A renewed interest in finding ways to improve access to oral health care has emerged in the United States since the publication of the Surgeon General’s report on the oral health of the nation in the year 2000. This special issue of the Journal of Public Health Dentistry calls upon the reader to consider several pertinent matters in developing educational programs for dental therapists, a well-established provider of oral health care in many countries used to reach underserved populations. While the addition of dental therapists is controversial in the field of dentistry, other types of mid-level providers have been used in providing medical care. For example, currently, there are mid-level nurse practitioners, physician assistants, and certified registered nurse anesthetists. Emergency medical technicians are sometimes included in this classification as well. Mid-level providers can examine patients, diagnose them, and provide some treatments, all of which must be signed off by a supervising licensed physician.

While debate continues in the field of dentistry about the benefits of adding a mid-level provider to the workforce to reach the underserved, dental therapists are being trained and deployed in two states. The Alaska Native Tribal Health Consortium has educated and deployed dental health aide therapists (dental therapists) in several communities in remote areas of Alaska. Legislation in Minnesota permits the education of dental therapists, and models of training have emerged, one at the bachelor’s degree level and the other at the master’s degree level. Some of the students enrolled in the Minnesota programs will soon graduate and become part of the workforce in that state. In addition, several states have indicated interest in adding dental therapists to the workforce.

The American Association of Public Health Dentistry believes that new alternate providers added to the dental workforce may help meet the well-documented need for improving access to oral health care for underserved populations in the United States. It was necessary in both Alaska and Minnesota to develop educational plans for the training of dental therapists. In the absence of a nationally recognized program of study for dental therapists, other states that decide to include dental therapists in their workforce would be required to develop their own education plan for dental therapists. This could result in a patchwork of responsibilities and varying scopes of practice for dental therapists that could lead to confusion by the public.

Funding from the W. K. Kellogg Foundation and the Josiah Macy Jr. Foundation made it possible to bring together a panel of academicians to think through what should be contained in a basic 2-year education program for dental therapists. This special supplement to the Journal of Public Health Dentistry describes the work undertaken by a panel of expert academicians to develop postsecondary curriculum and training for a dental therapist.

The overall goal of the panel was to plan its efforts in such a way that the basic educational approach could be adapted to a variety of educational settings. As a core feature of the educational plan, dental therapists would be expected to provide care under conditions of “general supervision” and would need to be trained accordingly. The purpose of the project described in this issue then was for a select panel to set out goals and the general operating agenda for an educational plan for 2-year postsecondary school dental therapist programs. The panel carried out its charge in three overlapping phases over 14 months as follows:

Phase I: Outlined the general content and approach for a 2-year postsecondary school curriculum and the educational setting for such training.
Phase II: Described the career pathway for dental hygienists and possibly others to follow to expand their training necessary to add therapist duties.
Phase III: Researched program accreditation issues and licensure in relation to state practice acts.

The results of the panel’s work are covered in three articles in this issue: The actual curriculum plan and the methods used to arrive at the plan are described in the paper entitled “The Principles, Competencies, and Curriculum for Educating Dental Therapists: A Report of the American Association of Public Health Dentistry Panel.” The panel commissioned a subcommittee to discuss how dental hygienists could gain additional dental therapy skills, and its report is entitled: “Navigating Career Pathways – Dental Therapists in the Workforce.” The panel decided that it was important that dental therapy programs be accredited. The third article regarding this aspect of their work is included in the paper by Gelmon and Tresidder and is entitled “Accreditation of Emerging Oral Health Professions: Options for Dental Therapy Education Programs.”

In considering the work of the panel, it was deemed appropriate to surround these three manuscripts with three other
manuscripts that could facilitate the reader’s thought processes. Dr. Burton Edelstein had previously prepared a thorough report for the W.K. Kellogg Foundation (http://www.wkkf.org/knowledge-center/resources/2010/Training-New-Dental-Health-Providers-in-the-U-S-Full-Report.aspx) that described the education of mid-level providers throughout the world. We asked Dr. Edelstein to provide the reader with a shortened version of his Kellogg report. It helps to examine what the panel recommends in view of Edelstein’s findings. Because there is a paucity of experience in the United States of dentists working in a team approach with a dental therapist, we requested that Dr. Mary Willard prepare a case study of how dentists in Alaska work with their dental therapists. She and her coauthor describe in the paper entitled “Dentists Provide Effective Supervision of Alaska’s Dental Health Aide Therapists in a Variety of Settings” the manner in which the dentist–dental therapist work together in a team approach to reach individuals in remote locations. The paper vividly demonstrates the different scope of service and responsibilities for the dentist and the dental therapist. The final paper in the special issue is a summary of the 2010 Dunning Symposium. The symposium explored the practice of dentistry in the 21st century, and it touched on many issues broadly related to a changing education and practice environment that could accommodate new mid-level practitioners, allowing the dentist to take on additional responsibilities in primary health care and the treatment of the more complex dental cases and medically complicated patients.

Conflict of interest

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Caswell Evans Jr., DDS, MPH
Associate Dean for Preventive and Public Health Science
University of Illinois at Chicago
801 S. Paulina St. (MC 621)
Chicago, IL 60612, Phone: 312-413-2474.

Ana Karina Mascarenhas, BDS, MPH DrPH
Associate Dean – Research
Chief, Primary Care
Nova Southeastern University
College of Dental Medicine
3200 S. University Drive
Fort Lauderdale, FL 33328,
Phone: 954-262-7373.

Allan J. Formicola, DDS, MS
Professor Emeritus
Columbia University
College of Dental Medicine
Phone: 212-304-5214.

Dorene Gillman Campbell, PhD
Consultant
AAPHD National Office
3085 Stevenson Drive, Suite 200
Springfield, IL 62703
Phone: 217-529-6941.
Training new dental health providers in the United States

Burton L. Edelstein, DDS, MPH1,2
1 Section of Social and Behavioral Sciences, Columbia University College of Dental Medicine
2 Children’s Dental Health Project

Abstract

Objectives: Introduction of dental therapists in the United States involves a wide range of issues including permissive governmental policymaking; determinations of their education, supervision, and deployment; their acceptance by dentists and the public; financing of their services; and, most fundamentally, their training. This contribution re-releases and updates the executive summary of an extensive report comparing therapists’ training across five industrialized countries and comparing therapists’ training to that of conventional U.S. dental providers.

Methods: Literature reviews, web searches, key informant interviews, and program document reviews.

Results: Internationally, three-year training programs that dually qualify trainees as hygienists and therapists dominate. There are marked differences between non-US and US-based therapist training programs and between US-based programs.

Reported goals of establishing dental therapists include expanding the availability of basic dental services to underserved disadvantaged subpopulations; potentially reducing costs of basic care; and enhancing the roles of dentists in providing the most sophisticated care, serving the most complex patients, and managing an expanded dental team. Criteria for establishing training programs include program length, supervisory arrangements, recruitment and incentives, deployment, educational costs, curriculum, oversight, and accreditation.

Conclusion: International experiences can well inform US policy on training of dental therapists.

Introduction

Between May 2009 and December 2010, the author undertook a study of dental therapist training in developed countries (1). That descriptive study provides the names and affiliations of dental therapy training programs in Australia, Canada, Great Britain, The Netherlands, New Zealand, and the United States. It provides comparative information based on interviews with program officials, web searches, peer reviewed publications, and, where available, English-language curricular materials. Findings were vetted with key informants prior to the report’s release and updated in June 2010 based on responses by readers. Information is provided on each program’s duration, degrees granted, and course distributions across biomedical, socio-behavioral, and clinical topics. The work also compares therapists’ education with dental education in the United States and provides a historical review of Congressional action on dental therapists. For orientation, the final publication additionally includes a description of existing and proposed dental care providers, both in the United States and internationally, together with a taxonomy of dental procedures, indicating which procedures have been maximally delegated, or proposed for delegation, to various providers (see Table 1). Dental care providers are categorized as “U.S. conventional,” which include dentists, dental hygienists, and dental assistants, “U.S. unconventional,” which include the Dental Health Aide Therapist and the two Minnesota Dental Therapists, “U.S. proposed,” which include the Community Dental Health Coordinator, the Advanced Dental Hygiene Practitioner, and the Oral Preventive Assistant, and “conventional non-U.S. providers,” which references the dental therapist. A concluding section provides information on trainee recruitment, curricula, and program length, together with a discussion of implications for dental care workforce development.
therapy training in the United States. The intent of the work is to provide all interested parties with objective information that may inform consideration of training dental therapists in the United States. This journal contribution reprints the study’s executive summary with modifications that reflect reviewer’s comments.

Actions and positions taken by the government (2,3) and by the dental professions (4-6), to increase the availability of dental care for underserved populations evidence an accelerating interest in developing new dental care providers in the United States. Over recent years, many states have significantly expanded their scopes of practice for dental hygienists and dental assistants, thereby allowing both to perform an increasing range of “expanded duties” (7). “Dental therapists” were independently established under federal authority in Alaskan Native areas in 2003 (8) and under state authority in Minnesota in 2009 (9). These primary care dental providers deliver services that were previously delivered in the United States only by dentists. Congress and the US Department of Health and Human Services have similarly paved the way for new dental care providers by mandating studies from the Government Accountability Office and the Institute of Medicine and by authorizing in the health reform law a national dental workforce demonstration program that allows development and study of dental therapists where allowable by state practice acts. At the same time, professional associations representing dentists and hygienists have each promoted their own conceptual models for new mid-level practitioners (10,11). As policymakers consider introducing dental therapists in the United States, one source of potentially useful information is the training experience in other countries. However, an understanding of therapists’ training in other countries first requires an appreciation of dental care providers and dental procedures that may be delegatable to non-dentists.

**Table 1** Scope of Dental Services Delivered by Traditional and Proposed Dental Providers

<table>
<thead>
<tr>
<th>Provider type</th>
<th>Advanced restorative care</th>
<th>Diagnosis and treatment planning</th>
<th>Basic restorative care</th>
<th>Preventive care including cleaning below gum line</th>
<th>Preventive care including coronal polishing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dentist</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Combination dental therapist/dental hygienists</td>
<td>ADHP</td>
<td>X</td>
<td>Limited</td>
<td>Variable</td>
<td>X</td>
</tr>
<tr>
<td>MN Advanced DT</td>
<td></td>
<td>Limited</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>DH/DT International</td>
<td></td>
<td>Variable</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Dental therapists</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DT International</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>AK-DHAT</td>
<td></td>
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<td></td>
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<tr>
<td>MN Basic DT</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Dental hygienists</td>
<td></td>
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</tr>
<tr>
<td>DH</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Exp function DH</td>
<td></td>
<td>Partial</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Dental assistants</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>DA</td>
<td></td>
<td>Partial</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Exp function DA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community dental health coordinator</td>
<td>CDHC</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

ADHP, Advanced Dental Hygiene Practitioner; MN, Minnesota; DT, Dental Therapists; DH, Dental Hygienists; DA, Dental Assistants; CDHC, Community Dental Health Coordinator.

**Taxonomy of dental providers**

Conventional dental providers in the United States are dentists, both generalists and specialists; dental hygienists who provide preventive services customarily in association with dentists; and dental assistants whose roles in delivering direct patient care vary considerably across states. New dental care providers in the United States include the Alaska Dental Health Aide Therapists (DHAT) who are already deployed, and the two types of Minnesota Dental Therapists whose training programs are now underway. Each of the three therapists’ scopes of practice differ by procedure, extent of procedure, and terminology but generally include many preventive services, basic dental repair services, and selective tooth extractions (Table 1). Additional new providers being developed by dental organizations include the American Dental Association (ADA)’s Community Dental Health Coordinator, which is envisioned to provide limited preventive and palliative care and extensive care coordination services, and the American Dental Hygienists’ Association’s Advanced Dental Hygiene
Practitioner (ADHP), which is envisioned as a highly trained analog to the medical nurse practitioner.

Conventional mid-level dental providers in other advanced and developing countries are the dental therapists who typically provide extensive care for children and limited care for adults, and dental hygienist–therapists who are dually trained to provide preventive dental hygiene services for children and adults and dental repair services primarily for children.

Dental therapists, first instituted in New Zealand in 1921 to serve children through a universal school-based dental delivery system, are today deployed in more than 50 countries. Countries with advanced dental care systems, including Great Britain, The Netherlands, Australia, New Zealand, and, to a more limited degree, Canada, have institutionalized these primary care providers (12). Unsuccessful efforts to establish dental therapists in the United States (1) date back to 1949 in Massachusetts, 1969 at Howard University, 1972 at the University of Kentucky, and, most extensively, from 1972 to 1974 at the Harvard-affiliated Forsyth Dental Center in Boston (13). This “Forsyth Experiment” verified the quality, patient acceptance, cost effectiveness, and productivity of dental therapists, but program advocates were unsuccessful in maintaining legislative authority to sustain the program. It was not until this decade when therapists were deployed under tribal authority in Alaska and sanctioned under state authority in Minnesota that dental therapy was officially instituted in the United States.

Coordination across providers

States, through their dental practice acts and boards of dentistry, have established a variety of delegation and supervision arrangements to ensure care quality, patient safety, and coordination among providers. These range from “direct” and “indirect” supervision, which require the dentist’s physical presence or physical availability, to “prescriptive” and “collaborative” arrangements, which support delivery of dental services by non-dentists in more independent or isolated locales. Teledentistry and advancements in health information technology are today blurring and expanding these traditional relationships.

Both patient and procedural complexity often require that treatment be delivered by a dentist as the most advanced dental practitioner. Patients with complex medical, developmental, or behavioral conditions require a dentist’s care regardless of the complexity of their treatment needs. Similarly, even the most basic procedures may present complexity that requires management by providers with the most advanced training. When such complexity arises unexpectedly, whether requiring a non-dentist provider to engage a dentist or a dentist to engage a dental specialist, treatment is temporized and the patient is referred. All who provide direct patient care must be competent and prepared to provide emergency medical services should a need arise during the provision of care.

Dental procedures and their delegation

To understand the roles and responsibilities of various dental care provider types requires familiarity with the range of dental procedures. The vast majority of dental procedures addresses one of two diagnoses: tooth decay and periodontal disease. Dental providers are additionally responsible for identifying and treating or referring a wide range of oral pathologies including oral cancer, infections, developmental disturbances, and traumatic injuries. Dental procedures are typically classified as “diagnostic,” “preventive,” “basic restorative,” and “advanced restorative.”

In the United States today, clinical diagnosis remains the sole purview of dentists whose extensive training in biomedicine, socio-behavioral, and clinical sciences establishes uniquely expert competencies. Non-dentist providers commonly obtain information (e.g., history, radiographs, photographs, initial dental and periodontal charting, and dental impressions) used by dentists in establishing diagnoses and plans of treatment. Visual identification of cavities and other common oral pathologies has long been within the purview of dental hygienists in the United States and dental therapists in other countries.

State practice acts vary widely in distributing authority to deliver preventive services across dentists, hygienists, and assistants including cleaning of teeth, placement of dental sealants, and application of topical preventive agents. Some states additionally authorize the independent or collaborative practice of dental hygiene, particularly in safety-net settings.

Basic restorative care was once the sole responsibility of dentists. It is now shared in many states with Expanded Function Dental Assistants and Expanded Function Dental Hygienists who can deliver most elements of basic restorative care except procedures that are not inherently reversible, including soft tissue surgery, “drilling” teeth, and extracting teeth. Advanced restorative care – including crowns, bridges, dentures, root canal treatments, advanced periodontal procedures, complicated extractions, and biopsies – remains the exclusive responsibility of dentists, facilitated by dental assistants.

