages, the ANTHC sent several Tribally selected students to the University of Otago, New Zealand to train in dental therapy. Known in Alaska as Dental Health Aide Therapists (DHATs), the providers were credentialed through the Alaska Community Health Aide Program (CHAP), a program administered by the Indian Health Service (IHS) that has sponsored community health providers in I medicine since 1968.⁸ Through CHAP, the Indian Health Service authorized the adoption of providers in many spheres of medicine with the exception of DHATs, the latter omission being due largely to the outcry from organized dentistry.⁹ The first DHATs began practicing in 2004. In 2007, the ANTHC began offering DHAT curricula and credentialing within Alaska, no longer requiring trainees to travel to New Zealand.¹⁰

In 2009, Minnesota became the first state (rather than tribal authority) to pass DT legislation. With the synchronous establishment of two DT training programs within the state, the first graduate DTs began practicing in 2011.

In 2014, Maine became the third state after Alaska and Minnesota to authorize a DT role, with five states following suit by 2018. An additional five states passed legislation in 2019. Bills authorizing a DT role are currently being considered in an additional eight states as of 2020.¹¹

The current state of dental therapy

We address the current state of dental therapy from three perspectives, namely, educational requirements, licensing requirements, and scope of practice. The information is presented in summary form in Tables 1 and 2. Table 1 lists the 13 states currently authorizing DT practice either state-wide or for American Indian/Alaska Native tribal members, the current number of dental therapists in each state, the educational requirements, scope of practice, level

of supervision, billing requirements and practice restrictions. Table 2 summarizes the range in states’ requirements for training, practice setting, level of supervision, and the ability of DTs to bill independently.

Educational requirements

In 2015, the Commission on Dental Accreditation (CODA), the body responsible for accrediting US dental schools, dental hygiene, and dental assisting training programs, released accreditation standards for dental therapy training programs.¹² All states with current DT legislation mandate graduation from a CODA-accredited training program, making these criteria a national standard. Notably, these standards do not dictate what degree a program must offer to earn accreditation (e.g., associate’s, bachelor’s, or master’s degree). Some states, however, require greatly in excess of the minimum educational requirements laid out by CODA for an individual to receive licensure as a DT. For example, the legislation passed in 2019 in Nevada requires an individual to already be licensed as a public health dental hygienist – which requires a dental hygiene degree and additional training – to have graduated from a CODA-accredited program, and to have completed at least 500 hours of clinical preceptorship.

This has resulted in a wide spectrum of training lengths and prerequisites that vary across states, in spite of CODA’s national educational standards. This stands in stark contrast to the education of dentists, for whom graduation from any of the 66 CODA-accredited dental schools in the United States is considered an acceptable level of education to be eligible for licensure by any state. The same is true for dental hygienists.¹³

The state-by-state variation in educational requirements presents a number of challenges. First, a training program that meets the educational requirements in one state may not meet those of another state, thus limiting the portability (and practicality) of a degree in dental therapy. By way of example, DTs with a Masters’ degree from Minnesota could not practice in Arizona if they were not also licensed dental hygienists, and Alaska-trained DHATs will be unable to practice outside of the five states that restrict their practice to patients in tribal settings. Such a lack of degree portability may make the profession less appealing to potential applicants.

Licensing requirements

While dentists and dental hygienists must complete regional board examinations when first applying for licensure in a chosen state, once licensed in one state there is reciprocity for licensure in any other.¹⁴ This is currently not the case for dental therapists.

