# A Report on Quality Assessment of Primary Care Provided by Dental Therapists to Alaska Natives

**Submitted by**
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**Introduction**

The unmet dental needs of Alaska's native population are overwhelming. The caries rate among Alaska Native children and young adults exceeds the amount of caries in the general U.S. population by 250 percent. That nearly 70 percent of the 125,000 Alaska Natives live in 200 villages in rural areas, most not accessible by road, compounds the problem. The remoteness and harsh climate combine to impose significant challenges to those seeking routine and emergency care. Moreover, the difficulty and expense of travel and the spartan living and working conditions often awaiting them discourage most dentists from volunteering their services. Five full-time paid dentist positions in the Yukon-Kuskokwim Delta have remained vacant for six years despite a salary/benefits package starting at $177,000.

In an attempt to address these barriers to care the Alaska Native Tribal Health Consortium initiated a dental therapist program whereby non-dentist Alaska Natives might provide primary care services to this rural population. The first group of four dental therapists has now returned to Alaska after completing a two-year training program in New Zealand, and they have been providing care since January 2005. This narrative provides a quality assessment of their clinical productivity to date. To my knowledge it represents the first review of the dental therapist program by an outside evaluator. (See the Evaluator's Credentials section below.)

**Clinical Sites**

During the week of September 18-24, 2005 I conducted a four-day site visit to the Yukon-Kuskokwim Corporation dental clinic in Bethel, and to two remote village dental clinics, in Buckland and Shungnak, that are currently administered by the Maniilaq Corporation dental clinic in Kotzebue. At the Bethel site two dental therapists are nearing completion of their preceptorships and currently providing care under direct supervision. The two dental therapists in the Kotzebue region currently staff clinics at two remote Arctic village clinics and provide primary care under standing orders issued by their preceptors at the Kotzebue regional dental facility. A fifth dental therapist has recently completed his basic training and is beginning a preceptorship at the Kotzebue regional clinic. His clinical proficiency was not evaluated and is therefore not part of this review.

**Assessment Criteria**

The dental therapists were evaluated on five aspects of clinical performance: record keeping; cavity preparation and cavity restoration; patient management; and patient safety.

*Record keeping:* The quality assessment guidelines developed by the Indian Health Service (IHS) were employed during review of a randomly selected sample of charts for each dental therapist.

*Cavity preparation:* The general principles of cavity preparation in primary and

permanent teeth are well established and have not changed significantly in over a century. Regional differences in preparation design do exist, however, depending upon training institution preferences. I evaluated the quality of cavity preparations employing these general principles based upon my experience teaching the laboratory course on cavity preparation for first year dental students at the University of Washington.

*Cavity restoration:* The California Dental Association Quality Evaluation System was used to evaluate all completed amalgam restorations on posterior teeth and tooth colored restorations on anterior teeth. Guidelines call for use of a mouth mirror and explorer and visual inspection. The criteria assess color match, cavo-surface marginal discoloration, anatomic form, marginal adaptation, and evidence of caries around each completed restorations.

*Patient management:* Patient management practices described in standard pediatric textbooks for children and young adults informed the quality assessment standards I set for this evaluation. However, because poor patient management often results in development of patient fears leading directly to avoidance and an added barrier to care, the standard I set for this assessment derived from clinical protocols developed by the clinic/research staff at the University of Washington Dental Fears Research Clinic in Seattle.

*Patient safety:* The dental therapists are not dentists. Because all of them will be providing primary care at remote sites without direct supervision, issues of patient safety were of primary concern. The dental therapists were carefully interviewed. Questions were designed to assess their ability to take and interpret a pre-treatment health history and to have a plan of action should a health alert appear. In addition, the dental therapists were confronted with hypothetical clinical situations in order to determine the boundaries of their scope of practice and their self-imposed limits on performing particular procedures that might otherwise result in untoward clinical events. For example, individuals were asked how they would respond to a dentally infected patient in acute pain presenting with a clinical problem beyond their scope of practice. My observations of patient safety issues were carefully noted. At the remote sites the plan was to ask the dental therapists to demonstrate their proficiency at telephone consultation with their preceptors using transmitted digital x-ray images.