New to the United States is the authority granted to dental therapists to deliver select irreversible procedures including “drilling” and selective extraction of teeth. This significant change allows therapists to be deployed through a prescriptive or collaborative arrangement with a supervising dentist. The proportion of procedures now delivered exclusively by dentists that could potentially be delegated to dental therapists is substantial: 75 percent for general dentists and 79
percent for pediatric dentists, based on American Dental Association survey data (14). However, British studies suggest that less care is routinely delegated to dental therapists (15), due in part to patient and procedural complexity.

Table 1 summarizes the categories of procedures that are now maximally delegable to various mid-level dental providers in the United States and internationally.

**Training of dental providers: US and international**

US dentists are educated in post-baccalaureate doctoral programs at more than 50 dental schools accredited by the American Dental Association’s Council on Dental Accreditation (CODA). The majority of graduates enter directly into practice (60 percent). Others pursue additional training in general or specialty dentistry. While dental education programs are almost universally 4 years in duration, clock hours of instruction and distribution of teaching across the three domains of study—biomedical, socio-behavioral, and clinical—vary considerably (16). Dental hygienists also are educated in CODA-accredited institutions, most typically in associate degree programs. A minority of hygienists obtain more advanced degrees. Dental assistants are most often trained on-the-job or in proprietary short-course programs.

The three new US dental therapy programs differ from one another, with the Alaska program most consistent with international norms because it was fashioned on New Zealand programs and because the first DHATs were trained in New Zealand. The Alaska program trains high school graduates in a 2-year program that is highly focused on hands-on skills and clinical care. In contrast, the Minnesota dental therapy approaches require variable lengths of collegiate education up to the master’s level. The Minnesota approaches are more academic, having been informed by and hosted within institutions that train dentists or dental hygienists. They also provide background appropriate to care of medically complex patients, may be less focused on the attributes of underserved community, and require more time to complete. Like many newer mid-level programs in other countries, one Minnesota program combines dental therapy with prior education in dental hygiene. Programs in Great Britain, The Netherlands, Australia, and New Zealand now prioritize dual 3-year hygiene and therapy training without collegiate level prerequisites, while the single mid-level program in Canada continues to feature the 2-year dental therapy-only approach.

Education requirements proposed for the new mid-levels advanced by the ADA and American Dental Hygienists’ Association (ADHA) differ from that of dental therapists. Training for the ADA’s Community Dental Health Coordinator is taking place at the University of Oklahoma and the University of California Los Angeles, where high school graduates learn both community health worker skills and preventive and palliative dental procedures in a 1-year program. Training for the ADHA’s advanced dental hygiene practitioner is envisioned as a 1- to 2-year master’s degree program that prepares graduates in dental hygiene, dental therapy, dental systems management, research, and policy domains.

**Goals of establishing dental therapy in the United States**

A primary goal of instituting dental therapists and hygienist–therapists in the United States is to expand the availability of basic dental services to socially disadvantaged subpopulations that are now inadequately served. A second goal is to establish a diverse cadre of caregivers whose social, experiential, and language attributes are a better match for targeted underserved populations than those of many current dentists. Entry level education as dental therapists or hygienist–therapists may also promote a career ladder for underrepresented minorities in dentistry.

Furthermore, assuming that care provided by these mid-levels is less costly than care provided by more extensively trained dentists, their implementation may – pending allocation of savings across providers and payers – reduce cost barriers, increase the cost efficiency of dental care systems (including private dental offices), and reduce costs of those public programs that pay at market rates. Widespread availability of dental therapists also holds promise to expand workforce in the dental safety-net of community health centers, school-based programs, and special population programs. Potentially most valuable to dentistry as an advanced healthcare profession is the opportunity to maximize the dentists’ expertise in managing the most complex patients and most complex treatments while delegating some routine and basic care to new providers. With greater delegation, dentists may also be well positioned to assume greater roles in screening patients for undiagnosed medical conditions, counseling patients on oral and systemic salutary health behaviors, and managing systems of care that involve both on-site and community-based components.

**Policy issues inherent in establishing dental therapists**

To address these goals, state legislators and regulators need to determine an appropriate balance between scope of practice and training requirement for dental therapists and hygienist–therapists. Many of the goals articulated above will be unattainable if the scope of practice is too broad and the associated training requirements too extensive. Similarly, if supervision standards are too stringent, opportunities to deploy therapists to areas of greatest need will be curtailed.

Decisions about scope, training, and supervision will influence important policy determinations regarding curricula
and training philosophy, program locations, designation of qualified training institutions, length and cost of training, and accessibility by applicants. These decisions in turn will influence critical determinations regarding certification and licensure of graduates as well as decisions about accreditation. While all dentists, dental hygienists, and the new Minnesota dental therapists are educated in CODA-accredited institutions, physicians’ assistants and nurse practitioners in medicine are independently accredited by agencies that are unaffiliated with either allopathic or osteopathic medical schools. Selection of an accrediting agent for dental therapists and hygienist–therapists training programs that is similarly independent of dental school accreditation may significantly influence how dental therapists may function in the United States.

Criteria for developing dental therapist and hygienist–therapist training programs

The following findings from international programs may be considered in developing new training programs for dental therapists in the United States:
• In advanced dental delivery systems that utilize dental therapists, length of training is 2 years for dental therapy alone and 3 years for combined dental therapy and dental hygiene. Dental therapists’ training fits within a larger career-ladder structure.
• Supervisory arrangements afford dental therapists sufficient latitude to practice collaboratively with dentists while ensuring that patients and procedures requiring a dentist’s expertise are provided by a dentist.
• Trainees are recruited from the general population, with preference for those from underserved populations or committed to care of the underserved and are deployed to areas or populations of greatest need.
• The cost of dental therapy and dental therapy/hygiene education is lower than the cost of educating a dentist because they are trained in less time.
• Curricula stress clinical and socio-behavioral studies that allow for technical proficiency and engagement of underserved populations over biomedical training.
• Training experiences focus on attainment of clinical competency over didactic knowledge and often engage trainees in community-based experiences.
• Social, legal, and financial incentives promote training and deployment of therapists in ways that increase access to basic dental care.
• Oversight and accrediting agencies establish standards specific to dental therapy and dental therapy/hygiene education within the context of comprehensive systems of care.

Conclusion

Training dental therapists in the United States holds promise to expand the availability of basic dental care within larger systems of quality dental care delivery managed by dentists. Doing so can be well informed by long-standing international experience as well as by recent US experience. While introduction of these dental care providers will present challenges both to the dental professions and to the governmental policymakers, thoughtful and collaborative determinations of scope of practice, supervision, deployment, and appropriate educational preparation can help meet the goal of safe, quality, accessible dental care for all who seek it. Additionally, implementation of dental therapists and dental hygiene–therapists in the United States can further advance the dentist as the most sophisticated and expert member of the dental team and as a more central member of the larger healthcare system.

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Conflict of interest

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References


The principles, competencies, and curriculum for educating dental therapists: a report of the American Association of Public Health Dentistry Panel

Caswell Evans, DDS, MPH

University of Illinois at Chicago College of Dentistry, Associate Dean for Prevention and Public Health Sciences

Keywords
dentist; dental health aide therapist; dental therapist; dental health education; dental therapy curriculum; public health dentistry.

Abstract
A panel of academicians was formed to develop an educational plan for dental therapists. The panel met over a 14-month period of time (2010-2011). The panel interviewed leadership from dental therapy educational programs in New Zealand, Canada, Alaska, and the University of Minnesota. The panel was structured into three subcommittees – principles, competencies, and curriculum to develop an educational plan for a 2-year postsecondary school dental therapy program. Reports from the three subcommittees are presented in this article along with introductory information and a discussion about the reports. A fourth subcommittee considered career pathways, and its report is presented as a separate article in this special issue. The final work of the panel was to consider accreditation issues regarding dental therapist programs, and its report is also presented in this issue.

Introduction
The Surgeon General’s Report (1) on oral health of the nation in the year 2000 provided evidence that there was enormous improvement in the oral health of Americans during the 20th century; however, there were millions in the population that had not benefited from prevention and early intervention of oral diseases and were in poor health. Low-income individuals, people of color, and racial/ethnic minorities suffer from the worst oral health, especially those living in remote locations or in inner cities. The disparity in oral health in the population has been attributed to a lack of access to dental care, as well as to complex cultural and socioeconomic issues. For example, although dental care for children is required under federal Medicaid guidelines, there was only a 36 percent national utilization of any dental services by children covered by Medicaid in 2008 (2). Reasons for the small percentage of children in the Medicaid system receiving any dental services include low reimbursement rates for dental care dissuading dentist participation in treating Medicaid patients, an insufficient safety net or delivery system that reaches the underserved, a shortage of dentists in many geographical regions of the country, and a lack of awareness of the importance of seeking dental care by parents for themselves or for their children.

Concern by federal and state legislators and professional organizations to reduce and eliminate oral health disparities between those well served and those poorly served by the current oral health care delivery system have grown during the first decade of the 21st century; however, no clear consensus has yet emerged on how to improve the current delivery system to care for those presently unable to gain access to care. At least four strategies have been proposed to open up access for the underserved. They are the following: a) improve the Medicaid reimbursement rate for dental care to improve the participation rate of dentists willing to treat Medicaid patients (3); b) include dental care or expand it in community health centers and federally qualified health centers (4); c) provide incentives for dentists to practice in designated dental shortage areas (5); and d) educate and deploy new
Principles, competencies, and curriculum for educating dental therapists

C. Evans

Types of dental workforce providers (6) that can reach groups not presently served in locations where they live. The first three strategies are already underway, however, with limited results. For example, while there is progress in expanding dental care in community health centers and increasing the oral health workforce in those centers (7), only 3.4 million patients are reached by those centers (8), but there are 49 million people who live in 4,230 federally designated dentist shortage areas (9) and approximately 45 million Americans age 65 and younger are without any dental health insurance (10). Efforts to increase Medicaid reimbursement rates and streamline administrative procedures have improved participation in several states that have employed this strategy; however, a recent 2009 analysis by the Government Accountability Office showed that fewer than half of the dentists in 25 of 39 reporting states treated any Medicaid patients in the previous year (11). While it is important to maintain those efforts, other mechanisms must be tried to continue the effort to bring care to the underserved in order to eliminate or reduce oral health disparities in the United States.

Educating and deploying new provider types has become a strategy of intense interest by federal (12) and state consumer groups (13) and some state dental associations (14) to expand the oral health workforce to stem the tide of what the Surgeon General called the “silent” epidemic of oral disease. Integrating new providers into the delivery system to expand the workforce has been proposed and is actually progressing in two locations, one in Alaska and one in Minnesota. However, there is no agreement and, in some cases, intense opposition to the roles and responsibilities of new oral health providers. The emergence of dental therapists in the United States, a part of the dental workforce in other countries, is causing alarm because dental therapists are perceived by some as a threat to dentists, the traditional provider of oral health care. The American Dental Association, for example, opposes the creation of dental therapists whose scope of practice includes some basic dental restorative and surgical procedures heretofore only performed by dentists (15). The American Dental Association has proposed (16) and is supporting training programs at University of California Los Angeles, University of Oklahoma, and Temple University School of Dentistry for a new type of oral health community health worker limited to engaging underserved populations on preventive approaches and ways to connect into the existing dental delivery system. The American Dental Hygiene Association (17) has proposed that dental hygienists expand their scope of services to include those dental therapists are providing, rather than creating a separate dental therapist worker.

In two states, Alaska (18) and Minnesota (19), dental therapists have either recently been added to the workforce [the Alaska Tribal Health Consortium (ATHC)] or are in the educational pipeline to be deployed in the near future (Minnesota). The educational and training programs in these two states differ considerably. The ATHC decided to base the training of the dental therapists on a long-standing 2-year program offered at the University of Otago in New Zealand. In Minnesota two separate educational approaches are now underway. One is built on an expansion of an existing baccalaureate dental hygiene program and the other on a new curriculum approach offered by the state dental school. There are also several other states at various points in considering the education and deployment of dental therapists to improve access to care for underserved population groups. In the absence of education guidelines for the training of dental therapists, each state will be required to “re-invent the wheel” regarding the basic education plan for dental therapists.

The American Association of Public Health Dentistry (AAPHD) supports the addition of dental therapists to enhance the oral health workforce to reach the underserved and believes that in the absence of a set of national guidelines for the training of dental therapists, the field would differ greatly from state to state thereby confusing the public as to dental therapists’ roles and responsibilities. Under the aegis of the AAPHD, therefore, a panel of expert academicians was brought together to define and outline a basic education plan for dental therapists, which could be appropriately locally modified.

Over a 2-year period, the panel (membership listed at the end of this article) came together to address the following goals:

- Outline a proposed 2-year postsecondary school curriculum for education and training of dental therapists.
- Discuss the considerations in the location and placement of such educational programs given the potential range of academic settings that could be available.
- Assess the career path implications of the curriculum to ensure that others in the oral health workforce, and the larger general health workforce, could take maximum advantage of their education, training, and experiential backgrounds in order to participate in the education to develop the dental therapist skills.
- Assess issues and opportunities regarding the accreditation of such programs.

The purpose of this article is to report out the results of the deliberations and findings of the panel on the first two of these four goals. Two additional articles in this issue separately report out the findings of the last two goals.

Methods

With funding from the W. K. Kellogg Foundation and the Josiah Macy Jr. Foundation, in 2008, a panel of twelve academicians from a variety of universities was brought together under the aegis of the AAPHD. They were asked to use their knowledge and experience to develop a 2-year postsecondary education plan for dental therapists in the United States.
The panel undertook its work by reviewing the educational programs offered in New Zealand, Canada, Alaska, and Minnesota. They reviewed the literature and decided to prepare a) a set of principles on which to base dental therapist education programs; b) the competencies for therapists that educational programs would need to prepare its graduates; and c) a general curriculum plan. Three subcommittees prepared draft reports, which the panel as a whole then debated, reviewed, and approved. An additional subcommittee prepared a report on career pathways. The career pathways report is published separately in this special issue of the Journal of Public Health Dentistry. The panel members and their affiliations are listed at the end of this report. The chair of the panel, drafted the Introduction and the Discussion for this paper, which was subsequently reviewed and approved by the entire panel.

The panel recognized that graduates of dental therapy programs in some states might need to be licensed practitioners. Because states require graduation from an accredited program for licensure, the panel also decided to consider how such programs could be accredited. Under a supplemental grant provided by the Kellogg Foundation to the AAPHD, an expert in the field of accreditation was funded to prepare a report, which also appears in this special issue.

This report has also been written with the following assumptions:
- The report is not intended to be an advocacy document for or against dental therapists.
- However, if dental therapists are to be educated and trained, the report advocates for both a 2-year postsecondary school level of training, or an additional year training program as part of a dental hygiene curriculum.
- Dental therapist education and training would be based on the assumption that program graduates would provide their services in geographic areas and for populations that are distinguished by issues of access to care, health disparities, and health workforce shortages.
- Dental therapists educated via the recommended curriculum would be trained to function as part of the dental team.
- Dental therapists would work under the general supervision of a dentist.
- Dental therapists would be educated and trained at a technical level of skill and not be expected to function with the full range of scientific and biological level of knowledge and skills of a dentist.

### Results

#### Principles

These are the principles on which dental therapist programs should be based:

- Adding dental therapists to the workforce should reduce barriers to care.
- Education should occur in a professional environment to ensure graduates are prepared to work in a team setting.
- Health promotion and disease prevention will be core elements of the educational program.
- Dental therapist education should be based on the premise that they will work under general supervision of a dentist, using established protocols grounded on evidence-based procedures and practices.
- Programs will be structured to complement rather than compete with other dental professionals.
- Educational plans should identify a limited scope of practice defined by competencies.
- Educational plans should be based upon best practices and include measurable outcomes.
- Quality of the care provided by the dental therapists should be equivalent to the care provided by dentists.
- Programs that prepare dental therapists need to be accredited.
- Certificates of completion or degrees may be awarded to graduates, allowing professional development and career growth.
- Dental therapists should become part of an organized system of care where referral of patients and the responsibility of care are clearly articulated.
- Dental therapists should increase the capacity of dentists to diagnosis and manage more complex patients.

