

Final Report to IHS Leadership
IHS Dental Workforce Efficiency Initiative
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Purpose

This initiative was designed to elevate the issue of improving dental workforce efficiency within the Indian Health Service (IHS), especially at IHS, Tribal, and Urban (ITU) dental programs throughout the country. With significant oral disease disparities in the American Indian and Alaska Native (AIAN) population, along with increasing dental professional vacancies in ITU programs throughout the country, the emergence of alternative dental workforce models offers promise and hope in reducing the disease burden of this historically underserved population. The IHS Dental Workforce Initiative aimed to educate ITU providers, tribal communities, and outside organizations about alternative workforce models and promote such models to help address oral disease disparities in the AIAN population.

Background

Traditionally, oral health services have been provided by a licensed dentist, a licensed/registered dental hygienist, and a dental assistant. Under this model, the dentist, a graduate of a 3-5 year dental school, leads the dental team, diagnoses oral diseases, develops treatment plans, and carries out treatment with chairside assisting by a dental assistant. The dental hygienist, operating under the supervision of a dentist, provides oral hygiene instruction, preventive and periodontal care to the patient.

In 1999, the IHS Oral Health Status Survey of AIAN dental patients found a large disparity between oral disease prevalence of AIANs compared to the U.S. population. One region of the IHS, the Alaska Area, recognizing both the disease prevalence and the difficulty in recruiting and retaining dentists, sought to reduce the disparity through the development of a Dental Health Aide Initiative similar to the Community Health Aide model used in IHS medical programs. Consequently, the Alaska Dental Health Aide Therapist (DHAT) Program was created by the Alaska Native Tribal Health Consortium in 2004 and it was initially comprised of four different models: a primary dental health aide (two levels), an expanded function dental health aide (also two levels), a dental health aide hygienist (one level, but no longer in use), and the dental health aide therapist (a.k.a. the "DHAT"). Contrary to popular opinion, however, this was not the IHS' first involvement with exploring an alternative dental workforce model designed to improve the delivery of oral health care. In 1961, the IHS spearheaded training and use of expanded function dental assistants, allowing these specially trained dental assistants to restore teeth under the direct supervision of a dentist.

Many signs point to the need to look at ways to improve the delivery of oral health care to the AIAN population. Native Americans suffer from the poorest oral health of any population in the United States, with staggering rates of untreated tooth decay among children and untreated decay and gum disease among adults (Pew Charitable Trust, 2015). The per capita expenditure on dental care in 2009 in the IHS was one third that of the U.S. population, \$99 vs. \$272 (Pew,

2015). An estimated 2.4 million Native Americans lived in counties designated as dental care shortage areas, and half of ALL Native American children live in such areas (Pew, 2015). At the same time, dentist vacancies in the Indian Health Service continue to climb, reaching 15% in Fiscal Year 2015. Clearly, improving efficiency and delivery of oral health care in ITU dental programs using alternative workforce models deserves a closer look.

Long-Range Goals

1. Decrease the burden of oral diseases in the AIAN population through improving the delivery of oral health care in ITU programs using both traditional and alternative dental workforce models.
2. Improve access to dental services in the AIAN population by 10% over the next five years using a combination of both traditional and alternative dental workforce models in ITU programs.
3. Increase IHS Division of Oral Health dental clinical efficiency and effectiveness indicators such as services/visits/relative value units (RVUs) per facility and per staff, the proportion of patients receiving treatment plans, RVUs per patient and per visit, and the proportion of patients completing planned treatment over the next five years.

