Cultural Context in the Effort to Improve Oral Health Among Alaska Native People: The Dental Health Aide Therapist Model

Scott Wetterhall, MD, MPH, Barri Burrus, PhD, Daniel Shugars, DDS, PhD, MPH, and James Bader, DDS, MPH

The Alaska Native people in rural Alaska face serious challenges in obtaining dental care. Itinerant care models have failed to meet their needs for more than 50 years.

The dental health aide therapist (DHAT) model, which entails training midlevel care providers to perform limited restorative, surgical, and preventive procedures, was adopted to address some of the limitations of the itinerant model. We used quantitative and qualitative methods to assess residents' satisfaction with the model and the role of DHATs in the cultural context in which they operate.

Our findings suggest that the DHAT model can provide much-needed access to urgent care and is beneficial from a comprehensive cultural perspective. (*Am J Public Health*. 2011; 101:1836–1840. doi:10.2105/AJPH.2011.300356)

PROVIDING DENTAL CARE TO sparsely populated rural areas is a long-standing challenge that is expected to become more difficult in the future unless corrective actions are taken. The current shortage of practicing dentists is expected to increase, with rural areas and vulnerable groups disproportionately affected.[1–3] Providing care in rural Alaska, with its expansive wilderness and adverse weather conditions, is a particularly daunting challenge under these circumstances.[4] Various solutions to address this crisis of care have been proposed, from expanding dental school enrollment[5] to training and credentialing various midlevel or expanded-function nondentist providers to perform some services.[6] Prevention approaches, including advocating for strategies such as better oral health education for vulnerable groups also have been described.[7] Vigorous debates have ensued in search of the best approach.

The traditional approach to providing dental services in rural Alaska stems from 1954, when Congress directed the Division of Indian Health (later reorganized as the Indian Health Service) to assume responsibility for all federally directed health care provision for American Indians and the Alaska Native people.[8] In the early 1960s, the Division of Indian Health established field visits by medical and dental teams as the basic model for providing care to residents of remote villages.[9] Under this model, teams of providers visited remote villages for brief periods—typically 1 to 2 weeks—and worked long hours to accommodate as many patients as possible. However, even as the number of commissioned officers in the Public Health Service grew, the unmet workload always exceeded service capacity. To supplement capacity, dentists from the lower 48 states would volunteer for brief tours of duty. With the exception of the Public Health Service officers, few were attracted to living year-round in a village of 800 or fewer residents, with limited housing opportunities and no paved roads, for a job that required travel by small plane, boat, or snowmobile, often in extremely hazardous conditions. By necessity, this long-standing dental service model focused predominately on addressing urgent restorative and surgical needs, leaving little time for preventive and early restorative care.

The Department of Health and Human Services Oral Health Survey for American Indians and the Alaska Native people documented pervasive dental disease in these underserved populations.[10] The results underscored the pressing need for alternative approaches that could provide more comprehensive care along with more reliable urgent care access.

A NEW MODEL

Use of dental health aide therapists (DHATs) is a long-standing approach in many countries that has been recognized around the world as a mechanism for providing care to remote regions.[11–13] In Alaska, dental professionals outlined various options for improving access to dental care in rural areas, presented to the state's Native Health Board in a 1999 white paper (Thomas Bornstein, personal communication, Thomas Bornstein DDS, 2008–2009). After considerable consensus building, and with input from legal counsel familiar with federal Native law, the board in 2002 approved standards to credential DHATs as a service component of the Community Health Aide Program, which has trained and certified village residents to provide basic medical services in rural Alaska since 1968.[14]

Introducing the DHAT model in the United States sparked considerable controversy, and the program has faced a prolonged legal challenge and ongoing opposition from organized dentistry.[15–17] Changes to an established system of care should appropriately evoke questions from dental professionals and the lay public alike, both to ensure that the new approach does no harm and to assess whether it offers improvements over existing practice. Many questions about the use of DHATs in Alaska have been raised, such as (1) Are DHAT providers practicing safely (particularly when performing irreversible procedures)? (2) Are patients satisfied with the quality of care

they are receiving? (3) Does access to care improve with the use of the DHAT model? (4) Will the model contribute to improvements in overall oral health for the communities served?

In the resulting model, DHATs were assigned to work in remote villages under the general supervision of and in frequent communication with full-time licensed dentists with experience working in remote areas of Alaska. The DHATs worked under a specific scope of practice. With financial backing from the Rasmuson Foundation and the endorsement of the Alaska Native Tribal Health Consortium, the tribal health associations, and several dental directors, the consortium arranged in 2002 to select 6 students and send them to the 2-year dental therapy program at the University of Otago in New Zealand. The program is well regarded and has been emulated in more than 50 countries.[11–13] This school-based program, in existence since 1922, trains nondentist providers in preventive and restorative care, including restoring carious lesions with amalgam and composite fillings and performing simple extractions.