#### Competencies

The dental therapist is envisioned as an extension of the dental team comprising at least one dentist with a license in the practice jurisdiction and one or more dental therapists working under general supervision with dentist-approved protocol. The competencies below, once achieved, are to be practiced within a dentist-dental therapist team supervised by the dentist, and not for dental therapists to practice independently of such a team. The level of supervision assumed is understood to mean that the dentist is available physically or electronically that permits timely intervention and the dentist maintains responsibility for care provided.

Competency statements (20) are taken to mean complete sets of understanding, skills, and supporting values necessary for the dentist–dental therapist team to function in authorized settings and under general supervision. Although this set of competencies is meant to guide curriculum development, it is expected that performance of some of these tasks may be precluded by scope of practice in different jurisdictions. Supervising dentists retain the responsibility to allow only those tasks they believe dental therapists are competent to perform (21). Additionally, the dental therapist should work under established protocols as established by the
supervising dentist following evidence-based procedures and practices. The curriculum that follows these competencies, therefore, would be expected to be based on contemporary evidence-based protocols and practices.

1. Assessment and judgment
   1.1. Identify conditions requiring consultation and treatment that the dental therapist is competent to provide.
   1.2. Identify conditions requiring treatment by dentists, physicians, other healthcare providers, and manage referrals.
   1.3. Document with existing oral conditions and care are provided (recordkeeping).
   1.4. Perform and obtain commonly used tests and procedures such as radiographs, pulp vitality tests, dental impressions, caries risk assessments, etc.
   1.5. Evaluate patients’ oral health knowledge: healthcare professional availability and barriers to seeking and using care such as personal, family, economic, geographic.
   1.6. Inform patients and recommend complete oral care.
   1.7. Create and monitor comprehensive, customized long-term oral healthcare protocols for patients.
   1.8. Identify and use the full range of available dental, medical, and other healthcare resources available in the community.
   1.9. Provide treatment and referral based on assessment of individuals’ general and dental health and social and personal circumstances.
   1.10. Provide treatment and referral based on previously approved clinical protocols taking into consideration a patient’s social and personal circumstances.

2. Preventive care, per protocol
   2.1. Posses communication skills to provide health education.
   2.2. Follow a protocol for caries prevention and therapeutic intervention based on age, risk factors, and cooperation.
   2.3. Deliver customized oral homecare instruction.
   2.4. Discuss substance abuse counseling, including tobacco cessation and offer appropriate referrals.
   2.5. Fabricate athletic mouth guards particularly in school settings.
   2.6. Place sealants and apply fluorides.

3. Therapeutic care, per protocol
   3.1. Treatment of uncomplicated gingivitis.
   3.2. Extract primary teeth and mobile permanent teeth.
   3.3. Remove sutures and change dressings.
   3.4. Replant and stabilize teeth.
   3.5. Restore primary and permanent teeth with amalgam and composite restorations.
   3.6. Fabricate and place temporary crowns.
   3.7. Prepare and place preformed crowns.
   3.8. Perform pulp therapy as necessary in an emergency setting.
   3.10. Re-cement permanent crowns.
   3.11. Perform Interim Therapeutic Restoration procedure.

4. Pharmacological and emergency management, per protocol
   4.1. Administer topical and local anesthetic.
   4.2. Administer nitrous-oxide analgesia.
   4.3. Dispense analgesics, anti-inflammatory agents, and antibiotics necessary for oral health under the direction of the supervising dentist.
   4.4. Recognize and manage complications arising during performance of oral therapy.
   4.5. Recognize and manage medical emergencies occurring during oral therapy.

5. Professional and community responsibility
   5.1. Practice consistent with all applicable legal, regulatory, and ethical standards.
   5.2. Pursue continuous learning, including periodic reassessment of needed training and continued competency.
   5.3. Manage a dental office, including patient records, billing, inventory, equipment, and personnel, including infection control.
   5.4. Participate in professional activities.
   5.5. Advocate for and participate in needs assessment, oral epidemiology surveys, and establish systems to promote oral health at a community level.
   5.6. Work to enhance the oral health resources available in communities.
   5.7. Use telehealth and other technology to communicate with supervising dentists and other healthcare providers.

**Curriculum**

The content of the curriculum must be of sufficient depth and scope to ensure achievement of the curriculum’s defined competencies. Foundational knowledge should be established early in the dental therapy program. Courses included in the curriculum should be at the college level. Written course descriptions, including instructional objectives, and content outlines and evaluation measures must be provided to students at the initiation of each dental therapy course.

Laboratory and clinical practice experience must assure that students achieve clinical competence and are capable of making judgment appropriate to the role of working under general supervision. Dental therapy programs also must have the capacity to provide an adequate number of patient experiences to ensure clinical competence.
It is recommended that at the conclusion of the formal coursework, a preceptorship experience course be included. The dental therapist should work under the direct supervision of the dentists chosen as preceptors. Dentists will need education and training on how to evaluate dental therapy students for competence and on how to utilize dental therapists as part of the oral health team. Currently, dentists trained in the United States are unfamiliar with the potential role that a dental therapist may provide as an extended oral health care team member. Therefore, dental therapy programs should provide or make provision for educational training to dentists specific to incorporating dental therapists into appropriate practice settings.

The curriculum must include content in the following areas (22) and at a depth consistent with that taught in dental hygiene programs. An in-depth 2-year curriculum, a 1-year curriculum that would be additional to a standard dental hygiene curriculum, and course descriptions (23,24) are in the appendices.

- Biomedical concepts include content in head, neck and oral anatomy, development of dentition, physiology, microbiology/immunology, general pathology, nutrition, and pharmacology.
- Dental sciences content includes dentition and tooth morphology, oral function, oral pathology, radiography, periodontology, cariology, pain management, and dental materials.
- Dental therapy sciences includes oral health and oral health counseling, health promotion and prevention, patient management, clinical dental therapy, infection control, community oral health, medical and dental emergencies, legal and ethical dimensions of dental therapy practice. Basic clinical education must include formal curriculum in the scientific principles of dental therapy that extends throughout the curriculum and is coordinated and integrated with clinical experience providing dental therapy care.
- General education includes oral and written communications and cultural competence.
- Telehealth communication skills include instruction and experience appropriately using electronic media to record and transmit images for the purpose of consultation and diagnosis.

Discussion

The principles, competencies, and the curriculum proposed in this manuscript are designed to assure the proposed dental therapist in the United States are prepared to provide a range of services that can extend our present dental workforce and thus improve access to care, especially in rural environments, inner cities, and public sector health facilities.

There were several principles that the panel considered essential to understanding the role of the dental therapist. General supervision of a dental therapist was felt to be a necessary component to the efficiency of this oral health provider, and was defined as supervision by a dentist either in the same physical location, or by “real time” communication via various current or developing electronic formats. It was agreed by the panel that the supervising dentists always were the responsible providers for the dental therapist’s care including quality, conduct of practice, and outreach activities. The described competencies and curriculum are those judged by the panel to be required in order to prepare dental therapist to practice safely, to provide quality care and to have an impact on the oral health needs of the underserved populations. It also was a consensus that the dental therapist is one of the several “extenders” of an oral health care team that includes dental hygienists, dental therapists, dental lab technologists, dental receptionists, and dental assistants.

Those competencies listed in this article are those judged by the panel to be required in order to prepare a dental therapist to practice effectively and safely under general supervision. These understandings, skills, and supporting values include assessment and judgment, preventive and therapeutic care, pharmacological and emergency care, as well as professional and community responsibilities. Competencies for this new practitioner have been proposed by other entities (25,26). Although this set of competencies is meant to guide curriculum development, it is expected that performance of some of these tasks may be precluded by scope of practice in different jurisdictions. However, understanding the importance of health promotion, the panel included preventive care (competence 2) and advocacy to promote oral health at the community level (competence 5.5 and 5.6).

The proposed curricula are structured to facilitate two career paths to becoming a dental therapist. The 2-year curriculum is designed for student entry after high school. The 1-year curriculum is designed for registered dental hygienist or dental hygiene students to fulfill the dental therapist requirements with 1 additional year. The 1-year curriculum necessarily compresses clinical skill development, laboratory courses, and preceptorship into the 1-year time frame.

These curricula are intended to enable educational programs to meet the competencies and skills necessary for impact to the oral health care needs in the United States. The 2-year curriculum structure is similar to the educational model that has been conducted successfully in other countries for over 50 years. These proposed curricula should not be considered a benchmark but rather a framework for the minimum recommended courses. Institutions will certainly find diverse approaches of instruction to carry out the curriculum. The panel also recognized that if such programs are part of a 4-year college or university curriculum, these institutions may require courses for a 4-year baccalaureate degree. In a community college, the suggested 2 years of education may satisfy the requirements for an Associate of Arts degree.
One of the areas of discussion by the panel concerned the suggested period of preceptorship under the direct supervision of a licensed dentist prior to working under general supervision of dentists. Such a period of time provides the dentist an opportunity to gain confidence on the attitudes, skills, and judgment of the therapist. The Alaska Native Tribal Consortium system requires 400 hours of such additional training after graduation. The dentist then prepares a set of “standing orders” that enumerates protocols and procedures the therapist can do under general supervision (27). It is important that attention be directed to developing educational programs for dentists to learn how to work with dental therapists as part of the oral health team and to supervise them appropriately.

The panel believes that collaborative programs between universities or community colleges with dental colleges would be the best setting to provide the educational program for the dental therapist because they would use existing resources to advantage.

The goal of this report is to suggest an organized national approach to educating dental therapists. The absence of program principles, competencies, and curriculum necessarily would result in great variation from one jurisdiction to another. The proposed programs for this new oral health provider will serve our nation by increasing the dental workforce and thus improving access to care for the underserved.

List of AAPHD panel members and their affiliations

Convener

Caswell Evans Jr., DDS, MPH
Associate Dean for Prevention & Public Health Sciences
University of Illinois at Chicago

Panel members

Michael C. Alfano, DMD, PhD
Executive Vice President
New York University

David Chambers, EdM, MBA, PhD
Professor of Administration
Arthur A. Dugoni School of Dentistry
University of the Pacific

Dominick DePaola, DDS, PhD
Associate Dean for Academic Affairs
College of Dental Medicine
Nova Southeastern University

Jay A. Gershen, DDS, PhD
President
Colleges of Medicine & Pharmacy
Northeastern Ohio Universities

Ira Lamster, DDS, MMSc
Dean
College of Dental Medicine
Columbia University

Frank Licari, DDS, MPH, MBA
Associate Dean for Academic Affairs
College of Dentistry
Midwestern University

Ana Karina Mascarenhas, BDS, DrPH
Associate Dean – Research
Chief, Primary Care
College of Dental Medicine
Nova Southeastern University

Victor Sandoval, DDS, MPH
Associate Dean for Academic Affairs
College of Dental Medicine
University of Southern Nevada

Norman Tinanoff, DDS, MS
Professor and Chair
School of Dentistry
Division of Pediatric Dentistry
The University of Maryland

Karen Yoder, PhD., MSD
Professor & Director
Department of Preventive & Community Dentistry
Division of Community Dentistry
Indiana University School of Dentistry

Eugene Sekiguchi, DDS
Professor of Clinical Dentistry
University of Southern California

Staff

Dorene Gillman Campbell, PhD
Consultant
AAPHD National Office

Pamela J. Tolson, CAE
Executive Director
AAPHD National Office

Allan J. Formicola, DDS, MS
Consultant
Professor of Dentistry
College of Dental Medicine
Columbia University

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References


4. GAO Report page 8 and page 22.


Appendix 1

A Template for a Two-Year Post-Secondary Dental Therapy Curriculum (Trimesters)

Template for a Two-Full Calendar Year Post-Secondary Dental Therapist Curriculum

First trimester

Fundamentals of Dental Therapy, Cariology and Periodontology I (lecture and laboratory)
Oral Anatomy, Physiology, Embryology & Histology
Microbiology, Immunology & Infection Control
Radiology I
Dental Materials for Dental Therapists
Second trimester
Fundamentals of Dental Therapy, Cariology and Periodontology II (lecture and laboratory)
Clinical Dental Therapy I
Medical & Dental Emergencies, Pharmacology & Therapeutics
General & Oral Pathology
Community Dentistry and Dental Health Education
Radiology II

Third trimester
Clinical Dental Therapy II
Technical writing and communication
Nutrition in Oral Health
Dental Anesthesia

Fourth trimester
Clinical Dental Therapy III
Professionalism, Ethics and Behavioral Science for the Dental Therapist
Telehealth
Community Prevention Project

Fifth trimester
Clinical Dental Therapy IV
Dental Therapy Seminar

Sixth trimester
Clinical Dental Therapy V
Preceptorship Experience

Appendix 2
Template for a Two-Full Calendar Year Post-Secondary Dental Therapist Curriculum (Quarters)
Template for a Two-Year Post-Secondary Dental Therapist Curriculum

First quarter
Fundamentals of Dental Therapy, Cariology and Periodontology I (lecture and laboratory)
Oral Anatomy, Physiology, Embryology & Histology
Dental Materials for Dental Therapists

Appendix 3
Template for a One Year Curriculum as Part of a Dental Hygiene Curriculum
Template for a One Year Curriculum as Part of a Dental Hygiene Curriculum
First trimester

Dental Materials for Dental Therapists
Fundamentals of Dental Therapy, Cariology and Periodontology II (lecture and laboratory)
Clinical Dental Therapy I
Medical & Dental Emergencies, Pharmacology & Therapeutics

Second trimester

Clinical Dental Therapy III
Dental Anesthesia
Telehealth
Dental Therapy Seminar
Preceptorship Experience

Third trimester

Clinical Dental Therapy V
Preceptorship Experience

Appendix 4

Course Descriptions
Suggested Course Descriptions

Fundamentals of dental therapy, cariology and periodontology I (lecture and laboratory)

(lecture) Coursework should include an introduction to the Dental Therapy with an emphasis on patient assessment and evaluation processes, cultural competence, professionalism, and the development of basic clinical skills.

(laboratory) This course should provide the clinical application of the lecture portion. The primary emphasis should be on patient assessment and evaluation processes, cultural competence, professionalism, and the development of basic clinical skills. The dental therapy student should have an opportunity to practice these techniques on manikins and student partners in the preclinical laboratory setting.

Oral anatomy, physiology, embryology & histology

This course should focus on the structure and function of the tissues and organs of the head and neck and oral cavity including a study of the growth, development and histologic anatomy.

Microbiology, immunology & infection control

This course should focus on the principles of microbiology with emphasis on microorganisms found in the oral environment and human disease. Topics should include an overview of microbiology and aspects of medical/dental microbiology, disease transmission, host resistance, and immunity and the identification and management of pathogens. Upon completion, students should be able to demonstrate aseptic and sterile techniques as well as knowledge of oral microorganisms and disease.

Radiology I

Topics in this course should include a historical perspective of radiology, various types of ionizing radiation, X-ray production, radiation dosage and the current guidelines for radiation safety. This course should also cover theory and practice of exposing, digital processing, and interpreting dental radiographs.

Dental materials for dental therapists

This course should introduce students to the physical properties and indications for use of materials and corresponding procedures utilized in oral health care. Topics should include preventive and restorative materials appropriate for the dental therapist. Upon completion, students should be able to demonstrate knowledge and skills in the laboratory and/or clinical application of routinely used dental materials and chairside functions including prosthetic repair.