Table 1 States' Dental Therapy Legislation

| State (year implemented) | Current DTs (#)* | Educational requirements† | Scope of practice‡ | Level of supervision† | Billing requirements‡ | Practice restrictions‡ |
|--------------------------|------------------|--|--|--|---|---|
| Alaska (2004) | 35 | Two-year certificate program and 400 hours clinical preceptorship | Diagnostic;‡ Preventive;¶ Restorative;§ Extractions or pulpectomy after consultation with dentist | General | May not independently bill for services | Must be employed by IHS or a Tribal program |
| Arizona (2018) | 0 | Must be a licensed dental hygienist; must graduate from any CODA-accredited DT program | Diagnostic;‡ Preventive;¶ Temporary restorations; Extractions of primary teeth | Direct or under collaborative practice agreement; dentists may only enter collaborative practice agreement with four DTs | May not independently bill for services | Must be employed at a FQHC or CHC or practice caring for CHC-referred patients |
| Connecticut (2019) | 0 | Must be a licensed dental hygienist; must graduate from any CODA-accredited DT program | Diagnostic;‡ Preventive;¶ Restorative;§ Extractions of primary teeth or mobile permanent teeth | Direct or under collaborative practice agreement; Must complete 1,000 hours of direct supervision before entering collaborative agreement with dentist | May bill independently | May only practice within a "public health facility" |
| Idaho (2019) | 1 | Must graduate from any CODA-accredited DT program | Diagnostic;‡ Preventive;¶ Restorative;§ Extractions or pulpectomy after consultation with dentist | General; 500 hours preceptorship under direct supervision; Dentists may only enter collaborative practice agreement with three DTs | May not bill for any services; Tribally employed only | May only provide full care on Tribal lands; may provide preventive services in public facilities adjacent to Tribal lands |
| Maine (2014) | 0 | Must be a licensed dental hygienist; must graduate from a CODA-accredited DT program, and pass a comprehensive clinical exam | Diagnostic;‡ Preventive;¶ Restorative;§ Extractions after consultation with dentist | Direct; 2000 hours preceptorship under direct supervision | May bill independently | Can only practice in public health settings, DHPSAs, or at least 50% Medicaid or uninsured patients |
| Michigan (2018) | 0 | Must graduate from a CODA-accredited DT program, and pass a comprehensive clinical exam | Diagnostic;‡ Preventive;¶ Restorative;§ Extractions after consultation with dentist | General; 500 hours preceptorship under direct supervision; Dentists may only enter collaborative practice agreement with four DTs | May bill independently | Can only practice in public health settings, DHPSAs, or at least 50% Medicaid or uninsured patients |
| Minnesota (2009) | 100 | Must graduate from a CODA-accredited DT program and pass a comprehensive clinical exam; <i>To become an Advanced Dental Therapist, must complete 2000 hour preceptorship</i> | Diagnostic;‡ Preventive;¶ Restorative;§ Extractions of primary teeth; <i>ADTs may create treatment plans</i> | General; Indirect for more advanced procedures | May bill independently | Can only practice in public health settings, DHPSAs, or at least 50% Medicaid or uninsured patients |

(Continues)

Table 1 (Continued)

| State (year implemented) | Current DTs (#)* | Educational requirements† | Scope of practice‡ | Level of supervision† | Billing requirements‡ | Practice restrictions‡ |
|--------------------------|------------------|--|--|---|---|---|
| Montana (2019) | 0 | Must graduate from a CODA-accredited DT program; 400 hours preceptorship | Diagnostic;‡ Preventive;¶ | General | May not bill for any services; Tribally employed only | Must be employed by IHS or a Tribal program |
| Nevada (2019) | 0 | Must be a licensed public health dental hygienist; must graduate from a CODA-accredited DT program and pass a comprehensive clinical exam; 500–1,500 hours preceptorship | Diagnostic;‡ Preventive;¶ Restorative;§ Extractions after consultation with dentist | General; 500–1,500 hours preceptorship under direct supervision; Dentists may only enter collaborative practice agreement with four DTs | May bill independently | Can only practice in public health settings, DHPSAs, or at least 50% Medicaid or uninsured patients |
| New Mexico (2019) | 0 | Must be a licensed dental hygienist; must graduate from a CODA-accredited DT program, and pass a comprehensive clinical exam | Diagnostic;‡ Preventive;¶ Restorative;§ | General; Indirect for restorations; 2,000 hours preceptorship under direct supervision; Dentists may only enter collaborative practice agreement with three DTs | May bill independently | Public health settings |
| Oregon (2011) | 3 | Two-year certificate program and 400 hours clinical preceptorship | Diagnostic;‡ Preventive;¶ Restorative;§ Extractions or pulpctomy after consultation with dentist | General | May not bill for any services; Tribally employed only | Must be employed by IHS or a Tribal program |
| Vermont (2016) | 0 | Must be a licensed dental hygienist; must graduate from a CODA-accredited DT program, and pass a comprehensive clinical exam | Diagnostic;‡ Preventive;¶ Restorative;§ Extractions of primary teeth | General; 1,000 hours preceptorship under direct supervision | May bill independently | No limitations |
| Washington (2017) | 8 | Two-year certificate program and 400 hours clinical preceptorship | Diagnostic;‡ Preventive;¶ Restorative;§ Extractions or pulpctomy after consultation with dentist | General | Medicaid may indirectly fund DHAT procedures through Tribal funding | Must be employed by IHS or a Tribal program |

* Current provider numbers were obtained by personal communication with the Board of Dentistry in each state as well as the Tribal Health Board where appropriate.