Following graduation, the DHATs underwent a mandatory 400 hours (or longer, at the supervisory dentist's discretion) of direct supervision by licensed dentists before they began to work under general supervision, typically in villages where they had been raised or had family. Over the next 3 years, a cohort of 3 classes, with a total of 10 Alaskan students, completed training in New Zealand and became certified to practice by the Community Health Aide Program Accreditation Board. Recognizing the need for a more sustainable training model, the Alaska Native Tribal Health Consortium, with input from faculty of university programs and other experts—began to develop an Alaskan training program for DHATs.[18]

In 2008, the W. K. Kellogg Foundation, in collaboration with the Rasmuson Foundation and the Bethel Community Services Foundation, sponsored our independent, detailed, and objective evaluation of the DHAT program in Alaska.[19] We focused on urgent questions about quality of care, patient satisfaction, and implementation of preventive practices, by examining areas such as

1. clinical technical performance and practice performance;
2. adequacy of patient records and clinical facilities;
3. patient satisfaction, oral health–related quality of life, and perceived access to care;
4. implementation of community-based prevention plans and programs; and
5. community oral health status (to provide a baseline for future assessment).

We selected 5 sites that employed a DHAT (for ≥ 2 years) from the 10 then existing. The 5 sites represented all 5 tribal health councils that had adopted the DHAT model.

The program was too young and small, and the existing dental issues too severe, to expect substantial population-level impact quickly. The cross-sectional study design did not permit quantifying changes that might be occurring over time in access to care (e.g., numbers served, frequency of visits per person, or average waiting time for an appointment). However, we found that the DHATs evaluated were practicing safely and provided competent patient care within their scopes of practice.[20] We extended our findings from that study by exploring patient satisfaction and access-to-care issues through a cultural context perspective that should be considered when evaluating use of the DHAT model for addressing oral health challenges for rural Alaska.

METHODS

A detailed description of our study methods are available elsewhere.[19] Our quantitative measures relied on methods described previously in the peer-reviewed literature, developed by national or international organizations, derived from examination standards for assessing dental clinical competency, or informed by expert opinion.[19] We also collected qualitative data through semistructured interviews with key stakeholders (e.g., village leaders, school personnel, clinic staff) and direct observation to assess community-based preventive efforts and overall community context. We focused on contextual factors, such as patient satisfaction and aspects of access to care that are linked to implementing preventive measures and improving oral health in remote Alaskan villages.

A small team of epidemiologists and dentists (previously calibrated in data collection methods) visited each of the 5 villages in which the DHATs participating in the study were practicing. Because of logistical challenges, we largely employed a convenience sample of village residents to assess community oral health and evaluate technical competence, although in 2 sites we were able to amass systematic samples of village schoolchildren. Caregivers of 233 children aged 6 to 17 years who had been treated in the previous 12 months by a DHAT answered questions about their experiences. To assess record keeping and clinic operations, we used a systematic sample of clinic records.[21]

Participants (or their adult proxies) in the oral health survey also completed a self-administered questionnaire regarding patient satisfaction and quality of life. We adapted the instrument from the Agency for Healthcare Research and Quality's Consumer Assessment of Healthcare Providers and Systems Dental Survey.[22]

RESULTS

Satisfaction with dental care was good and generally comparable among respondents who received care from DHATs and those who were treated by another type of provider (e.g., general dentist, oral surgeon). The majority of children's caregivers had positive responses about DHATs' communication skills and chairside manner (Table 1). Responses were generally consistent across sites and age groups. On a scale of 0 (worst) to 10 (best), caregivers' rating for dental care in the previous 12 months for children who visited DHATs was 8.24 (SD = 2.16); for children who were also treated by another dental provider, it was 8.05 (SD = 2.35). Results for the 111 adult participants who completed at least a portion of the questionnaire mirrored those of the children's survey, overall and within subgroups categorized by age, site, or treatment by a DHAT or another provider (Table 2).

Attitudes Toward the New Model

Ensuring the oral health of a community is more complex than providing residents with the opportunity to receive regular dental care. Long-standing oral health care attitudes and practices significantly influence behaviors and outcomes. Our stakeholder interviews with program staff and village

TABLE 1—Survey Responses From Caregivers of Alaska Native Children Aged 6 to 17 Years Who Were Treated by a Dental Health Aide Therapist in Previous 12 Months

Dental Health Aide Therapist Performance	Always, No. (%)	Usually, No. (%)	Sometimes, No. (%)	Never, No. (%)	Total, No. (%)
Explained things, was easy to understand	141 (60)	73 (31)	13 (5)	6 (3)	233 (100)
Listened carefully	149 (64)	68 (29)	13 (6)	3 (1)	233 (100)
Treated child with courtesy and respect	174 (76)	46 (20)	7 (3)	3 (1)	230 (99)
Spent enough time with child	130 (56)	58 (25)	32 (14)	13 (6)	233 (100)

Note. Caregivers for 233 children were interviewed.

residents identified several key factors that likely influenced their communities' oral health access.