Fundamentals of dental therapy, cariology and periodontology II (lecture and laboratory)

(lecture) This course should provide didactic coursework and laboratory exercises in dental therapy concepts necessary for providing caries detection, sealants and treatment and prevention of uncomplicated gingivitis. Topics include: planning for dental therapy treatment, record keeping and appropriate preventive and treatment procedures including: patient education, oral prophylaxis and fluorides. Upon completion, students should be able to demonstrate knowledge needed to complete patient evaluation, caries detection, sealant placement, and the treatment and prevention of uncomplicated gingivitis.

(laboratory) This course should continue student skill development in providing patient evaluation, caries detection, sealant placement and the treatment and prevention of uncomplicated gingivitis. Upon completion, students should be able to demonstrate the skills needed to complete patient
evaluation, caries detection, sealant placement and the treatment and prevention of uncomplicated gingivitis.

**Clinical dental therapy I**

This course should provide dental therapy students with experience in providing patient services through performing the treatment and prevention of simple gingivitis, periodontal/caries assessment, exposing and processing radiographs, presenting patient education, preventive applications and charting the oral cavity.

**Dental office emergencies, pharmacology & therapeutics**

This course should focus on the common drugs utilized in dental therapy practice and prescribed to patients and the management of dental office emergencies. Topics should include methods of adverse outcome prevention, initial management of a variety of emergencies, legal considerations and the necessary equipment and medications to have at ready. This course should also provide basic drug terminology, general principles of drug actions, routes of administration, dosages and adverse reactions of drugs commonly used in dental therapy. Emphasis should be on developing a basic knowledge of drugs in the overall understanding of patient histories and health status including drugs utilized for premedication prophylaxis. Upon completion, students should be able to recognize that each patient’s general health or drug usage may require modification of the treatment procedures and to recognize, assess and manage various dental office emergencies and activate advanced medical support when indicated.

**General & oral pathology**

This course should provide a general knowledge of oral pathological manifestations associated with selected systemic and oral diseases. Topics should include specific microbial and viral diseases, developmental and degenerative diseases and conditions and the associated immune and inflammatory responses with emphasis on the dental therapy student’s ability to recognize abnormalities. Upon completion, students should be able to differentiate between normal and abnormal tissues and refer unusual findings to the dentist for diagnosis and follow-up.

**Community dentistry and dental health education**

This course should provide an overview of the principles and methods used in assessing, planning, implementing, and evaluating community dental health programs. Topics should include biostatistics and epidemiology, research methodology, preventive dental care, dental health education, program planning and the access and utilization of dental services.

**Radiology II**

This course should provide clinical experience on the fundamentals of oral radiographic techniques utilizing radiation safety and infection control protocols in addition to basic interpretation of radiographs. The course should include patient selection criteria and the utilization of common radiographic techniques, exposure of intra-oral and extra-oral radiographs, as well as, the identification of normal anatomical radiographic landmarks and radiographic artifacts.

**Clinical dental therapy II**

This course should continue the dental therapy student’s preclinical skill development in providing restorative oral health care. Emphasis should be placed on the development of skills in restorative dentistry. Upon completion, students should be able to assess patients’ needs and provide basic restorative dentistry treatment.

**Nutrition in oral health**

This course should focus on nutrition and diet as related to oral health, the utilization of nutrients and the biochemistry of digestion. Special emphasis should be placed on understanding diet as part of a patient’s overall health and the role of the dental therapist in providing nutritional and dietary counseling.

**Dental anesthesia**

This course should prepare the dental therapy student with the necessary theory to appropriately and successfully administer topical anesthesia, local anesthesia and/or nitrous oxide analgesia to provide appropriate pain control when caring for dental therapy patients.

**Technical writing and communication**

This course should emphasize development of the writing and presentation skills needed by a dental therapist. Coursework should emphasize writing and presentation skill development including utilizing Word and PowerPoint software, audience assessment, topic selection, and editing. Upon completion, students should be able to produce well-developed essays and letters using standard written English and prepare and deliver well-organized presentations with appropriate audiovisual support.
Clinical dental therapy III

Under the direct supervision of dentists, this course should continue the skill development of students in providing oral health care to patients. Emphasis should be placed on the development of skills in dentistry including: taking a medical/dental history, collecting and recording clinical data, exposing and processing film and/or digital radiographs, determining and recording preliminary assessment of dental disease, providing preventive and basic restorative dentistry treatment.

Telehealth

This course should focus on current telehealth technologies which allow clinicians to conduct remote assessments and consults, as well as capture and store patient information for further evaluation and sharing with a consulting dentist or physician. Students should be able to learn how to use the teledentistry equipment as well as collaborate with telehealth dentists, physicians and nurses as a telehealth team and understand the applicable laws with use of telehealth applications.

Professionalism, ethics and behavioral science for the dental therapist

This course should focus on professional development, ethics, and jurisprudence with applications to practice management. Topics include conflict management, state laws, abuse, and legal liabilities as health care professionals.

Community prevention project

Students in this course should have the opportunity to participate field assessments in a variety of community dental health service learning activities which require application of dental public health principles and concepts.

Clinical dental therapy IV

Under the direct supervision of dentists, this course should continue the skill development of students in providing oral health care to patients. Emphasis should be placed on the development of skills in dentistry including: taking a medical/dental history, collecting and recording clinical data, exposing and processing film and/or digital radiographs, utilizing teledentistry equipment, determining and recording preliminary assessment of dental disease, providing preventive and basic restorative dentistry treatment and uncomplicated oral surgical procedures.

Dental therapy seminar

This Evidence Based Dentistry seminar course should serve as a means of a capstone course in the dental therapy curriculum and utilize the best practices in actual patient cases that the dental therapy students have treated as an educational resource. This course should also be designed to assist in preparing dental therapy students for the written and clinical examinations required for licensure and entry into the profession.

Clinical dental therapy V

Under the direct supervision of dentists, this course should continue the skill development of students in providing oral health care to patients. Emphasis should be placed on the development of skills in dentistry including: taking a medical/dental history, collecting and recording clinical data, exposing and processing film and digital radiographs, utilizing teledentistry equipment to transmit images, determining and recording preliminary assessment of dental disease, providing preventive and basic restorative dentistry treatment and uncomplicated oral surgical procedures.

Preceptorship experience

Students are assigned to the preceptor dentist that they will work with after graduation in a 400 hour (10 week) experience. Students provide patient care under the direct supervision of the preceptor dentist. Upon completion of the experience the preceptor dentist verifies which procedures the dental therapist will be able to provide under general supervision.
Accreditation of emerging oral health professions: options for dental therapy education programs

Sherril B. Gelmon, DrPH; Anna Foucek Tresidder, MPH
Mark O. Hatfield School of Government, Portland State University, Portland, OR

Abstract
Objectives: The study explored the options for accreditation of educational programs to prepare a new oral health provider, the dental therapist.
Methods: A literature review and interviews of 10 content experts were conducted. The content experts represented a wide array of interests, including individuals associated with the various dental stakeholder organizations in education, accreditation, practice, and licensure, as well as representatives of non-dental accrediting organizations whose experience could inform the study.
Results: Development of an educational accreditation program for an emerging profession requires collaboration among key stakeholders representing education, practice, licensure, and other interests. Options for accreditation of dental therapy education programs include establishment of a new independent accrediting agency; seeking recognition as a committee within the Commission on Accreditation of Allied Health Education Programs; or working with the Commission on Dental Accreditation (CODA) to create a new accreditation program within CODA. These options are not mutually exclusive, and more than one accreditation program could potentially exist.
Conclusions: An educational accreditation program is built upon a well-defined field, where there is a demonstrated need for the occupation and for accreditation of educational programs that prepare individuals to enter that occupation. The fundamental value of accreditation is as one player in the overall scheme of improving the quality of higher education delivered to students and, ultimately, the delivery of health services. Leaders concerned with the oral health workforce will need to consider future directions and the potential roles of new oral health providers as they determine appropriate directions for educational accreditation for dental therapy.

Introduction
Accreditation of educational programs is complex and requires high levels of collaboration among professional accrediting agencies, educational and practice organizations, and state regulators. The fundamental principle of accreditation is protection of the public. Systems of accreditation are predicated upon the development of educational standards agreed upon by interested stakeholders. It provides the foundation for quality assurance and continuous improvement in the delivery of health care through preparation of a competent and relevant workforce, and standardized competencies.

This article reports the results of a study conducted for the American Association of Public Health Dentistry (AAPHD) panel on dental therapist curriculum development, convened in January 2010 with the support of the W.K. Kellogg Foundation and the Josiah Macy, Jr. Foundation. The study summarized here is based upon an extensive report on the accreditation of dental therapy programs and certification of dental therapists, presented to the AAPHD panel in September 2010 (1).

The field of dental therapy is emerging in the United States. Educational programs currently exist in Washington and Minnesota, and programs are being discussed in other states in order to create new oral health professionals to reach underserved populations. As stated by the W.K. Kellogg Foundation, "internationally and in Alaska, dental therapists have a history of successfully expanding proven high-quality
care to underserved children and families as part of a comprehensive system of care managed by dentists. Dental therapy is well-established in more than 50 countries around the world, including countries with advanced dental care systems similar to the U.S." (2).

At present, there is no national accrediting body for dental therapy education, so as programs begin, there are inevitable questions related to individual licensure at the state level to regulate the quality of dental therapists. In the absence of a national accrediting agency, states may feel a need to set up their own quality review processes. Multiple state-level processes could undermine future attempts to create a consolidated professional approach to dental therapist education, resulting in fragmentation and variations in scope of practice among states.

Thus, the charge from the AAPHDD panel was to investigate alternative approaches to educational accreditation and identify options for the future for ensuring the quality of dental therapy education.

Methods
The research team conducted an extensive literature review exploring Web sites and reports from various accrediting, educational, professional, and government organizations, as well as the peer-reviewed and public domain literature about accreditation, the health professions, and regulation of scope of practice in the health professions. The research team then conducted interviews with 10 content experts. The experts represented a wide array of interests, including individuals associated with the various dental stakeholder organizations in education, accreditation, practice, and licensure, as well as representatives of non-dental accrediting organizations whose experience could inform the study.

The purpose of the interviews was to investigate the various perspectives on accreditation of dental therapist education programs. The two members of the research team conducted all of the interviews and were the only people who had access to the original recordings and transcripts of the interviews. The interview strategy and protocol was reviewed and approved by the Portland State University Human Subjects Research Review Committee (the institutional review board).

Current context of the dental workforce
In 2000, the report entitled Oral Health in America: A Report of the Surgeon General described a national oral health care crisis (3). The report concluded that the infrastructure for the oral health system is insufficient to meet the needs of many disadvantaged population groups in the United States. It also reported disproportionate access to dental care based on race, ethnicity, and socioeconomic factors within the US population. In response, new workforce models are being introduced, in the hopes of balancing the provider distribution in the future to better address these disparities. Increases in aging and immigrant populations, rural residents, and the needs of children are all placing pressure on the US oral health system and exposing its inequalities (4).

In Alaska, the Alaska Native Tribal Health Consortium developed the strategy of the Dental Health Aide Therapist (DHAT) practitioners, who are now trained in the DENTEX program at the University of Washington (5). The DHATs work in a coordinated system of oral health care in order to reach remote populations who receive episodic dental care or no professional care at all (6). The University of Minnesota recently started the bachelor of science in dental therapy and the master of dental therapy programs (7). Metropolitan State University (8), also in Minnesota, is offering the master of science in oral health care practitioner program for licensed dental hygienists and collaborates with Normandale Community College (9) to offer two dental hygiene degree completion programs. None of the aforementioned programs is accredited by an educational program-specific accreditor.

The development of these programs has been welcomed by many in the oral health workforce who see the dental therapist as a viable solution for expanding oral health services for populations. There has also been opposition by others who feel that any new oral health professionals undermine the singular position of dentists in the health workforce and may affect both scope of practice and income generation. The American Dental Association (ADA) initiated unsuccessful legal action against the Alaska initiative; the details of that action are beyond the scope of this paper, but the action itself is emblematic of the position expressed by the ADA and others with regard to dental therapists and concerns about scope and authority for dental practice and service delivery.

More recently, three high-profile reports have been issued, addressing the current state of the oral health workforce and recommending actions including new practitioner models.

The U.S. Oral Health Workforce in the Coming Decade: Workshop Summary (10) provides a summary of a workshop sponsored by the Institute of Medicine (IOM) in February 2009. The workshop provided a forum for experts from all oral health disciplines to discuss the state of oral health care in America and how it needs to evolve in the coming years. The report stated, “the current oral health workforce fails to meet the needs of many segments of the U.S. population” (10). The conclusions that resulted from the workshop led the IOM to state that “variability in access to oral health services... often related to geography, insurance status, socio-demographic characteristics, and income levels...” creates many challenges (10).

Help Wanted: A Policy Maker’s Guide to New Dental Providers (11) provided objective information for consideration of
Accreditation of emerging oral health professions

three new workforce models currently under discussion in many state legislatures: dental therapists, community dental health coordinators, and advanced dental hygiene practitioners. The report called on policy makers to weigh carefully the concerns of all stakeholders when considering how to develop new providers to join the dental team and potentially expand the safety net for dental health care.

Training New Dental Health Providers in the U.S. (12) addressed training considerations for new dental health providers and their scope, supervision requirements, and placement options. The report provides details on eight criteria for developing dental therapy training programs: recruitment, curricula, length of training, supervision and placement, cost, training experiences, care for the underserved populations, and certification and accreditation (12).

Content experts interviewed for this report emphasized that the purpose of dental therapists is to provide access for the underserved to the oral health system. In order to assure services to underserved, rural, and other marginalized populations, more diverse populations of students should be recruited from those groups and provided with fiscal support and incentives to return to their home area to practice upon graduation. The experts also emphasized the opportunities and need to expand the scope of the oral health workforce by effectively using various levels of providers who are appropriately trained, are certified for a defined scope of practice, and work with the relevant amount of autonomy and/or supervision. In all cases, the concerns for enhancing access and service provision were closely coupled with the need for attention to ensuring quality and safety.

Accreditation of dental education

The Commission on Dental Accreditation (CODA) currently accredits all educational programs that train the oral health workforce, including dentists and dental hygienists (13). The mission of CODA is to “serve the public by establishing, maintaining and applying standards that ensure the quality and continuous improvement of dental and dental-related education and reflect the evolving practice of dentistry” (13). CODA accredits programs in predoctoral dental education, dental specialties, and allied dental education. The latter category includes dental hygiene, dental assisting, and dental laboratory technology programs. In total, CODA accredits approximately 1,300 education programs (13).

As part of its recognition by the US Department of Education (USDE), CODA is required to function autonomously in all matters related to the accreditation process. Although autonomous, the commission is an agency of the ADA, which houses it and contributes to its staffing and resource needs. Members of the commission are selected by the participating organizations; these selections are not subject to review by any other organization. The commission membership is intended to reflect a diversity of geography, gender, and underrepresented ethnic groups.

The scope of CODA’s activities relates to educational accreditation at the programmatic level, and not to licensure or certification of individuals. Decisions are made based upon evidence provided in a self-study, explored during a site visit by expert peers, and reviewed against professionally established standards. CODA leadership has indicated it is trying to be more transparent by holding open hearings at ADA and the American Dental Education Association meetings, as well as webinars, in order to enable interested parties to learn more about the processes and practices of the agency (according to an interview with Dr. A. Ziebert, September 2010).