† Educational requirements, scope of practice, level of supervision, billing requirements, and practice restrictions were derived from the text of each state or tribal entity's dental practice act or enabling legislation.

‡ Diagnostic procedures include: oral exams, radiographs.

§ Restorative procedures include: fluoride varnish, sealants, cleanings, scaling, and root planing (gum disease treatment).

¶ Preventive procedures include: administering dental anesthesia, fillings, stainless steel crowns, repairing dentures, placing temporary crowns.

Table 2 Summary of Variation in DT Requirements in the United States

| Regulation | Number of states (%) |
|---|---|
| Training requirements | |
| <i>Dental hygiene requirement</i> | 6 (46%); Arizona, Connecticut, Maine, Nevada, New Mexico, Vermont |
| <i>Comprehensive clinical exam required</i> | 6 (46%); Maine, Michigan, Minnesota, Nevada, New Mexico, Vermont |
| <i>Training program must be CODA-accredited</i> | 13 (100%) |
| Practice requirements | |
| <i>Limited to tribal lands/communities</i> | 5 (38%); Alaska, Idaho, Montana, Oregon, Washington |
| <i>Limited to "public health settings"^a</i> | 7 (54%); Arizona, Connecticut, Maine, Michigan, Minnesota, Nevada, New Mexico |
| <i>No limits in practice setting</i> | 1 (8%); Vermont |
| Supervision requirements | |
| <i>2,000 hours of direct supervision</i> | 2 (15%); Maine, New Mexico |
| <i>1,000 hours of direct supervision</i> | 2 (15%); Connecticut, Vermont |
| <i>500 hours of direct supervision</i> | 3 (23%); Idaho, Michigan, Nevada |
| <i>No proscribed amount of direct supervision, or less than 500 hours</i> | 6 (46%); Alaska, Arizona, Minnesota, Montana, Oregon, Washington |
| Billing requirements | |
| <i>May bill independently</i> | 8 (62%); Alaska, Connecticut, Maine, Michigan, Minnesota, Nevada, New Mexico, Vermont |
| <i>May not bill independently</i> | 5 (38%); Arizona, Idaho, Montana, Oregon, Washington |

^a "Public health settings" are defined as community health centers, dental health professions shortage areas, or dental practices with at least 50% Medicaid beneficiaries.

States that predicate licensing on individuals having to complete a dental hygiene degree before enrolling in a DT training program introduce an additional restriction on the ability of aspiring DTs to practice. While the purpose of DTs is to increase access to care by underserved populations, the reduced educational requirements required for licensing by DTs compared to dentists – as exemplified by the CODA standards – has the potential benefit of allowing for broader diversity in the dental workforce. This has been borne out among Alaska-trained DHATs, most of whom are enrolled tribal members, although only 0.2 percent of dentists are American Indian or Alaska Native.¹⁵ As graduates of dental hygiene programs are 94.8 percent female and 67.3 percent white, restricting DT credentialing to dental hygienists with additional training presents a substantial barrier to increasing

the proportion of historically underrepresented racial and ethnic minorities in the dental workforce.¹⁶

Scope of practice

The lack of standardization between states also manifests itself in DTs' permitted scope of practice and their degree of autonomy. The heterogeneity is perhaps best exemplified by juxtaposition of the Alaska DHAT program and Minnesota's DT program. While training programs in both states meet CODA requirements for Dental Therapy, DTs in Minnesota must possess a bachelor's degree in dental hygiene and earn a Master's degree to practice, while DHATs may practice with a non-degree certificate awarded by Alaska's Iñisagvik College after 1 year of study.¹⁷ At a maximum, Iñisagvik students of dental therapy may elect to obtain an Associate of Applied Science (AAS) degree after 2 years (equivalent to three academic years of study), which helps create broader career pathways for them.¹⁴

DHATs in Alaska operate under general supervision, often serving as the sole provider for remote communities, and may only treat Alaska Natives. While DTs in Minnesota must work in areas of high dental need, there are no restrictions on who may be treated by a DT. DTs must enter a collaborative agreement with a dentist and may not practice independently. Lastly, the scope of practice of Alaska DHATs is slightly broader than that of Minnesota DTs (e.g., DHATs may extract teeth after consultation with a dentist, while DTs may not).