Access to urgent care. Alaska's remote villages face daunting transportation challenges that severely curtail residents' access to medical and dental professionals. Some villages may be visited only once or twice a year by outside care providers. Severe weather can completely halt travel by itinerant dentists and other medical personnel who provide scheduled service; likewise, it can impede the transport of residents with health emergencies. Even with good weather conditions, travel for dental care is expensive and time consuming, as in other remote areas of the country.

Stakeholders emphasized how much residents of villages with a DHAT valued their increased access to urgent care. Stories of self-treatment that occurred prior to the arrival of the DHATs, such as sufferers extracting their own teeth and lancing abscesses, highlighted the dire conditions in these villages before DHATs were hired. Stakeholders' examples of the DHATs' availability to provide prompt emergency care in case of accidents and severe pain further illustrated the intangible value of having ready access to urgent care.

Pain relief versus preventive care. The long-standing model of dental care by itinerant dental providers who occasionally visit villages (sometimes only once or twice a year) effectively rations care and prioritizes acute treatment over efforts to prevent disease and improve oral health. Many of our adult participants reported that they grew up in a culture in which daily tooth brushing was not the norm. Some respondents suggested that brushing was less important because the native diet was less damaging to—and, to some extent, more protective of—oral health than a traditional Western diet.

Stakeholders pointed out that the prevailing norm for oral health care for many residents was to seek dental care only when in pain. Changing individual attitudes to value preventive dental care will require time and education for village residents. Respondents shared examples of DHATs' contributions to prevention education activities in the villages. For example, one DHAT took toothbrushes on a cart daily to the school to encourage the children to brush their teeth regularly.

Trust of care providers. A sizable proportion of Americans (> 25%) avoid visiting a dentist because of fear.[23] Most of those we interviewed noted that the rapport between DHATs and patients made the patients less fearful of the procedures. For example, children often did not need to be restrained because they knew and felt comfortable with their DHAT. Respondents attributed the rapport to DHATs living in or frequently visiting the villages, often having origins or relatives where they were practicing. As members of the community, DHATs also were viewed as positive role models for good oral health practices and professional development, particularly for village youths.

TABLE 2—Questionnaire Responses From Alaska Native Adults Who Were Treated by a Dental Health Aide Therapist in Previous 12 Months

Dental Health Aide Therapist Performance	Always, No. (%)	Usually, No. (%)	Sometimes, No. (%)	Never, No. (%)	Total, No. (%)
Explained things, was easy to understand	46 (74)	13 (21)	1 (2)	2 (3)	62 (100)
Listened carefully	45 (74)	11 (18)	3 (5)	2 (3)	61 (98)
Treated patient with courtesy and respect	51 (82)	9 (15)	0 (0)	2 (3)	62 (100)
Spent enough time with patient	36 (58)	15 (24)	8 (13)	3 (5)	62 (100)

Note. Sample size was 111 adults, 62 of whom reported receiving treatment from a dental health aide therapist.

Dietary and Economic Factors

The diet of village residents underwent a significant transformation during the past half century.[24–26] Although some residents continued to practice a subsistence lifestyle, stakeholders indicated that the majority relied on the local store (often with only 1 store serving the entire village) as their primary source of food. Weather and transportation challenges limited the availability of fresh foods. The stakeholders noted that although access to processed foods was generally good, fresh produce was often of poor quality or unavailable, and milk and bottled water were more expensive than sugared soft drinks, thus contributing to extensive consumption of nutrient-empty beverages.

Respondents shared examples of DHATs' efforts to educate residents about the effects of sugary beverages on their teeth and why babies should not be fed juice in their bottles. Anecdotes of children hiding their sodas when the DHAT passed by suggested that DHATs' messages about the negative effects of sodas might be reaching the young people.

Economic opportunities in the villages were limited. Many villages relied on seasonal employment or various forms of government support, which influenced diet and other lifestyle choices. One of the villages in our study lacked a public water supply. The availability of fluoridated community water depended on the availability of competent water treatment personnel who were certified to operate fluoridation water treatment equipment in the village. Following

a 1992 incident in which a resident died and others became ill from acute fluoride poisoning, fluoridation of municipal water systems in rural Alaska declined. Stakeholders noted that this incident—which was reportedly a result of operator error, compounded by inoperative water treatment processes and flow controls—affected receptivity to fluoridated water in some villages.