**Results: Yukon-Kuskokwim Corporation Dental Clinic (Bethel) Site**

*General impressions:* Two dental therapists are currently completing their preceptorships at this site. This 14-operatory clinic manages dental health needs for 50 Alaska Native rural communities in the southwest region. It is staffed with seven full time dentists, as well as additional dentists in residency training or under contract to provide services. Each dentist I spoke with was eager to talk about the dental therapists. Without exception they were positive in their comments. One dentist, who had graduated from dental school two years earlier and, upon arrival in Bethel, had expressed reservations about dental therapists providing care involving irreversible dental procedures, indicated their patient management skills with children and young adults exceeded her own abilities. She further admitted their clinical training in pediatric dentistry surpassed her own training in dental school. The dentists practicing at this facility, both long term and short term, expressed no reservation about the two dental therapists being sent to the sub-regional clinics to provide primary care in the absence of

direct supervision by their preceptors.
The dental therapists exhibited a professional demeanor at all times. They were adept in communicating with patients who were children as well as their parents and articulate in explaining the patients' problems. Given their interactions with preceptors and the other dentists, both dental therapists appeared confident and demonstrated dental knowledge beyond the scope of their practice. Each seemed eager to provide care within the limits of their training. They appeared comfortable in the operatory and interacted well with both the dental assistants assigned to them and the auxiliary staff throughout the clinic. Not only did they exhibit respectful behavior toward their patients and the accompanying adults, but the respect appeared to be consistently reciprocal.
*Clinical evaluation:* During my two-day visit at the Bethel site I randomly sampled patient records for both dental therapists. I observed dental care spanning the range of their defined scope of practice. This included initial examination and health history review, x-ray interpretation, prophylaxis, sealants, amalgam fillings, temporary restorations, simple extractions, and infection control practices. (I did not observe the stainless steel crown procedure.)
Record review: All treatment record entries at this site are entered digitally employing a software program that prompts by subject. X-rays are taken with digital sensors and placed in the electronic treatment record. The dental therapists demonstrated proficiency and ease using the electronic chart entry protocols. Their treatment narratives were detailed, ranging from the volumes of local anesthesia employed to patient management issues. Their record keeping met the current IHS guidelines.
It is unlikely electronic record keeping will be available at all remote village clinics. However, I am confident this early experience will generalize to proficiency with the more traditional handwritten entry method once reassigned to their next duty stations.
Cavity preparation and restoration: Each cavity preparation and restoration placed met the standard of care established for these procedures.
Patient management: Patient management skills of both dental therapists not only met the standard of care; they were exemplary. Each therapist continuously attended to the patient's physical comfort and psychological needs, including, but not limited to, providing adequate pain control, providing information on what to expect during the next phase of the procedure, and taking frequent rest breaks. Parents were permitted in the operatory at all times and invited to participate when appropriate. All questions posed by parents were answered fully and immediately. Extractions frequently generate significant stress related behavior by both children and adults. Following careful instruction to their patients on what to expect during the procedure and after providing adequate pain control the dental therapists efficiently performed several simple extractions of primary teeth that resulted in no untoward patient management incidents.
Patient safety: During the interview process both dental therapists clearly communicated the boundaries of their scope of practice and the phase of treatment at which they would seek consultation with their preceptors or refer their patient to a dentist. I came away assured any error in judgment will be on the side of referral rather than taking on a clinical problem beyond their training and ability. The following case illustrates the point.

- A 16-year old male presented with acute pain on both permanent maxillary canines. Examination revealed extensive cervical caries on all maxillary anterior

teeth. The dental therapist believed this case to be beyond his scope of practice and sought consultation with his preceptor regarding referral. When advised that such decay is often broad but shallow, thus looking worse than the actual condition, he agreed to initiate palliative treatment to relieve the patient of his pain. Treatment employing an intermediate restorative material was completed without incident, and the young man was reappointed with the dental therapist for follow-up care.

This confidence building procedure demonstrated a "when in doubt, refer" approach to patient safety. Both dental therapists subsequently demonstrated proficiency on taking and interpreting a health history. Through detailed descriptions they also demonstrated full understanding of the protocol to be followed for prescribing and dispensing antibiotics and analgesics when providing care at remote sites.

**Results: Maniilaq Corporation Dental Clinic (Kotzebue) Remote Sites**

*General impressions:* Two dental therapists are currently staffing remote village dental clinics and providing primary care under standing orders issued by their preceptors at the regional dental facility in Kotzebue. An inflexible travel schedule precluded a visit to the Kotzebue clinic for discussions with the dentists there. However, one clinical day was spent with the dental therapist assigned to the Buckland village dental clinic, and a second full day at the Shungnak village dental clinic. The dental clinics share space in the health clinics staffed by Alaska Native medical health aides. The latter control access to the medications to be prescribed by the dental preceptors following consultation with the dental therapists, such as antibiotics and analgesics (including Class II narcotics.) Protocols for dispensing prescription drugs to dental patients were confirmed by the health aides stationed there. Each dental therapist was in charge of his/her clinic and provided primary care without direct supervision by their preceptors in Kotzebue more than 100 miles away. An Alaska Native dental assistant was assigned to each therapist. The dental clinics were well maintained and proper infection control protocols followed at all times. Both dental therapists appeared at ease providing care without direct supervision.