Seven states currently mandate that DTs practice in a "public health" location, such as a federally qualified health center or a private practice where at least 50 percent of patients treated by the practice are Medicaid beneficiaries. While intended to address dental access shortages, these requirements further restrict practice opportunities for DTs. Medicaid coverage of dental procedures is determined at the state level and is mandated only for children, resulting in adult dental benefits often being under threat and in fact being cut during budget shortfalls.¹⁸ DTs may find their scope of practice or even their employment in flux with changes in coverage. Similarly, a DT practicing in a dental health professional shortage area (DHPSA) could be obligated to relocate seek employment elsewhere if the Health Resources and Services Administration recalculates provider ratios for the county in which they work.

The future of dental therapy

While not insubstantial, the challenges of differing educational, licensing, and scope of practice restrictions are probably eclipsed by the current shortage of training programs. There are presently only three in the entire United States:

the Iġisagvik College program in Alaska, which trains both Native and non-Native students, and whose graduates are restricted to practicing on tribal lands, and two programs in Minnesota. The University of Minnesota grants students a combined bachelor's degree in dental hygiene and a master's degree in Dental Therapy, while the Metropolitan State University Dental Therapy Program allows dental hygienists to earn a Master's of Science in Advanced Dental Therapy.¹⁹ Only DTs who graduated from the Minnesota programs after 2016, when the programs began granting dual dental hygiene/dental therapy degrees, or who were dental hygienists before enrolling in either program, are able to practice in the six states that mandate that a DT must also have a dental hygiene degree.

With current programs graduating fewer than 100 DTs a year, the profession will need additional training programs to produce a substantive workforce across 13 states. However, there is currently only one additional program being developed at Vermont Technical College, which will offer a master's degree in dental therapy in Vermont and a distance-learning program for students in Maine.²⁰ The program was scheduled to begin in May 2020 but as yet has not opened to applicants.

After a record number of states passed DT legislation in 2019, advocates hailed the profession as being at an important inflection point.²¹ Yet with only 147 DTs compared to 199,486 dentists practicing by 2019, the success of dental therapy in the United States is far from assured.²² Currently approved legislation appears to show two very different potential paths for dental therapy, as described below. These two models may coexist, as they do now, or one may ultimately become the national standard.

Tribal nations have been vocal proponents of expanding the Alaska model, with first Washington and then Oregon tribes hiring DHATs, and several tribal members from the Pacific Northwest enrolled in or graduating from Alaska's DHAT program. Because of the IHS' restriction that DTs may practice even on sovereign tribal land only if the state in which they are located permits practice by DTs, tribal leaders have played a key role in advocating for state approval.²³ American Indian and Alaska Native advocates also note that because the model facilitates a curriculum with a distinctly indigenous focus delivered by a tribal college, graduates are equipped to care for American Indian/Alaska Native patients with greater cultural competence, which also serves to improve care outcomes for the community.²⁴

All five states that have restricted DT practice to tribal lands have training and practice requirements that mirror Alaska's, such as graduation from a certificate program rather than a Master's program. This model also allows for general rather than direct or indirect supervision of DT practice, though there have been no calls for full provider autonomy like those in nurse practitioner practice.

While a model that permits DTs to practice on tribal lands is not as far-reaching as one allowing DTs to practice throughout a state, it could nonetheless make a dramatic difference in access to care for the American Indian and Alaska Native nations that already experience the most dramatic oral health disparities in the country.²⁵ This possibility has been borne out in evaluations of Alaska DHATs, who are able to provide full-time dental access to remote villages that previously had to wait months for a visiting dentist.²³

In 2016, the IHS sought feedback from tribal leaders on the possibility of expanding CHAP to remove the restriction that individual states must authorize dental therapy before tribes may employ DTs and received universally positive responses.²⁶ If it occurred, this change to CHAP would make all 326 reservations in the United States eligible to employ DTs. With a 18 percent vacancy rate for dental positions within the IHS, such a change could greatly increase access to dental care for American Indian patients and raise demand for more DT graduates.²⁷ Tribal colleges and universities could also emulate the Iġisagvik College curriculum to expand educational offerings and train greater numbers of DTs or, to economize on scale, expand Iġisagvik College's current program beyond its current 10 graduates a year.

In January 2019, an assembled group of academics and clinicians produced model dental therapy legislation that aligned with the Alaska DHAT model, explicitly allowing for general supervision and not necessitating a dental hygiene degree; however, only two out of the five states that passed dental therapy legislation in 2019 adhered to these criteria.²⁸

In the eight states that do not restrict DT practice to tribal lands, a different model is emerging. Six of these states now mandate a dental hygiene degree, essentially converting dental therapy into an additional set of skills required by dental hygienists, rather than recognizing dental therapy as a field unto itself. With the exception of Vermont, all states also restrict DTs to practice in public health settings, which have been variably defined within the practice acts.