DISCUSSION

Our comprehensive evaluation, drawing from quantitative and qualitative data, indicated that the use of DHATs is a promising approach to addressing the crisis-of-care challenges posed by a growing shortage of dentists, particularly for sparsely populated areas. The traditional approach primarily advocated by organized dentistry is that only qualified dentists from accredited training programs can safely and competently provide surgical services such as restorations and simple extractions.[15] But this approach has failed to produce an adequate and sustainable number of qualified dentists in private practice who live and provide dependable care in remote areas. The argument for the status quo ignores the reality that few dentists can be enticed to relocate to remote sites in Alaska with few amenities for a job that requires regular travel under hazardous conditions.

The consequences of solely relying on an itinerant dental care model are harsh. This approach has limited access to preventive care, constrained access to restorative treatment, allowed disease and associated pain to worsen, and fostered expectations that dental care should be sought only when a person is in pain. This model has hindered routine restorative and appropriate preventive care and education.

Our results document that well-trained and certified nondentist providers, who live in the villages where they practice full time, augment dental services in Alaska. The patients we surveyed were very satisfied with the care they received from DHATs, and satisfaction with this care did not differ from satisfaction with the care provided by other dental practitioners. The DHAT model minimizes impediments such as travel requirements and weather, and makes access to emergency and regularly scheduled restorative and preventive care a viable option. Interview results also suggested that the residents looked up to and trusted the DHATs. In addition, we found that DHATs were educating village residents, particularly children, about the importance of prevention. The esteem with which the residents regarded the DHATs might help to alleviate fears associated with dental care.

A limitation of our study was that data derived from our measures for quality of care[20] were not available for dentists in private practice to compare with the results for DHATs.[21,27] Applying similar methods to a sample of dentists in private practice in various locales throughout the country would provide much-needed information for evaluating alternative practice models.

Critics will sidetrack efforts to address these comprehensive oral health challenges if we allow the key question driving the debate to be whether the DHAT or the itinerant model is more appropriate. The DHAT model does not and was never intended to replace the services of licensed dentists. The model's design specifies that DHATs operate under supervision of a licensed dentist and, even then, allows only a relatively limited scope of practice. The licensed dentist must continue to play a key role in performing more complex and specialized procedures outside of the DHATs' purview, along with providing supervision of the DHATs' work. Regularly scheduled visits by itinerant dentists will continue to be essential for addressing the spectrum of villages' care needs.

The oral health challenges for Alaska Natives in rural Alaska are, in many respects, similar to those faced by rural populations and other traditionally underserved groups throughout the United States. Individuals in remote areas of the lower 48 states, for example, are forced to travel long distances for care. Access to healthy foods such as high-quality fruit and vegetables is often limited by lack of resources and availability. Other pressing priorities can demand attention over preventive health issues.

The DHATs we evaluated were practicing competently within their scope of practice. Our interviews with stakeholders indicated that DHATs improved access to urgent care for the villages where they lived and worked. Our results further suggest that as a result of increased presence and relationship development, the DHAT model can encourage residents to adopt a more preventive perspective and to seek early treatment model for regular oral health.

It would be naive to assume that implementing a single model could overcome these myriad issues. The DHAT model represents just one piece of the solution for improving oral health care access and quality for rural and traditionally underserved groups. Other strategies, such as decreasing sugar consumption and fluoridating water safely, must also be encouraged. Nonetheless, the DHAT model has promise as a safe and culturally relevant approach to facilitating emergency and preventive dental care practices in remote Alaska. With the increasing shortage of licensed dentists and the myriad barriers to improving oral health faced by Alaska Natives in remote areas, the debate must move from determining which model is best to examining how multiple models can be combined to most effectively and efficiently offer safe, accessible, and economical restorative and preventive care for those in need. ■

About the Authors

Scott Wetterhall is with RTI International in Atlanta, GA. Barri Burrus is with RTI International in Research Triangle Park, NC. Daniel Shugars and James Bader are with the School of Dentistry, University of North Carolina at Chapel Hill.

Correspondence should be sent to Barri Burrus, Hobbs Building, RTI International, 3040 E Cornwallis Rd, PO box 12194, Research Triangle Park, NC 27709-2194 (e-mail: Barri@RTI.org). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints/Eprints" link.

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Contributors

S. Wetterhall was principal investigator, and B. Burrus was coprincipal investigator for the study. Both participated jointly as authors in the development and preparation of the article. D. Shugars and J. Bader served as consultants to RTI throughout the study and participated directly in the development and preparation of the article.

Human Participant Protection

RTI International's institutional review board served as the primary reviewer for all of the study components. The Alaska Area institutional review board also reviewed and approved the study.

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