*Clinical evaluation:* During my two-day visit to the remote village clinics I observed a partial range of allowable services. They included examination, health history taking and interpretation, prophylaxis, sealants, cavity preparation and amalgam placement, and simple extractions. Time constraints imposed by inflexible flight schedules allowed fewer procedures to be observed than at the Bethel site.

Record review: All record entries at the remote village clinics are currently entered by hand, but on printed treatment forms that prompt by subject. At both sites treatment records were pulled randomly and evaluated for readability and completeness. While the entries tended to be more brief than the computer assisted entries observed at the Bethel site, and both providers used words in abbreviation, I had no difficulty reading and understanding the records. On two occasions I noticed absence of x-rays that had apparently been taken at the Kotzebue regional clinic. Otherwise the record entries met the IHS standard of care guidelines for patient records. At the Buckland clinic patient records were stored in metal trunks in the hallway. Although the records themselves were in perfect order, the dental assistant had to retrieve the charts while on hands and knees, and the trunks partially blocked the hallway.

Cavity preparation and restoration: Dental procedures similar to those observed at the Bethel site were also observed at the village clinics, but fewer in number due to scheduling, a slower pace (Buckland), and frequent consultation with the preceptors in Kotzebue. (See below.) All cavity preparations and restorations observed met the standard of care. I was impressed with the conservative preparation designs employed for those patients with adequate oral hygiene.

Patient management: Patient management protocols were similar to those observed at the Bethel site. Like their Bethel colleagues, the management skills of these dental therapists exceeded the standard of care assuring me that dental fear will not become a significant problem for either of the two providers. Several of the young patients at the Shungnak clinic, in fact, appeared eager to receive dental care.

Patient safety: During visits to both villages clinical problems arose resulting in multiple telephone consultations with the preceptors in Kotzebue. Thus, I did not have to rely on simulations to assess the therapists' proficiency in this area. Because safety issues in the remote villages are of primary concern, two examples from the four telephonic consultations I observed are illustrated in detail.

- A patient's mother reported her child was previously diagnosed with a heart murmur. Upon questioning she revealed the child had previously been admitted to the Maniilaq Corporation hospital, thus establishing the existence of a medical record. The dental therapist thereby called the Kotzebue clinic and requested the medical record be pulled and delivered to his preceptor with instructions for a call back while the mother and patient were still present. In the meantime, the mother was carefully informed of the potential need for prophylactic antibiotic coverage and that dental treatment would have to be postponed until the issue was resolved. The preceptor returned the call within ten minutes. The medical record revealed no need for prophylactic coverage. The dental therapist thus entered an appropriate accounting of the consultation into the treatment record, and dental treatment proceeded (sealants and prophylaxis) without incident.
- A pre-adolescent female presented with pain in the vicinity of a mobile primary mandibular second molar previously treated with pulpotomy and stainless steel crown. A minor swelling was evident around the neck of the tooth. An x-ray revealed presence of a full mesial but no distal root. The permanent bicuspid was in evidence. Uncertain as to the best way to proceed, the dental therapist transmitted a digital copy of the x-ray by e-mail, then called the Kotzebue dental clinic for consultation. Her dentist preceptor came to the phone within moments. With both clinicians viewing the same x-ray the decision was made to extract the tooth without the need for follow-up antibiotic coverage. The dental therapist, deciding the simple extraction procedure fell within her scope of practice, removed the tooth without incident and without fracturing the spindly mesial root.

Two additional telephonic conferences took place during the site visits where the dental therapists were able to demonstrate both their proficiency in this area and their attention to concerns of patient safety. One of the consultations resulted in a referral to the regional dental clinic.

**Recommendations**

The clinical and program recommendations itemized below arose from my direct clinical observation and from discussions with the dental therapists, with the dentist preceptors, and with the program director at the Bethel regional facility. The recommendations are listed in no order of priority.

*Continuing dental education:* During my interviews with the dental therapists I was unclear whether there was universal appreciation for safety, efficacy, and clinical indications for long acting local anesthetics, such as bupivacaine (Marcaine). Given the remote locations of many of the villages to which dental therapists will be stationed, patients referred with toothaches must often travel time-consuming distances to receive care in the regional dental clinics in Bethel and Kotzebue. In some cases administration of long acting local anesthetics to obtund acute pain during such delays may be appropriate. I recommend the preceptors prepare a continuing education module devoted to a review of local anesthesia and the clinical situations when long acting local anesthetics are indicated.