CODA is formalizing new criteria to judge new types of programs. These include that the new discipline be aligned with CODA’s mission and scope; there are sufficient benchmarks and performance measures to serve as a basis to develop accreditation standards; the educational programs are part of institutions that are accredited by an agency recognized by the USDE or Council for Higher Education Accreditation (CHEA); there is sufficient level of activity and expertise to establish standards and sustain a quality review process; and there is evidence of need for the new programs and support from the public and professional communities to sustain educational programs in the discipline (14). However, until such criteria and related procedures for accreditation of new programs are adopted, it is not within CODA’s scope to review new dental therapy programs for consideration for accreditation. Criteria for current accreditation programs (such as the predoctoral or dental hygienist programs) are not specific to dental therapy and therefore would not be relevant.

Options for accreditation of dental therapy programs

The majority of sources reviewed and content experts consulted point to a consensus that there must be a consistent, coordinated national program of accreditation of dental therapy education. This is important to ensure quality and to remove any bias or variation that may occur if a single organization or jurisdiction is controlling the process. Such a program should be organized to be broadly representative of the key stakeholders in dental therapy education and practice, and more broadly in terms of the oral health workforce.

The strengths of an accepted accreditation process include assurance of quality; promotion of self-assessment and continuous improvement; establishment of standards derived by educators and practitioners that serve as a baseline for entry to professional practice; and peer review and consultation (15). Arguments against accreditation include concerns about the fragmentation of professions through multiple...
accreditors; the perceived inflexibility and inability of accreditation to respond to societal changes; perceptions of accreditation as a barrier to educational innovation; and a concern about a compliance and process focus as compared with an improvement and outcomes focus (16).

Another issue that is raised about accreditation is the lack of evidence that it is effective in identifying substandard schools or improving educational quality, and, concomitantly, that it protects students from deficient education or the public from deficient services (17) – in this context, oral health care. The problem of evidence has at least two parts: a) linking educational programs to outcomes, in particular, the competency of graduates; and b) identifying desirable educational processes, methods, or structures (such as curricular approaches, faculty qualifications, or performance monitoring systems) (1). There have been few, if any, systematic studies of the processes and outcomes of accreditation, including studies of rater bias or validity, in particular, because of the fact that few programs would be willing to serve as the “controls” for such a study.

This review resulted in identification of four feasible options for organization of an accreditation program for dental therapy education. In all cases, the work that is required to establish such a program must involve key stakeholders representing multiple interests who will work together to define the common standards for accreditation, the accompanying procedures to manage the accreditation program, and the organizational and governance structures to manage it. The options are: a single new program that is created and operated through the existing structures of CODA; a single new program that seeks to become one of the joint review committees within the Commission of Accreditation of Allied Health Education Programs (CAAHEP); a new stand-alone accrediting agency; or creation of two or more new programs, within CODA, CAAHEP, or a new stand-alone model. The primary advantage of working with either CODA or CAAHEP is that these organizations have long track records and experience in accreditation, and bring resources and expertise.

Option #1 – CODA
CODA offers connections to dental education and linkage to the “dominant” interest in the dental profession. For CODA to begin accreditation of dental therapy programs, it would need to work with a group of stakeholders who represent the dental therapy educational programs and collaboratively develop standards for curriculum, faculty, resources, and the other elements that are generally included in accreditation programs. It would be unusual for an accreditor to develop such a program in isolation from those in education and practice; the norm is that the profession goes to the accreditor, demonstrating that there is a critical mass of programs and indicating a willingness to provide leadership to establish an accreditation program in collaboration with the accrediting agency. The profession and other key stakeholders would have input on all the necessary elements of the accreditation program not only in terms of programmatic issues but also in terms of the structure of the accreditation body, governance, representation, staffing, and decision-making processes.

Some content experts expressed concerns about affiliation with CODA because of perceptions that CODA’s close ties to the ADA prevent truly independent operations because of the size, power, and influence of the ADA, and the ADA’s public opposition to dental therapy education programs.

Option #2 – CAAHEP
Developing a new committee within CAAHEP may be a more agreeable option for some stakeholders, offering the stability of a long-established agency yet separate from “organized” dentistry. In order to become a committee of CAAHEP, an organization representing a health profession must represent a well-defined and distinct field, be national in scope, have programs already established with enrolled students, have standards for the programs, and demonstrate that graduates have obtained the necessary skills to enter practice (18). CAAHEP-affiliated accrediting agencies review programs that range from the 9-month technical degrees through associate and baccalaureate degrees to graduate degrees.

Accrediting agencies that have left CAAHEP and established independent operations have achieved a greater degree of flexibility and adaptability that allows their independent agency to respond to the needs of its specific profession (cited in confidential interviews).

The breadth of programs covered under the CAAHEP umbrella may raise concerns as to whether CAAHEP can adapt its review processes to consider the specific context of a profession and the relevant depth and breadth of the educational program. “Allied health” agencies that operate outside of CAAHEP believe that they have a greater degree of professional autonomy and that their accreditation decision-making processes respond to their specific professional stakeholders, and not the multiple interests of the broad CAAHEP community. These agencies also speak to the value of being separate from the perceived control of the American Medical Association (AMA), because CAAHEP is housed at the AMA.

Option #3 – a new independent agency
Some individuals think that linking a new accreditation program to an existing organization will dilute the interests of dental therapy and that there needs to be a new stand-alone agency. If that option is chosen, leaders in the profession will need to engage with accreditation experts from various fields...
to ensure careful guidance on all matters involved in establishing a new accreditation agency – both in terms of dental therapy education specifically as well as addressing all of the necessary logistical, political, and organizational considerations and decisions regarding recognition by/affiliations with the USDE, the CHEA (19), and the Association of Specialized and Professional Accreditors (ASPA) (20).

As with the option for developing a new committee in CAAHEP, a stand-alone accrediting agency would need to represent multiple education and practice interests in dental therapy, and have sufficient resources to create a new non-profit organization that could independently conduct the accreditation program. Many observers have noted the proliferation of accrediting agencies (21) and caution against developing a new accrediting agency that may increase burden on educational institutions and be duplicative of other organizations that offer many of the needed services. Establishing a new accreditation agency is often seen as a path to increasing control over a profession’s future and its identity and prestige, which would be desirable to better establish dental therapy as a unique profession (22).

Option #4 – develop multiple programs

The choice to develop multiple new programs of accreditation is offered only as a consideration should there be an inability to agree on a single preferred model, and various groups develop, each of which decides to pursue accreditation. In a field as small as dental therapy is at present, with a limited number of educational programs, this latter option is unlikely to be feasible or viable specifically for dental therapy. However, a new accreditor serving the multiple emerging oral health providers might also be an option. Should the deliberations on accreditation go on over a period of time during which new educational programs develop, then considerations of the benefits and consequences of multiple accreditors will need to be carefully assessed. Experience in other fields such as nursing, teacher education, the mental health professions, and business education has not demonstrated clear benefit when there is apparent replication of effort.

Strategies for developing a new accreditation program

In order to move forward to develop an accreditation program, there needs to be consensus among leaders in the field on the common curriculum for dental therapy education and the defined scope of practice, so that programs can prepare graduates for the relevant practice environment and control entry of practice to those who have demonstrated competency (as defined by the field). This will involve ongoing conversations among those leading national accreditation efforts, professional workforce strategic planning, educational programmatic development and core curriculum conversations, and state-level licensure and/or certification groups. This suggests leadership from the oral health education and practice communities, and cultivation of stakeholders to gain buy-in to development of an accreditation program (assuming there is agreement on the need for dental therapists). Leaders would be well advised to think beyond the traditional “family” of oral health workforce interests (23) and consider additional stakeholders from government, health services delivery organizations, insurance, associations, public health, the long-term care industry, and minority population groups – all of whom could have an interest as potential employers, payers, or consumers of the services of dental therapists. An accrediting agency also must have “public” representation in order to be recognized by the US Secretary of Education (24).

Overall, critics of the current accreditation process argue that its costs in time, money, and institutional disruption are excessive for its positive results. There are criticisms that accreditation is duplicative and wasteful – a concern to keep in mind if multiple accreditors are responsible for the various dental education programs, many (if not all) of which are likely to be housed in common academic units on university or college campuses (25). This concern is further manifested when academic units are expected to respond to multiple sets of standards, each of which has different data requirements and different presentation formats, and those units are expected to be available for multiple accreditation visits that require substantial investment of time, money, and human resources. Streamlining data requirements and synchronizing formats for submission of information, especially if there is synergy among professions with common roots (such as dentistry, dental hygiene, and dental therapy), could respond to the concerns of institutional administrators and create a more receptive environment for specialized accreditation on campuses (26).

Establishment of a new accrediting agency will require not only considerable deliberations within the oral health community, but also consultations with established accrediting agencies with regard to organizational structure, governance, legal issues, resource implications, and operational issues. Consultation with the USDE, CHEA, and ASPA will be essential. A concern to address is the variability of titles assigned to various practitioners and the related variation in educational preparation and graduate scope of practice, which may cause considerable confusion and difficulties in agreeing upon a coherent set of standards for the new accreditation program. If this variation results in fractionation among educational programs, this may also preclude identification of the critical mass of similar programs that will form the basis for the new accreditation program. Given discussions of new practitioners such as dental therapists, community dental health coordinators, advanced dental hygiene practitioners, and oral
preventive assistants, there clearly needs to be stakeholder agreement upon naming the practitioner and the core curriculum for educational preparation in order to establish the foundation upon which an accreditation program to be established.

Some content experts suggested that a major facilitator of moving forward will be pressure from the states; if states begin to recognize dental therapists as a key oral health services provider, then there will be a need to develop multiple education programs and subsequently develop a coherent accreditation program. If the new practitioners develop as a core part of the dental team, then there will be pressures from established oral health providers who will want the structure of accreditation to ensure the quality of the educational preparation of the new providers and that they are graduates of reputable educational institutions.

Many content experts also spoke to the uncertainty regarding development of a “dental home” within the evolving healthcare reform activities in this country, with some concerns regarding the lack of advocacy on behalf of the oral health workforce in positioning itself as a core element of the new efforts in health reform. While detailed discussion of this is beyond the scope of this report, changes in health insurance coverage (i.e., children, adults, seniors) and in perceptions of oral health as a core element of basic primary health care could help to facilitate support of dental therapists, leading to pressures for educational program development and the resulting need for systems of programmatic accreditation and individual licensure.

**Conclusion**

Some content experts interviewed believe that the “train has left the station” with regard to developing dental therapy programs and accreditation – the process is already underway and cannot be stopped. Accreditation can only be as “good” or as “bad” as the direction and guidance given to the accrediting agency by the professional stakeholders, which should be responsible to shape, mold, and/or alter accreditation functions (27). An accrediting agency should conduct its activities in collaboration with all key interest groups, and not act completely independently in the development of standards and procedures. Independence is essential in the process of evaluation and decision making, and accreditors must ensure that these functions are conducted at arm’s-length from key interested parties. The responsibility for guiding accreditation directions rests with the profession and its willingness to either provide or abdicate direction to the accrediting body. Accreditation and accreditors should not drive educational or practice mandates, but should reflect current education and practice needs. Collaboration is essential to ensure that accreditation fulfills its fundamental purposes with regard to educational quality and professional preparation, and that accreditation processes complement (rather than interfere with) institutional and programmatic cycles of planning and evaluation (28).

The fundamental value of accreditation is as one player in the overall scheme of improving the quality of higher education delivered to students and ultimately the delivery of health services to individuals and populations, through quasi-regulation of educational programs. Systems of individual licensure at the state level provide another means of improving quality through control of entry to, and scope of, practice. Ultimately, public accountability is a core value of both accreditation and licensure, and can serve to connect the educational process, the evolving healthcare system, and the changing demands of the public, employers, professional organizations, educational institutions, and students (25). These strategies will be important to pursue as leaders concerned with the oral health workforce consider future directions and the potential roles of new oral health providers.

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**Conflict of interest**

The authors have no conflicts of interest to declare.

**References**

Accreditation of emerging oral health professions
S.B. Gelmon and A.F. Tresidder


Dentists provide effective supervision of Alaska’s dental health aide therapists in a variety of settings

Mary E. Williard, DDS1; Nicole Fauteux, BA2

1 Alaska Native Tribal Health Consortium, Division of Community Health Services, University of Washington, DENTEX Training Center, Anchorage, AK
2 Independent writer and editor, Fairfax, VA

Abstract

Objectives: This paper examines the supervisory relationships between Alaska’s dental health aide therapists (DHATs) and their supervising dentists to gain insight into how DHATs are being deployed and supervised to increase access while ensuring safety and quality.

Methods: Telephone interviews were conducted with four DHATs, their supervising dentists, and the dental directors at three health corporations in geographically distinct areas of Alaska. Follow-up questions were submitted and responded to via e-mail.

Results: This article profiles three DHATs and their supervising dentists, and offers observations on how dentists supervise and work in a team format with DHATs.

Conclusions: DHATs practice as part of a care team, with dentists providing direct, indirect, and general supervision. Both DHAT training, with its mandatory preceptorship, and the group practice model are designed to assure that DHATs provide safe, competent, and appropriate care within their limited scope of practice. The presence of DHATs allows dentists on the care team to play roles commensurate with the full extent of their training. Tribal health organizations in Alaska are deploying these providers safely and effectively in a variety of roles, according to regional needs and preferences. This suggests the model’s potential adaptability to settings outside Alaska.

Introduction

Nationally, the dental workforce debate seems to be shifting from the question of whether new provider types will be introduced to the question: “What is the appropriate way to supervise new providers to ensure safety and quality?”

This article presents three profiles that look closely at how dentists supervise the most skilled of Alaska’s four new oral health providers: the dental health aide therapist (DHAT).

Background

DHATs receive 2 years of post-high school training, which prepares them to provide a limited scope of dental education, prevention, and urgent and basic restorative care. The program is run by the Alaska Native Tribal Health Consortium (ANTHC). The first year of training is held at the University of Washington DENTEX Training Center in Anchorage; the second year of training is held at the Yuut Elitnaurviat Dental Training Clinic in the rural community of Bethel.

In early 2000, the ANTHC introduced an initiative to address critical, long-term dental access issues and oral health disparities. The dental health aide (DHA) Initiative introduced four new dental workers to the dental care delivery teams serving American Indian/Alaska Native (AI/AN) populations through the Alaska Tribal Health System.

The DHA Initiative grew out of the existing Community Health Aide Program (CHAP) in Alaska. The CHAP began in the 1950s when healthcare providers were scarce in Alaska, and tuberculosis was threatening the entire AI/AN population in the state. In the beginning, healers and community leaders in remote villages were recruited to act as the eyes and hands of physicians located in the larger cities. Through the years, the program developed a well-established network of
healthcare workers whose training and scope of practice is regulated by a federal CHAP Certification Board through a formalized Standards and Procedures document (1). In 1968, CHAP received congressional recognition and funding. Because CHAP is a federally recognized program, CHAP providers practice outside of state practice act legislation.

In the last decade, CHAP expanded its reach with the introduction of DHAs. DHAs are certified by the CHAP Certification Board after successful completion of training and a preceptorship. Unlike licensed healthcare providers, certified DHAs must demonstrate competency throughout their careers in their full scope of practice in order to retain their certification. This demonstration of competency requires that DHAs perform all procedures in their scope under the direct observation of supervisors during the 2 years prior to applying for recertification.

CHAP’s four new dental providers are geared to meet the specific unmet needs of the Alaska Tribal Health System by improving access to care and the dental teams’ ability to provide prevention services. Each DHA has a specific scope of practice. The DHAT has the most diverse and skill-intensive scope of the new providers. Of the four types of DHA, the DHAT is also the most controversial and misunderstood.