While no states have mandated a specific degree in order to practice, both Minnesota DT training programs now exclusively grant Master's degrees in dental therapy, making this the de facto standard for these states. This parallels trends for medical advance practice providers, as an increasing number of nurse practitioners earn doctoral degrees, and several universities now offer Doctorate of Physician Assisting programs. This has not been without contention, however, with some in these fields voicing concerns about training burden and the clinical relevance of doctoral-level work.^{29,30} The prospect of increased educational requirements for DTs has faced similar backlash.³¹

Yet as the Minnesota model has grown to encompass the plurality of states with DT legislation in place, it is likely that future DT training programs will develop curricular offerings aligned with these requirements in order to maximize their graduates' ability to practice. In Minnesota, both dental therapy programs changed to more closely align with this model, now exclusively graduating a dual-trained dental hygienist-DT workforce that makes up the bulk of all DT graduates nationwide. The endorsement of the American Dental Hygienists' Association for an explicitly dental hygiene-based DT model also represents a stakeholder group with the ability to influence policy toward this model in states considering dental therapy legislation.³²

It is possible, however, that the requirement for DTs to practice only in underserved settings could protect, rather than restrict, the profession. For example, the final dental therapy training program in Canada was defunded in 2011 after it was found that the majority of graduates were working in urban private practices, not providing care to vulnerable groups.³³ Early results from Minnesota suggest that by restricting DTs to public health settings or practices consisting of 50 percent Medicaid beneficiaries, dental practices and health centers employing DTs are able to care for a greater share of low-income patients while remaining solvent.³⁴

The outcome of these two evolving paths to DT practice, as well as the potential for expansion of dental therapy into additional states, will also ultimately depend on the attitudes of dentists themselves. Increasing the number of dentists who see financial and clinical advantages from employing DTs may make organized dentistry, a traditional opponent of dental therapy, into an unexpected advocate. Dentists who work with or train alongside DTs report more favorable attitudes toward these providers,³⁵ a pattern paralleled by changing physician attitudes towards advanced practice providers in medicine.³⁶ With continued expansion, the vocal opposition of organized dentistry may fade. For example, the Massachusetts Dental Society, which previously opposed DT legislation, endorsed that put forth in 2018. However, this iteration of the bill also included several additional restrictions on DT practice in order to gain the dental society's support.

The evolving demographics of dentists may also play a role in this change. Dental graduates of the last decade are more diverse, more likely to be female, and more likely to embrace nontraditional practice schedules and settings, perhaps making them more amenable to collaboration with DTs.³⁷ No studies to date have evaluated dentists' perspectives on the length and scope of training desired for DTs, but state dental societies have pushed for more restrictive licensing practices, such as increased hours of direct supervision. Although the American Dental

Association continues to oppose dental therapy, measured political support on the state level could tip the balance in many legislatures, while also allowing organized dentistry to steer requirements toward conditions they perceive as more favorable to practicing dentists.

Patient and consumer advocacy too may impact the future of dental therapy in the United States. Consumer stakeholders have thus far played a fairly small role. Some conservative think tanks have embraced dental therapy as a potential supply-side solution to dental access issues, although the practice restrictions imposed on DTs in most states prevent their true diffusion into a free market.³⁸ Mainstream consumer awareness of dental therapy has not been widespread due to the small number of DTs currently in practice. However, a recent poll by the Pew Charitable Trusts found that 71 percent of respondents would be willing to receive care from DTs.³⁹ A recent spate of direct-to-consumer "DIY" orthodontic products, as well as legal battles over the provision of tooth whitening by non-dentists, also demonstrate that many consumers are comfortable seeing non-dentist providers, especially at a lower cost.⁴⁰ With its entry into a growing number of states, consumer awareness of dental therapy may become a more powerful force in informing the nature and scope of DT practice.

Conclusion

Even as the number of states with DT legislation has increased, the complexity and lack of standardization in the educational requirements and scope of practice have limited the potential impact of this workforce model. While there is good evidence both internationally and domestically that dental therapy is safe and effective, more than a decade after its first implementation in the United States, fewer than 150 DTs are practicing across 13 states. The relatively long-standing presence of standardized CODA guidelines means that advocates for dental therapy may consider focusing their efforts on expansion of educational offerings for potential DTs. Stakeholders will also need to seriously consider the dramatic differences in timeline, feasibility, and cost between a hygiene DT model and a model with fewer educational requirements. Ultimately, the future of dental therapy may rely on centralized models and streamlining of educational and licensing requirements, rather than legislative victories at the state level.

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