Pediatric bite blocks for use during forceps extraction of mandibular molars were not evident at either of the village clinics. Although unnecessary for any of the extractions I observed, the preceptors might consider reviewing with the dental therapists the clinical indications for their use. The preceptors should establish that pediatric bite blocks are currently available in the sub-regional and village clinics.

*Stocking the clinics:* It appears the Buckland dental clinic is not currently stocked with stainless steel crowns for placement on primary molars. I understand from his three peers that the dental therapist now working there owns the best skills to provide this pediatric clinical service. Their availability will enable him to more fully utilize his training and avoid unnecessary referrals to the Kotzebue clinic. I recommend all sub-regional and remote village dental clinics be surveyed to assure each is stocked with all supplies necessary to enable the dental therapists to fully implement their scope of practice.

*Patient records:* Patient dental records at the Buckland clinic should be transferred from trunks into secure vertical storage cabinets located away from hallways.

Since more dental therapists will be moving into the sub-regional and remote village clinics there will be an increase in the frequency of patients receiving care both there and, upon referral, at a regional dental facility. Existing patient record protocols should be reviewed by the regional dental directors to determine the advisability and feasibility of forwarding copies of treatment documentation to the referring village clinic in order to provide a complete treatment record.

*Anti-cariogenic Xylitol chewing gum:* The Yukon-Kuskokwim Corporation regional dental clinic was the recent beneficiary of a significant supply of Xylitol chewing gum resulting from a prematurely terminated clinical study conducted nearby. Xylitol is an anti-cariogenic agent with proven efficacy in long term reduction of caries risk. Some of this stock should be transferred to the Shungnak clinic for use in a caries prevention program currently being set up in the village school. The dental therapist there has requested dental literature on Xylitol and related materials to increase her knowledge of this important adjunct and assist her in incorporating it into the prevention program.

*Dental therapist demonstration project:* The Shungnak village provides a potentially ideal setting for a demonstration project to assess the long-term efficacy of the dental therapist program now getting under way in the remote sites. Combining a school based

caries prevention program with comprehensive dental treatment, this site may provide a model for future dental therapists to emulate in the sub-regional and remote village clinics where they will be assigned. The dental therapist at Shungnak is a permanent resident of the village, and her seven-year old son attends the school there. She began a daily tooth brushing program for the K-12 student body (N=79) at the beginning of the 2005-6 school year. The school's principal indicated to me her full support for this volunteer program. The dental therapist is currently providing dental examinations of the entire student body, scheduling each student for treatment of the dental problems within her scope of practice, and referring children with emergent needs to the Kotzebue regional clinic. She is wait listing patients with more complex dental problems to be treated by the next dentist scheduled to visit the clinic. At the earliest possible time the dental directors at the Yukon-Kuskokwim and Maniilaq Corporation dental clinics should consult with the Alaska Native Health Board through its dental consultant to obtain necessary authorization and generate resources for design and implementation of such a study.

*Reassigning the Bethel dental therapists to the sub-regional clinics:* My interactions with the two dental therapists at the Yukon-Kuskokwim Corporation dental clinic convince me the young providers are clinically prepared and psychologically ready for reassignment to the remote sub-regional health clinics in the Yukon-Kuskokwim delta. They should be transferred as early as possible. The medical health aides currently staffing the four sub-regional clinics do not have the necessary training to make appropriate dental diagnoses or referrals of patients with dental emergencies. On two occasions during my site visit patients arrived from remote villages who did not require the emergency care for which they were referred. Such unnecessary referrals place a strain on state and federal resources dedicated to defraying transportation and potential overnight housing costs for young patients and their adult chaperones.

**Conclusion**

During my four-day site visit to the dental clinics at Bethel, Buckland, and Shungnak I evaluated the clinical performance of the four dental therapists who have been providing primary care for Alaska Natives since the beginning of 2005. In every respect their performance met the standard of care I had established. Their basic training and subsequent preceptorships have produced competent providers. Each is equipped not only to provide essential preventive services but simple treatments involving irreversible dental procedures such as fillings and extractions. Their patient management skills surpass the standard of care. They know the limits of their scope of practice and at no time demonstrated any willingness to exceed them. On multiple occasions they demonstrated their ability to recognize and avoid clinical situations that might pose a threat to patient safety. My first hand observations convince me that statements by dentists and dental societies suggesting that dental therapists cannot be trained to provide competent and safe primary care for Alaska Natives are overstated.