After completing more than 3,000 hours of training, DHATs must be directly supervised during a preceptorship lasting a minimum of 400 hours. The preceptorship can be thought of as a short residency. During this typically 6-month period, the supervising dentist acquires an intimate knowledge of the DHAT’s skills. In the Alaska Tribal Health System, these dentists often work in group practices. More than one dentist may be involved in the supervision of a particular DHAT, but the designated supervising dentist decides when the DHAT is ready for certification. The dentist then establishes individual standing orders for the DHAT based on his or her direct observation of the DHAT’s skills and clinical competence. After certification, the DHAT can only perform services under general supervision if they are listed in the standing orders. Other services in the DHAT scope of practice that are not on the standing orders must only be performed under direct or indirect supervision (see Figure 1).

Although supervising dentists do not receive special training in supervision or evaluation, the experience of the ANTHC suggests that the supervisory abilities of its dentists are more than adequate to assure the clinical competence of the DHATs they supervise. Like other dentists, they come to DHAT supervision with previous experience supervising dental hygienists, dental assistants, and administrative personnel. They also routinely supervise dental students who rotate through public health settings. All DHAT supervisors receive training in the use of teledentistry technologies, and

Definitions of Types of Supervision

CHAP Standards and Procedures state, “The supervision of a dental health aide may be general, indirect or direct,” and define supervision as follows:

“Direct supervision” means the dentist … in the dental office, personally diagnoses the condition to be treated, personally authorizes the procedure, and before dismissal of the patient evaluates the performance of the dental health aide.

“General supervision” means the dentist … has authorized the procedures and they are being carried out in accordance with standing orders issued to a specific dental health aide.

“Indirect supervision” means a dentist … is in the facility, authorizes the procedures, and remains in the dental facility while the procedures are being performed by the dental health aide.

Figure 1 Source: Community Health Aide Program Certification Board Standards and Procedures, Amended June 19, 2008. Sec. 2.30.010. Supervision of Dental Health Aides.
in January 2011, the ANTHC began offering a course for supervising dentists in order to acquaint them with the newer evidence-based protocols that are part of the DHAT curriculum and to share supervisory best practices among the regions.

Methods

Eleven of Alaska’s 27 native health corporations have hired DHATs, deploying them in a variety of settings and under several types of supervision. This paper presents three profiles of well-established relationships between DHATs and dentists. These specific provider pairs were chosen because they offer a window on three types of DHAT supervision and the various ways in which DHATs are safely and effectively expanding access to oral health services. In order to illustrate the flexibility of the model, pairs were selected from three separate health corporations, each of which faces different geographic, cultural, and infrastructure challenges.

One to 2-hour telephone interviews were conducted with the DHATs, their supervising dentists, and their dental directors using a list of questions formulated by the authors. Three of the supervising dentists and one of the DHATs also submitted answers to follow-up questions via e-mail.

Limitations

The corporations profiled and most of the others that have chosen to participate in the DHA Initiative are pleased with the model and intend to continue or expand its use. Our sample does not represent the small minority of the corporations that have encountered difficulties in integrating DHATs. These difficulties typically involve compensation for newly established positions in under-resourced communities and the problems individuals with challenging personal situations face in meeting the demands of full-time employment.

Profiles

Aurora Johnson, Norton Sound Health Corporation (NSHC)

**DHAT location:** Coastal village in western Alaska

**Supervising dentist:** Dr. Mark Kelso, Nome

**Supervision:** General

**Additional staff support:** Dental assistant, itinerant dentists

**Population served by the DHAT:** The village’s 727 residents, another 743 people in 3 surrounding villages and 15 school-based clinics

**Population served by the corporation:** The Nome clinic serves the 9,403 residents of Alaska’s Bering Straight Region, a 44,000 square mile area with few roads (2).*

* Where the state of Alaska was not able to certify numbers, state estimates were used.

Aurora Johnson began her preceptorship under the supervision of Dr. Mark Kelso, Dental Director of the NSHC headquartered in Nome. She enjoyed the support and indirect supervision of a resident dentist in her village for the first 2 years of her practice. Since that dentist moved away, Johnson has continued to practice under Dr. Kelso’s general supervision from Nome in accordance with her standing orders. She has the help of a full-time dental assistant, and NSHC supplements her services with those of an itinerant dentist who travels to the village every 6-8 weeks. Patients needing urgent complex treatment must fly to Nome to see a dentist.

Johnson initially moved to the village when she married. She has been active in village life and has raised three children in the community. As a DHAT, she divides her time among treating patients in her village clinic, providing care in three surrounding villages, overseeing school-based hygiene and prevention programs in 15 schools, and pursuing other public health initiatives. She lobbied for a “no pop” rule in the local schools, which no longer sell carbonated beverages during school hours, and she has made it her personal business to help the town’s new water plant manager become certified so that fluoride can be reintroduced in the local water supply.

Dr. Kelso supervises four DHATs, two of whom work remotely. He says that the DHAT in Nome and the other dentists in his office seek his opinion on a daily if not hourly basis simply because he is available, and his group practice model encourages provider interactions. Dr. Kelso is confident of Johnson’s ability to handle routine care within her scope of practice with less frequent interaction. When she does consult with him, typically by phone, it is usually to discuss more complex situations such as inadequate orthodontic space in children. Twice in her career, Johnson has sought Dr. Kelso’s help in handling a rare dental emergency.

“I just came across to town from my fish camp, and as soon as I parked my boat, the community health aide came to me [with a patient], and just looking at him, it was obvious that he needed help. I was just thankful that Dr. Kelso was home [when I called].

Dr. Kelso talked her through the delicate process of lifting up the patient’s lower teeth, which a baseball had knocked loose, and pushing them back in. She describes Dr. Kelso as “always encouraging,” giving her the confidence to provide the necessary care.

“We put four of his lower teeth back into place,” she concludes, “and I thought for sure he would need root canals, but you know what? His teeth are perfectly fine. He eventually went to Nome to see Dr. Kelso, and his teeth are still in and functioning.”

Once a year, Dr. Kelso has an opportunity to observe Johnson at work when they travel together for two intensive weeks providing care in the surrounding villages. Dr. Kelso
believe that “working side-by-side periodically is good for both the supervising dentist and the DHAT,” adding that whenever he treats a patient who has previously been seen by one of his DHATs or dentists, he makes a point of reviewing their work. “That tells me more than a chart review,” he insists. “I can look at the filling, the contour, the completeness, the occlusion, and I can go back to [the provider] and say, this is what you need to focus on in the future.”

Indeed, the certification process requires periodic direct observation of this kind. In order to complete the required observation of DHAT practice, the supervising dentists will observe in the village and may bring the DHAT to the hub clinic. In a group practice, a team of providers may share the responsibility of conducting all the required observations for recertification.

Conan Murat, Yukon Kuskokwim Health Corporation (YKHC)

DHAT location: Village on the Kuskokwim River
Supervising dentist: Dr. Edwin Allgair, Bethel
Supervision: General
Additional staff support: Dental assistant, itinerant dentists

Population served by the DHAT: The village’s 485 residents and another 1,788 people in 13 communities nearby

Population served by the corporation: Bethel’s 5,803 residents and another 19,157 people living in 56 villages in an area the size of the state of Oregon are served by this regional hub.

The village where Conan Murat practices had a dentist stationed there for about 1 year in the late 1990s. Otherwise, Murat has been its only resident dental provider. Dental care was traditionally provided by itinerant dentists from Bethel, 150 miles down river. They would visit one or two times per year for a couple weeks, not enough time to provide comprehensive care for all the people in the village and surrounding communities. When Murat first started practicing in the village, he recalls sending people to Bethel for emergency extractions on a regular basis, but after 5 years in the community providing both clinical and prevention services, he says, “I’ll go to a school screening, and the rate of decay is a whole lot lower than it was.” Nevertheless, he still faces disturbing evidence on a regular basis that much work remains to be done.

A parent will come in with a one- or two-year-old, and I’ll end up taking out four front teeth ‘cause the parents are giving ’em pop and giving ’em candy to suck on. If it’s the first time, a lot of the parents will be in there crying. Other parents have been in before for dental surgery with their older kids, so they just think it’s the normal thing to do.

The biggest challenge I face is just trying to talk those parents into taking care of their kids’ teeth.

Murat’s supervisor, Dr. Edwin Allgair, resides in Bethel. Murat remembers calling him a minimum of three times a day during his first year on the job, but the frequency of their contacts has diminished considerably over time. Dr. Allgair agrees with Murat’s assessment that the need for close supervision diminishes as DHATs gain experience. He supervises three DHATs, all stationed in remote locations. Each has different standing orders commensurate with the skills they demonstrated during their preceptorships. Two of these DHATs are newly certified and have just moved to their respective village clinics. Dr. Allgair expects that these two will initially require more interactions, which will likely taper off as they gain experience and build confidence.

When Murat needs to consult a dentist, he calls Dr. Allgair, but when Dr. Allgair is out, he will speak to any of the dentists in Bethel. Although they are less familiar with his work, Murat believes that he receives comparable assistance from every dentist on the team.

Murat can only remember two times in 5 years working as a DHAT when he began a procedure he could not complete.

“I was over in a village and started extracting a tooth,” he recalls. “It just didn’t want to come out. I informed the patient, and he said, ‘Okay, I understand’ and we put him on a flight to Bethel that same day. The dentist had trouble with it, too, but he got it out.”

Dr. Allgair comes to the supervisory role with extensive experience supervising predoctoral and postgraduate dental students. To facilitate a systematic approach to overseeing all of YKHC’s junior providers, he has developed the following protocols and tools:

- He teaches DHATs a scripted way of communicating a patient presentation to make sure that, when possible, everything relevant can be communicated to a dentist in 30 seconds.
- He and the other dentists on staff keep a shared log of all DHAT/dentist contacts to facilitate continuity of care.
- He provides DHATs with a form to keep track of patients who need care beyond their scope of practice so that visiting dentists have a plan of action when they arrive.
- He orients all new staff dentists in how to provide clinical guidance, not only to DHATs, but also to extern dental students and the community health aides in the villages who refer patients with dental pain.
- He has assembled an ad hoc preceptor “manual” that he shares with other supervisors around Alaska.

Dr. Allgair also conducts education sessions for his DHATs, some tailored to their particular needs, and they participate in quarterly chart reviews and other quality assurance activities that are typically part of the hospital-based group practices in the Alaska Tribal Health System.

Dr. Allgair’s approach to supervision is more formalized than most and may be particularly appropriate to YKHC, which has recently undergone a vast expansion of its dental staff. Since Dr. Brian Hollander became dental
director in 2009, the corporation has added 10 new dentists to an initial group of 4 and hired 2 new DHATs for a total of 3.

“Our philosophy is to get the DHATs out to the villages where the care is needed,” Dr. Hollander says. “Then we can set up prevention programs and provide year-round care. I think that’s the only way we’ll ever catch up on the acute care and cut down on the amount of decay.”

The corporation is currently sponsoring the training of another seven DHATs and intends to train more. As their direct supervisor, Dr. Allgair will precept the next DHATs and continue to supervise the three in place.

Daniel Kennedy, SouthEast Alaska Regional Health Consortium (SEARHC)

DHAT location: Island village in Alaska’s panhandle
Supervising dentist: Dr. Stephen Ericksen
Supervision: Direct and indirect, occasionally general
Additional staff support: Dental hygienist, dental assistant, primary dental health aide

Population served by the DHAT: 782 people living in the village and another 1,497 in three other island villages connected by roads
Population served by the corporation: The 53,000 Alaska Native and American Indian residents of Juneau, Ketchikan, and Sitka, and the residents of the surrounding villages.

Daniel Kennedy’s first job with SEARHC was as a dental assistant in Juneau. Two years later, SEARHC’s dental director, Dr. Tom Bornstein, approached Kennedy about becoming a DHAT, and a year after that, Kennedy joined the first class of DHATs to be trained in Alaska. He returned to his island village for his preceptorship in June of 2009 alongside Dr. Stephen Ericksen.

“I was a little skeptical of the DHAT program at first,” says Dr. Ericksen, who originally encountered it while working in Nome, “but the four that I’ve worked with have all been great, even to the point where I would be comfortable having them work on me and my own family.”

Dr. Ericksen estimates that the dental clinic handles 30 percent more patient visits since Kennedy’s arrival on the island and that his presence has allowed the dentist to provide approximately twice as many higher level services such as root canals, wisdom tooth surgery, and construction of prosthetic restorations. That is just what SEARHC intended when it decided to station its DHATs side by side with dentists. In the view of dental director Dr. Tom Bornstein, DHATs have a very specific role to play in the clinic: clean out decay and fill cavities.

“That was the Achilles heel of the whole system,” he believes. “We didn’t have enough horsepower to get routine fillings done. The DHAT fits in this niche.”

Most of Kennedy’s clinical time is spent filling adult teeth, with the remainder divided among conducting comprehensive exams, placing sealants and varnishes, and the occasional extraction. Fewer than 10 percent of the clinic’s patients are walk-ins, so Kennedy discusses his patients with Dr. Ericksen at the start of every morning and consults him as questions arise.

Both providers described their relationship as collaborative and collegial. It is not uncommon for Kennedy to conduct an exam on a new patient, calling Dr. Ericksen in to perform a root canal, and then place the final filling while Dr. Ericksen works on a patient seated next door. At other times, travel to outlying villages forces them to collaborate at a distance.

“I typically supervise my DHAT remotely only one day each week,” says Dr. Ericksen, “but I consider the extensive time we spend working side-by-side to be invaluable for our confidence and communication when we are working in separate locations.”

In addition to providing clinical services, Kennedy also leaves the clinic to conduct screening and education events about four times a month, visiting grade schools, Head Start programs, and other sites. His presence on the island brings significant public health benefits and is helping to diminish dental fear. According to Kennedy, a lot of people, especially in his generation, are “deathly afraid of coming to the clinic,” and they convey this fear to their children. He retains unwelcome memories of the once or twice yearly visits that dentists made to the village prior to the opening of the dental clinic. Children had to line up in the community hall to be seen by a dentist, all the while listening to their peers crying as they received local anesthetic or underwent extractions.

Kennedy credits his ability to deliver local anesthetic with very little pain to winning some residents over to the idea of seeing a DHAT. “I get a lot of people returning to the clinic and wanting to see me,” he says.

Kennedy has also begun reaching out to villagers who are uncomfortable with the clinic setting. With the help of his dental assistant, he provides nonsurgical clinical services, preventive services, and screenings in the home. According to Dr. Ericksen,

Having Dan here is allowing us to think outside the box on some of these situations. We are doing more preventive care like in-office fluorides in the home for a single mother with many kids. For elders who have trouble coming in, I’ll have Dan clean their dentures for them and do a brief oral exam [in the home] to find out their needs. Like the other dentists interviewed, Dr. Ericksen acknowledges that supervision has its challenges, including adjusting to the roles of teacher and mentor. It is time consuming, especially during the DHAT’s preceptorship, forcing dentists to reduce their patient loads. He also expresses a desire to expand his DHAT’s standing orders to include more urgent care-related services.
Discussion

These brief profiles provide representative snapshots of how DHATs are providing care in Alaska. They are consistent with the larger picture revealed in the course of our interviews, and they may shed light on the process of employing dental therapists in Alaska and other settings.

Observation #1. Dentists can provide effective supervision for DHATs whether they are in the operatory next door or many miles away

Although contact between DHATs and their supervisors varies considerably, the lengthy required preceptorship and the dentist’s discretion to establish and modify the DHAT’s standing orders provide the basis for a trusting, collegial relationship characterized by excellent two-way communication. Communications technologies such as telehealth carts and electronic health records can enhance supervision by facilitating the secure transmission of radiographs and patient data, but in actual practice, most remote contact occurs via the telephone. During visits to the remote clinics, supervising dentists can perform audits of paper charts. At corporations with electronic dental records, dentists can perform these audits remotely.