The dental therapist program will likely never make a significant dent in solving the unmet dental needs of Alaska Natives. However, in talking with the program directors who designed the dental therapist program, established the certification guidelines, and currently oversee their implementation it was never the intended goal that this innovative program attempt to do so. What they seem to think, as I have also come to believe, is that

dental therapists now and in the future will make a significant difference in the quality of life to those individuals they do treat. For this reason and because dental therapists have demonstrated their proficiency in providing competent and safe dental care to Alaska Natives, I believe the program deserves not only to continue but to expand.

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**Evaluator's Credentials**

An abridged curriculum vitae outlining my credentials may be found attached to this report. In summary, I have been associated with the University of Washington School of Dentistry as a teacher, clinician, and researcher since 1979. I have taught restorative dentistry to dental students. I have applied the California Dental Association Quality Evaluation System criteria in evaluating the quality of restorations in large populations. My clinical and research activities focusing on patients with dental fears and phobias were devoted to designing and implementing patient management practices to help overcome dental fears and to prevent their occurrence in the first place. Because my present research activities relate to medical and dental care in historical settings and do not involve current dental practice I came to this project with no pre-judgments about the dental therapist program or the present controversy surrounding it. My identity as a potential consultant was passed on to the program director by a non-involved third party.

# *Curriculum Vitae*
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**Education:**

University of Washington 1962-1966 BA (Chemistry)
University of Washington 1966-1970 DDS
University of Washington 1983-1985 Fellow, Dept. of Community Dentistry
University of Washington 1985-1986 Senior Fellow, Dept. of Community Dentistry

**Faculty Appointments:**

| *Institution/Department* | *Rank* | *Years* |
|---|---|---|
| University of Washington<br>Dental Hygiene | Clinical Associate | 1976 |
| University of Washington<br>Restorative | Clinical Associate | 1975-1979 |
| University of Washington<br>Community Dentistry | Clinical Associate | 1980-1986 |
| University of Washington<br>Dental Public Health Sciences | Research Assistant Professor | 1986-1992 |
| University of Washington<br>Dental Public Health Sciences | Research Associate Professor | 1992-1996 |
| University of Washington<br>Dental Public Health Sciences | Affiliate Associate Professor | 1996-present |

**Intramural Private Practice:**

| | | |
|---|---|---|
| University of Washington<br>Dental Fears Research Clinic | Associate | 1986-1994 |
| University of Washington<br>Dental Fears Research Clinic | Acting Director | 1988-1989,<br>1990, 1992 |

**Publications (40 total):**


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**Completed Sponsored Projects (17 total):**

"Adoption of the Medical Model in Dental Practice," Washington Dental Service, 1 year, $20,000. Role: Principal Investigator, 1995-1996. The aim of this mail survey of Washington state dentists is to study the diffusion of information and new technology into dental practice.
"Pain Management In Alcoholics," ADAMHA (NIAAA), 3 years, $99,917. Role: Principal Investigator, 1992-1994. The aim of this work is to document higher pain sensitivity among alcoholics compared to controls in a controlled laboratory setting at baseline and in the presence of peripherally acting local anesthesia and centrally acting nitrous oxide.
"Epidemiology of Dental Fear." NIDR, 2.5 years, $611,166. Role: Investigator, 1991-1993. The primary aims are: (1) to study a population of 5-10 year old financially disadvantaged public school children in order to assess the etiology and prevalence of dental fear; and (2) to determine the effect of parental fear, attitudes and behaviors on utilization of dental services.
"Fluoridation Effects on Dental Demand." NIDR, 4 years, $213,000. Role: Investigator, 1989-1993. The aims of the study are: (1) to determine the effect of fluoridation on the oral health status of insured adults aged 20-34; (2) to determine the effect of fluoridation on dental demand among insured adults aged 20-34; and (3) to determine the effect of patient and provider factors on the necessity of restorative and periodontal treatment. Primary responsibilities include managing collection of oral exam data and the interpretation of final results.
"Clinical Evaluation of the Relative Efficacy and Safety of Intravenous Premedication in Dentistry," NIDR, N01-DE-72569, 2.5 years, $134,450. Role: Project Director, 1987-1990. The aim of this multi-site study is to assess the safety and efficacy of five intravenous anxiolytic clinical drug strategies among healthy adults undergoing third molar extractions. Responsibilities include subject recruitment and screening, and all data collection tasks.