Supervising DHATs appears comparable to or easier than the other supervisory roles that dentists play. Dr. Allgair observes, “I haven’t found the DHATs to be any more of a burden than a dental student. In fact, most of them are less likely to exceed their skills or authority.” Dr. Bornstein concurs. “It’s more the new dentists that I worry about. The [DHAT] training stresses knowing your scope of practice.”

Indeed, DHATs’ strict adherence to scope-of-practice limitations was a common refrain in all our conversations. Both dentists and DHATs credited the training programs with inculcating this ethic in their students. DHATs are aware of just how critical this fundamental tenant is to safeguarding not only their patients, but also their own professional futures. During their yearly professional gathering in Anchorage, DHATs have been overheard challenging one another on adherence to this principle, in effect policing each other in the interest of the group.

Observation #2. Care is perceived as a team effort with both DHATs and dentists sharing responsibility for improving the population’s oral health

Even when DHATs and dentists are in separate locations, DHAT practice is supervised, not independent, with DHATs being viewed as an integral part of the care team.

Each of the dentists and dental directors interviewed emphasized that consultation is part of their normal routine whether or not they are working with DHATs. Their offices frequently incorporate dental students doing externships and newly minted dentists who also need supervision, and it is not unusual in their group practices for other dentists to seek their advice when they encounter unusual situations.

Observation #3. Quality assurance is integral to the DHAT model

Critics of the DHAT model have expressed concerns about patient safety, but the evidence from nearly 100 years of dental therapy practice worldwide does not support these concerns. A growing body of evidence demonstrates that dental therapists – and DHATs specifically – provide safe, competent, and appropriate care. A recent evaluation by RTI International (3) of the implementation of the DHAT program in Alaska found that the DHATs included in its study were “performing well and operating safely and appropriately within their defined scope of practice.” The study also reported high patient satisfaction with DHAT care.

All of the corporations profiled in this paper have traditional quality assurance measures in place such as periodic chart reviews, yearly performance evaluations, and continuing education requirements. CHAP also requires that every 2 years, DHATs demonstrate their competency on all of the procedures within their scope of practice under the direct observation of a supervising dentist in order to renew their certification.

Additionally, the group practice model itself functions as a powerful quality assurance mechanism. Patients typically have encounters with several providers within each corporation. Even in practices where providers maintain separate patient panels, regular out-of-office travel, the periodic presence of itinerant dentists, the availability of walk-in appointments, and the need for patients to travel to hub sites for higher level care all converge to increase the likelihood that patients will be seen by multiple providers.

Observation #4. Problems encountered during delivery of care by a DHAT are well handled by the existing system of referral

The use of DHATs has produced notable improvement in the oral health of the communities served, and according to Dr. Hollander and the other dentists interviewed, the clinical care provided by DHATs is “of excellent quality and no different from what the dentist would be doing.” All the dentists indicated that DHATs know their scope of practice and err on the side of caution. As a result, clinical problems, such as the difficult extraction that Conan Murat encountered, are true
rarities, and when they arise, systems are in place to transport patients to a dental provider with a broader scope of practice.

**Observation #5. The presence of DHATs allows dentists to play roles commensurate with the full extent of their training**

DHATs address oral healthcare needs that have long been overwhelming the traditional dental provider pool. Adding DHATs, with their limited scope of practice, frees the dentists to provide the higher levels of care for which they have trained. As Dr. Mandie Smith, who works with DHAT Brian James in one of the larger clinics in Sitka, explains, “Because Brian is able to work off existing treatment plans, to do simple fillings and a lot of prevention and disease control, it frees up slots in my schedule where I can provide third molar extractions, root canals, prosthodontics, ortho, and advanced perio.”

Dr. Bornstein foresees additional benefits. “The presence of DHATs should make dentists better physicians of the oral cavity,” he says. “Fifty percent of oral cancers don’t have a good outcome because they’re discovered late. Dentists should be doing a good oral cancer screening. They should highlight the medical aspects of their training.”

**Conclusion**

DHATs practice as part of a care team, with dentists providing effective direct, indirect, and general supervision. DHAT training and certification, mandatory preceptorships, and the group practice model further reinforce and assure that DHATs provide safe, competent, and appropriate care. The presence of DHATs allows dentists on the care team to play roles commensurate with the full extent of their training. While adding another person to the dental team poses some challenges for supervisors, these are managerial, not clinical. The clear message from the dentists interviewed was that the overall result – improved access to care – was well worth the effort.

Our profiles also reveal the flexibility of the DHAT model. The tribal health corporations are deploying these providers safely and effectively in a variety of roles, according to regional needs and preferences. This suggests the model’s potential adaptability to settings outside Alaska.

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**Conflict of interest**

Dr. Williard is employed by the Alaska Native Tribal Health Consortium, Division of Community Health Services and has an appointment as clinical instructor in the Medex Northwest Physician Assistant Training Program of the Department of Medical Education and Biomedical Informatics at the University of Washington, School of Medicine, Seattle, WA. Ms. Fauteux’s services were paid for with funding provided by the W.K. Kellogg Foundation to the American Association of Public Health Dentistry.

**References**


A summary of the 2010 Dunning Symposium: the practice of dentistry for the 21st century

Ira B. Lamster, DDS, MMSc; Allan Formicola, DDS, MS

College of Dental Medicine, Columbia University, New York, NY

Abstract

The 15th Dunning Symposium was held on November 29 and 30, 2010 in conjunction with the Greater New York Dental meeting in New York City. Since the first symposium in 1981, the symposia have addressed major issues in the field of dentistry that impact on the oral health of the public. The theme for this symposium dealt with how the practice of dentistry would emerge given healthcare reform legislation, opportunities for dentists to become more engaged in the primary care of patients, trends in dental education, and the addition of a mid-level practitioner. The audience, consisting of dental school deans and leaders in state and national dental associations, completed a pre-symposium questionnaire to gauge their opinions on key issues and then, after the presentations, participated in breakout sessions that discussed the implications of the presentations. This paper is a summary of the Dunning Symposium.

Introduction

The Dunning Symposium is named for Dr. James Dunning, a 1930 graduate of Columbia University College of Dental Medicine, who served as Dean of the Harvard School of Dental Medicine and became prominent in founding the field of public health dentistry. This symposium, the 15th in a series that began in 1981, was held in November 2010 to explore how the practice of dentistry could evolve to allow dental professionals to assume a more prominent role in health care and to reach a greater proportion of the underserved population through the use of emerging mid-level practitioners. The symposium was funded by grants from the W.K. Kellogg Foundation provided by the American Association of Public Health Dentistry and from the Robert Wood Johnson Foundation. The symposium was held in conjunction with the 2010 Greater New York Dental Meeting.

The symposium raised issues that have been the focus of attention of national and state dental associations as well as community groups, healthcare foundations, and state governments. The invited audience included 9 dental school deans and 10 representatives of state dental associations principally from the northeast; 8 representatives of national dental associations (the American Dental Association, the American Dental Education Association, the American Dental Hygiene Association, and the American Academy of Pediatric Dentistry); and 2 representatives from the Health Resources Service Administration (HRSA). The remainder of the audience was staff from community/health centers, staff from the Kellogg and Robert Wood Johnson Foundations, and faculty from the College of Dental Medicine, Columbia University. In total there were 46 attendees.

The format for the symposium included six presentations, each followed by a discussion period and two breakout sessions exploring questions raised by the presenters. The two overall goals for the symposium were to view a) how dental practice and dental education are responding to public health challenges and the passage of healthcare reform; and b) how emerging mid-level providers function and how the profession views them. The symposium also discussed linkages of these two drivers of change.

Synopsis of the presentations

Michael Sparer, Chairman of the Department of Health Policy and Management at the Columbia University Mailman School of Public Health, provided an overview of the Patient
Protection and Affordable Care Act (PPACA), the new health-care overhaul bill, that was signed into law in March 2010. His presentation indicated that the reform law had several goals: to provide health insurance coverage for most of the approximately 50 million persons currently without insurance; to do so without adding to the nation’s budget deficit; to stem the rising cost of health care more generally; and to reorganize and improve the quality of the health delivery system. Sparer then summarized the insurance expansion provisions (including an effort to add approximately 16 million more individuals to Medicaid) and a program to enable another 16 million to buy private coverage through newly created state insurance exchanges. He also summarized systems changes that are designed to promote integrated delivery of care, the medical home, primary care, and chronic disease management.

Regarding oral health care, Sparer noted that PPACA will require insurance companies to provide basic dental coverage for children and that it directs Medicaid and the State Children’s Health Insurance Program (SCHIP) to look at the reimbursement levels for dental care. Pilot projects to include mid-level providers in the oral health workforce also are encouraged by the PPACA. Sparer also observed that dentists could “scope up” as primary care practitioners and assist the nation in combating major chronic public health problems, such as screening for diabetes, while delegating or “scoping down” some of the more routine dental procedures to mid-level providers to help cover the uninsured.

Edward O’Neil, Director of the Center for the Health Professions at the University of California San Francisco, concurred with Sparer’s view of the need to reshape the delivery system but qualified how this should impact on oral health care. His view was that the current private practice system that evolved in the United States was serving about 75 percent of Americans well and should be left to operate as it currently does, but that 25 percent of the population is suffering from poor oral health and has limited to no access to dental care. He urged the profession to seek changes in regulations that serve as barriers to develop and demonstrate new practice models different than the current private practice dental delivery system that could reach the underserved. O’Neil estimated that between 10 and 15 percent of dental graduates would be needed and could be successful in community settings, providing care to those currently left behind.

Ira Lamster, Dean of the Columbia University College of Dental Medicine, presented his view of the 21st-century practitioner who would have the capacity to utilize more of the comprehensive education provided in the nation’s university-based system of dental education. He envisions dentists becoming more integrated in the primary care system by undertaking a greater role in assessment of diseases and disorders that affect oral health and a patient’s ability to tolerate dental treatment. A more comprehensive patient evaluation could aid in the detection of early symptoms of disease. Further, dentists would concentrate their direct practice efforts to treat the more complex restorative cases or more medically complex patients. Lamster indicated that dentists could “scope up” because they have the education to do so and could find the time in their busy practice day to do so by utilizing mid-level providers. He sees the latter as practice “extenders” that dentists could supervise in community settings developed to treat the underserved.

Peter Polverini, Dean of the University of Michigan School of Dentistry, reported that an extensive strategic planning process at that school developed a curriculum that would allow students to select specific educational tracks. These tracks will allow students to select a clinical, research, or leadership with a public health/healthcare policy focus. The focus would be on evidence-based dentistry, the profession’s need for managing the care of the growing elderly as the baby boomers age, and the expectation that the profession will provide the necessary leadership to formulate healthcare policy to improve the oral health on a local, regional, and global basis. The plan also includes using multidisciplinary training opportunities so that students in medicine, dentistry, pharmacy, and nursing could better work in a team practice environment. The graduates would more fully understand and appreciate the roles of other health providers.

The views of Lamster and Polverini are compatible and consistent with the intent of the new healthcare law as expressed both by Sparer and O’Neil. All agreed that future dental graduates will be required to manage the care of a growing number of medically complex patients with significant oral health care problems, and the profession will require better trained individuals in public policy to assist it deal with problems of the underserved. Their presentations recognize that mid-level providers, physicians, and nurses may be needed to augment the dental workforce “reflecting a growing awareness of an unmet need that is accelerating at an unsustainable pace.”* The symposium, therefore, turned its attention to a formal analysis of mid-level providers, specifically how the Alaska Tribal Health Consortium’s Dental Therapist program is operating. This was followed by a discussion of the challenges associated with wider introduction of these providers into the dental delivery system.

In the fall of 2010, Research Triangle Institute International (RTI) reported a 2-year study they completed on the evaluation of the dental therapist model in remote areas of Alaska (1). The study examined how five therapists performed routine dental procedures such as basic restorative care, simple extractions, and preventive care, and whether their practice was safe. The methods of the study included direct intraoral examinations of the quality of restorations provided

* A quote from Peter Polverini’s presentation at the Dunning Symposium on November 29, 2010.
by therapists and dentists, clinical preparations of teeth on patients to receive restorative materials performed by therapists, direct observations of therapists managing patients, record reviews, and reviews of the practice environment including consultations with supervising dentists. The technical quality of restorations provided by therapists was comparable with that provided by dentists, no untoward complications were found regarding the care they provided, and patients readily accepted therapists as providers in their communities. The study concluded that the therapists were performing well and operating safely and appropriately within their defined scope of work in this unique setting, e.g., mainly in remote locations where Alaska Natives live and under the Alaska Tribal Health Consortium’s system of health care. These findings were presented by Caswell Evans, the Chairman of the National Advisory Committee for the RTI study and Associate Dean, Prevention and Public Health Science, University of Illinois at Chicago College of Dentistry.

Burton Edelstein, Chair of the Section of Social and Behavioral Sciences at Columbia University College of Dental Medicine and President of the Children’s Dental Health Project, addressed the challenge of prognosticating the access and financial feasibility implications of incorporating dental therapists into the workforce. Approaching the topic as an observer and researcher, he reported on the perception of dental therapists by various profession groups and government, and detailed the implications of those differing perceptions. He noted that proponents of therapists believe that they will increase access to care in financially feasible ways, whereas opponents cite the same evidence to conclude that they will not. Referencing public and policy statements of various associations posted on the Web, he substantiated opposing views and catalogued areas of agreement and disagreement.

His analysis determined that all agree that there is a disparity problem, that oral disease is largely preventable, and that the dental delivery system should engage a team of providers with the dentist in the lead. He distinguished access from utilization and noted substantial disagreement regarding the source of the disparity problem — whether it lays within the profession’s lack of attention to the underserved or the underserved populations’ lack of attention to dental care. He concluded by citing critical issues that need to be addressed if there is to be a viable future for incorporating dental therapists into the workforce in ways that address access disparities and are financially feasible. Among these are issues of “scope of practice” designation, supervision determinations, and allowable locations for dental therapists as determined by state practice acts; practitioner and public acceptance; and practitioner capacity to manage complex delivery systems.

Taken together, the six presentations indicate that the current environment in the United States is focused on provision of health care to all Americans and that the dental profession must endorse a similar philosophy. Healthcare reform will offer additional dental benefits to children, but not adults. The dental profession must offer creative solutions to the access to care problem. Further, the focus on management of chronic diseases offers new opportunities for dentists to become involved in improving the general health and oral health of dental patients. Dentistry can play a stronger role in managing chronic disease, treating more complex oral health needs of the growing number of elderly, and demonstrating its commitment to finding ways to treat the growing dentally underserved population in part through augmenting the dentist workforce with mid-level providers and the assistance of other health practitioners such as physicians and nurses. This will allow dentists to treat more medically complex patients who have more demanding oral healthcare needs.

**Views of the audience and discussion breakout sessions**

A pre-symposium survey was conducted to obtain the opinions of the audience, which included leaders in dental education and national and state dental organizations. A 10-question 5-point Likert scale questionnaire was answered by 46 of the participants (100 percent return). In summary, relevant to the theme of the Dunning Symposium, attendees agreed that the mandate that all children must receive dental coverage will impact on dental education (37 strongly agreed/agreed); that over the next 10 years, dentists will assume a larger role in providing primary health care (31 strongly agreed/agreed); and that the delivery system should be reshaped to better serve a larger portion of the public (39 strongly agreed/agreed). Regarding whether integrating mid-level practitioners into the delivery system would improve access to care, the participants were almost evenly divided between those who agreed (20 strongly agreed/agreed) and those who were neutral in their opinion (19 were neutral). There was less agreement on whether the RTI International study showed that the dental therapist program currently implemented by the Alaska Tribal Health Consortium could be utilized in other US locations (26 strongly agreed/agreed, 13 disagreed/strongly disagreed, and 5 neutral).

Two breakout sessions discussed questions arising from the six presentations. The groups were asked to consider the questions in the context of strengths, weaknesses, opportunities, and threats (SWOT analysis). Some of the most important points raised will be reported in this summary.

In relation to the healthcare legislation passed in March of 2010, the fact that all children will be required to be covered in all healthcare plans was viewed as strength by the first discussion group. However, there was concern that the current system of care could not meet the demand of covering all children. Including all children was seen as an opportunity to
educate a different kind of dental provider, but combining dental insurance with medical insurance for children could become a problem because medical insurers may not have the interest or knowledge to include an appropriate dental benefit package.

Expanding the range of dental practice into primary health care was seen as a benefit that could lead to early identification of chronic diseases, but many dentists may have a lack of interest in utilizing the full range of their education to include these activities. Cross-training of dental students with other health science students and permitting dental students to follow unique tracks in such fields as public health will lead to a more coordinated system of oral and general health care. It was felt, however, that it might prove difficult to prepare faculty to teach in such an environment.

Regarding the RTI International study, the second discussion group viewed the study’s strengths to be that dental therapists can practice safely, patients are satisfied with their treatment, and that it expands the workforce to help correct disparities in oral health care. However, the model has not focused sufficiently on prevention, and its unique setting in remote Alaska Native villages does not permit extrapolating the results to the rest of the nation. While not addressed directly by the study, the group discussed the opportunities and challenges to including dental therapists in the workforce. This paradigm shift will expand the traditional workforce, with a dental therapist who can provide some basic dental procedures traditionally provided only by the dentist. However, rather than creating an entirely new type of mid-level provider, expanding dental hygiene, an already established member of the dental workforce, to include dental therapist skills may be a better way to provide care to the underserved.

The addition of a mid-level provider also raises an opportunity to explore financial models to expand dental coverage to the uninsured and underinsured. Restrictive practice acts and the ability of dentists to manage and utilize a model of care including dental therapists are two challenges.

The presentations, the breakout sessions, and the questionnaire led to the following conclusions and suggestions for the future:
• The dental profession cannot be a bystander but must actively assist state and federal efforts to reshape the delivery system for those with limited economic means who cannot gain access to care.
• Healthcare reform, including provisions for oral health, should encourage dentists to become more involved in the health of the patients, including screening and management of chronic health conditions that affect general and oral health.
• Dental education will need to educate students with enhanced skills to become more integrated into the primary healthcare system.
• Mid-level providers such as dental therapists have been shown to provide comparable care in a narrow scope of dental procedures and are able to practice safely under the general supervision of dentists; however, their acceptance by the profession is at issue.
• Mid-level providers can be viewed as dentist extenders who will allow the dentist to treat the more complex orally and medically compromised patients.

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Conflict of interest
Dr. Allan Formicola served as a paid consultant to the W. K. Kellogg Foundation for the Research Triangle Institute International study, the results of which were presented at the symposium and summarized in this article. Dr. Ira Lamster declares no conflict of interest.

Reference
Navigating career pathways – dental therapists in the workforce: a report of the career path subcommittee

Karen Yoder, PhD, MSD1; Dominick DePaola, DDS, PhD2

1 Indiana University School of Dentistry, Indianapolis, IN
2 Nova Southeastern University, Ft. Lauderdale, FL

Abstract

Creating career pathways to facilitate current dental and other healthcare providers becoming dental therapists can be an efficient means to expand the dental workforce and reduce barriers to access to oral health services. Career pathways are proposed to facilitate dental providers building on previously learned skills to broaden their scope of practice and become even more versatile and productive providers of oral health services. Creation of a unified and integrated curriculum will enable research to document the effectiveness of this new dental provider who will work as part of dental teams and with supervision by dentists. The goal of augmenting the current dental team and reducing barriers to access to dental services for underserved populations can be enhanced by offering alternative pathways to achieve the competencies required of dental therapists.

Development of a New Dental Workforce Model

Attention is now focused on the development of a dental workforce in the United States that will include an alternative dental provider specifically designed to alleviate inequities in access to oral healthcare services (1,2). January 2010 marked the initiation of a panel under the guidance of the American Association of Public Health Dentistry (AAPHD) that began developing a two-year postsecondary curriculum for dental therapists. AAPHD received funding from the W.K. Kellogg Foundation and the Josiah Macy, Jr. Foundation to pursue this work. The project is divided into three phases: Phase I – develop the general content and approach for a 2-year postsecondary school curriculum; Phase II – develop career pathways for entry of other alternative dental providers into this workforce model; Phase III – elucidate program accreditation issues and licensure in relation to state practice acts.

This paper explores Phase II of the Kellogg/Macy Dental Therapist Curriculum Development Project. The goals of Phase II are:

• Goal 1: Explore and define how currently trained dental hygienists can obtain additional skills of dental therapists.
• Goal 2: Explore and define how 2-year postsecondary school-educated therapists can gain the additional skills to provide dental hygiene services.
• Goal 3: Outline advanced standing possibilities for dental therapists and hygienists when enrolling in the respective programs, as well as the potential for graduates to receive credit towards baccalaureate degree programs.
• Goal 4: Consider the entry point and career pathway options for other potential candidates.

There is increasing awareness in the United States of the potential benefit of developing alternative workforce dental providers to deliver oral health services to a greater proportion of the population. Basic dental clinical procedures are provided by alternative dental providers in at least 54 countries (3). Medicine in the United States has progressively diversified its workforce in recent years and Americans are now accustomed to receiving services from a variety of healthcare providers in addition to physicians. Dentistry is, likewise, moving towards a workforce with diversified scopes...
of practice. The American Dental Association (ADA) and the American Dental Hygienists Association have proposed alternative workforce models. Many states have broadened their dental practice acts to enable dental hygienists to work in alternative settings without direct supervision of a dentist and to allow dental assistants to provide limited direct clinical services. Some states are exploring the development of a variety of alternative provider models. Significant change is no longer in the distant future; it is occurring now. With development of alternative dental providers occurring simultaneously in multiple venues, fragmentation of role descriptions is inevitable. It is prudent, therefore, to work towards developing a common language to describe the newly developing alternative dental providers, to carve out job descriptions that are consistent and transferrable from state to state and that can be measured for effectiveness through clinical research. It is of primary importance to define roles that have the potential for significant impact on the oral health of underserved populations.

Organized dentistry is engaged in dynamic discussions about the potential benefits, challenges, and/or threats of promoting the dental therapist role in public health and/or private practice settings. The American Academy of Pediatric Dentistry analyzed the various proposals for alternative dental providers and released this policy statement: “AAPD supports the use of mid-level providers who perform or assist in the delivery of specified reversible procedures and certain surgical procedures under the general supervision of a dentist, provided that such arrangements have been thoroughly evaluated and demonstrated to be safe, effective, and efficient and to not compromise quality of care in similar settings” (4). The proposed evaluation cannot occur without creating a common, consistent model to be evaluated.

**Member of the Dental Team**

Dental therapists, as envisioned by this panel, will be part of dental teams that are directed by dentists who will authorize and evaluate the services provided. There is speculation that services provided by dental therapists will be inferior to those provided by dentists. Creating a competent dental provider is the goal of the dental profession and will be demanded by the American public. Research has shown that dental therapists, within their scope of practice, can provide high-quality care that is comparable with services provided by dentists (5). A wide range of complexities of services are provided by dentists ranging from simple, routine procedures to the more complex and technically demanding. An ADA report quantifies and categorizes, by type of procedure, the average number of procedures that general and pediatric dentists perform in a year. The percentage of all procedures that could potentially be delegated to dental therapists, after diagnosis by a dentist and with general supervision of the therapist, is 75 percent for general dentists and 79 percent for pediatric dentists. These are primarily radiographic and preventive procedures with about a tenth of procedures being basic restorative. However, these are overestimations of the proportion of procedures that could be delegated to therapists because they do not account for either patient or procedural complexity nor do they account for the proportion of procedures that are already delegated to dental assistants and dental hygienists (6). Edelstein points out that the potential for benefit can become even greater if the dental therapist also has credentials to offer services within the dental hygienists’ scope of practice (7). Through this statement, Edelstein is introducing the concept of sequentially building the competencies and skill sets of already licensed dental health professionals.

Beginning in 1915, dental hygienists provided school-based preventive services and soon began direct preventive and therapeutic services for patients in dental practices. This enabled their employer dentists to use their skills for more technically demanding services. Broadening the oral health services that can legally be delegated to alternative dental providers may lower the cost of services and make more of the general dentists’ time available to perform more highly skilled treatments for greater numbers of technically difficult cases including medically and mentally compromised patients. To the extent that dentists then provide more complex procedures, and increase the number of patients treated, their financial returns are likely to increase. A recent report analyzed three representative scenarios; solo pediatric dental practice and solo and small group general practice. The conclusions predicted an increase in productivity through the use of new workforce models including the dental therapist and/or hygienist/therapist(s) (8). Financial benefits are also likely to accrue for safety-net dental clinics and their patients; services may be available at lower cost because alternative workforce providers, who have incurred the cost of 2 or 3 years of education as compared with 8 years of a dentist’s education, may be less costly employees. Clinic income will be enhanced by increased production due to adding personnel who are able to provide services that directly generate revenue. There will be costs associated with integrating the dental therapist into private practice or community dental clinic models, including establishment of tele-dentistry capabilities and procurement of equipment and materials for providing direct services; however, the income generated by services provided is expected to offset the expenses. Patients will receive the net benefit of this reconfiguration of workforce; they are expected to receive competent dental services, in an accessible location and at an affordable fee. It is now possible to use simple and inexpensive methods to assure competence among dental therapists practicing in remote locations under general supervision without the dentist being physically present on-site; the concept of general supervision no longer needs to mean that
the dentist’s expertise is not readily accessible. Through the use of intraoral cameras and digital radiography, the use of technology enables the dentist to view the procedures that are being performed without being on-site. General supervision can now be augmented by transmitting high-quality images, videos, and radiographs via the Internet, thus creating a cost-effective means for dentists to supervise experienced alternative dental providers. The supervising dentist is able to diagnose, plan the treatment, consult, and evaluate during each phase of patient care. This capability, alone, significantly reduces the potential for inappropriate or inadequate treatment.

Career Pathways to Maximize Resources

Maximizing the services of alternative dental providers may encompass building upon skills already mastered by dental personnel who have experience in other dental provider roles. A dental hygienist who has experience has already achieved scientific and experiential background but may want to broaden his/her professional scope. It will be advantageous to create curricula for dental hygienists and other alternative dental providers to add new competencies to already existing skills and licensures. In addition to enhancing job satisfaction, dual training would enable an alternative dental provider to offer a broader range of services, with general supervision, in locations that cannot support sufficient numbers, or types of on-site dentists and support staff.

The curriculum for dental therapists should be structured to facilitate career paths that will allow a registered/licensed dental hygienist to fulfill the dental therapist requirements in basically one additional year; thus, the first year of dental therapy curriculum should closely adhere to the first year of the dental hygiene curriculum. When the applicant’s goal is to attain licensure in both domains simultaneously, a curriculum should be available that will encompass not less than 3 years following completion of secondary school. There should be a common core curriculum in the first year followed by a second year specifically targeting the dental hygiene or dental therapy career pathway. A third year should be available for the current student or returning dental professional to pursue licensure in the other domain. The first year curriculum should closely follow the long-accepted curriculum for dental hygiene students.

Expanded function dental assistants and other alternative workforce dental providers should be given credit for equivalent courses from equivalent educational institutions. Examples of other practitioners who could join the dental therapist workforce include international dentists and expanded function dental assistants. Some educational institutions may choose to offer advanced degrees for alternative dental providers.

Enabling efficient career paths will be beneficial from social, economic, and health perspectives. For example, when there is a mismatch in market versus availability resulting in a surplus of dental hygienists, hygienists could broaden their marketability by enrolling in a 1-year course to add the competencies required of a dental therapist.

Practitioners with previous experience should be awarded credit for previously courses taken and previously mastered competencies. Having practitioners with previous clinical experience, such as dentists ineligible for licensure in the United States because of being trained in other countries, or dental hygienists who decide to add dental therapy to their skills to pursue training as a dental therapist will be especially beneficial. These practitioners will receive credit for previously achieved competencies and course work and will come into the workforce with enhanced previously mastered skills of technique, observation, and interpersonal communication.

Providing an efficient career pathway will facilitate more effective use of public funds that support many state and community college-based dental educational programs. One additional year, rather than 2 years of training, has obvious financial benefits for students and public alike. Likewise, an experienced dental therapist, dental health aide therapist, or other alternative dental provider may want to pursue additional training in dental hygiene to enable offering both skill sets. Cross-training will be beneficial for the public and therefore is a goal of the curriculum planning and career pathway processes.

The role of clinical dental hygienists is primarily focused on preventive and therapeutic periodontal procedures, but specific scopes of practice vary from state to state and will not be itemized here. The proposed role of dental therapists is likely to include the following procedures provided for children and adults under general supervision of a dentist in private or public health settings. General supervision means that the dentist has authorized the procedures to be performed, and the conduct of practice, but the dentist is not required to be present when the procedures are performed, and the authorized procedures may be performed at a place other than the usual place of practice of the dentist.

- Assessment: Collection and documentation of data to identify patient oral health needs
  - Medical and dental histories
  - Vital signs
  - Extra/intraoral assessment
  - Dental and periodontal assessment
  - Radiographs
  - Indices
  - Risk assessment including oral health risk assessment, medical classifications of patients, and risk associated with use of dental materials
  - Use of teledentistry for diagnosis and consultation
  - Preliminary diagnosis
• Planning: Establishment strategies to facilitate treatment goals
  ○ Provisional treatment plan
  ○ Informed consent
  ○ Case presentation
  ○ Adherence to legal and ethical requirements and accepted standards of care
• Implementation: Provision of treatment as directed by the supervising dentist
  ○ Infection control
  ○ Pain management
  ○ Restorative dentistry by protocol
  ○ Evaluation and triage of dental emergencies
  ○ Uncomplicated extractions
  ○ Application of pit and fissure sealants and caries preventive agents by protocol
  ○ Treatment of simple gingivitis
  ○ Health education, nutrition, and preventive counseling
  ○ Reevaluation of patients at periodic recall
  ○ Evaluation, triage, and treatment of special needs patients
• Evaluation: Measurement and documentation of the extent of success in reaching goals identified by the community dental clinic and in individual treatment plans
  ○ Patient satisfaction
  ○ Community satisfaction
  ○ Subsequent treatment needs
  ○ Adherence to continuing care
  ○ Adherence to referrals for general dentists’ or specialists’ care

Alternative provider career pathways will be available for the:
• Dental therapist
• Dental hygienist
• Foreign-trained dentists

The common core curriculum for year 1 will require competence in the following subjects which are the courses required of first year dental hygiene students:
• Fundamentals of dentistry
• Head, neck, and oral anatomy
• Microbiology, immunology, and infection control
• Embryology and histology
• Radiology
• Dental materials
• Pharmacology, therapeutics, and nutrition
• Medical/dental emergencies
• General and oral pathology
• Dental public health and dental health education
• Technical writing and communication

It is important to reexamine and modify traditional dental delivery systems in order to respond to the oral health needs of a greater proportion of the US population. Effective development of a unified dental therapist model, with consistent requirements and accountability throughout the country will provide greater access to care for underserved populations. Forging clear pathways for already trained dental providers to gain and use new skill sets is a goal that offers significant advantages including the potential for lowered cost for dental services in the public and private sectors. The Federal government should fund pilot studies to evaluate the costs and effectiveness of services and improvements in access to care. Universities should work together to develop exemplary dental therapy programs, flexibility in career pathway options for dental professionals, and a system that does not introduce unnecessary barriers for those who are interested in serving in a variety of roles in the dental field.

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References