Strategies

To reach these goals, the IHS Division of Oral Health, working in collaboration with state, tribal, and other federal programs, will strive to meet the aforementioned goals using the following strategies:

- Educate ITU dental and medical providers about alternative dental workforce models which may, depending on the unique circumstances of each program, improve the delivery of oral health care.
- Establish a formal competency assessment process and continuing dental education program to support the delivery of care using a non-traditional model, including the revitalization of the restorative and periodontal expanded function dental assistant (EFDA) programs.
- Work with the Office of Personnel Management and Human Resources to develop a standardized scope of practice for alternative dental workforce positions in an effort to recruit, retain, and standardize such positions.
- Measure the efficiency and effectiveness of ITU programs at least annually and develop recommendations on improving the delivery of oral health care.
- Increase access to dental services, especially in underserved areas, through a coordinated effort by the IHS Division of Oral Health, IHS Areas, ITU dental programs, and community

volunteers through education, raising awareness of dental service availability, and a focus on dental prevention efforts in the community setting.

Planning Committee/Duration of Initiative

The IHS Dental Workforce Efficiency Initiative began in December 2015 and mostly concluded on September 30, 2016. However, since one of the goals of the initiative was to complete an evaluation of different workforce models, the initiative wasn't officially closed out until the completion of the Johns Hopkins University Alternative Dental Workforce Model Report in April 2017.

The planning committee consisted of: (1) Dr. Tim Ricks, Initiative Chair, Nashville/Albuquerque Area Dental Officer (and later IHS DOH Deputy Director); (2) Dr. Tim Lozon, Director of the IHS DOH; (3) Dr. Mary Williard, Alaska Area Co-Area Dental Officer and head of the Dental Health Aide Therapist (DHAT) Program; (4) Dr. Carol Bassim, then-IHS DOH Oral HPDP Coordinator; (5) Lisa Cone, RDH, a dental hygienist with the Southeast Alaska Regional Health Corporation (SEARHC); (6) Dr. Sarah Shoffstall-Cone from the Alaska Native Tribal Health Consortium (ANTHC); and (7) Dr. Lynn Van Pelt, also from ANTHC. The committee met monthly for over a year to carry out the aforementioned strategies.

Outcomes

1. Creation and Dissemination of IHS Clinical Efficiency and Effectiveness Indicators

The IHS first developed a list of 12-14 indicators to measure dental efficiency and effectiveness in 1990 or 1991. These measures included a count of patient visits, broken appointment rate, service minutes (an outdated measure of dental clinical productivity), and others. In 2003, these indicators were slightly changed with information from just a handful of dental programs. As part of this initiative, a detailed analysis was conducted on over 50 IHS, tribal, and urban dental programs from multiple IHS Areas. As a result of this six-month analysis, new indicators were developed and released nationally in September 2016. These new indicators were incorporated within Chapter 8 of the IHS Oral Health Program Guide. [See attachment 1]

What sets this accomplishment apart is that this is the first set of major changes to performance metrics in IHS dental since the early 1990s. Resource indicators, which were based on a combination of IHS Resource Requirements Methodology, the previous IHS dental indicators, and the public health-oriented Dental Safety Net Manual, included population to dentist ratio, population to dental staff ratio, dental assistant to dentist ratio, and dental operatory to dentist ratio). Three types of measures were developed to measure both productivity and efficiency based upon services, relative value units (a measure of productivity defined specifically by CMS and a Professional Specialty Group that assigns weights to specific dental procedure codes), and

patient visits. For the first time, these indicators included dentist-specific and hygienist-specific averages since many of the dental software programs employed by IHS and tribal dental programs are able to distinguish between the different providers, and because often productivity and efficiency data is used in annual performance evaluations. For those programs unable to make clear distinctions between dentist and hygienist productivity (where the hygienist data was incorporated within the dentist data), facility averages were also included. A fifth and final set of indicators was related to quality of dental care, specifically the broken appointment rate, the proportion of patients treatment planned (receiving comprehensive dental examinations), the proportion of patients completing planned treatment, and the percentage of basic (Dental Priority Levels I, II, and III) services provided by the dental program.

Dissemination of the new measures was done through four primary means: (1) inclusion of the form in the IHS Oral Health Program Guide, which is available to IHS dentists, dental hygienists, and assistants on the IHS Dental Portal and continues to be the primary clinical guidance specifically for IHS-funded dental programs; (2) promotion of the new data indicators through multiple postings on the various IHS dental listservs; (3) creation of a course called “Understanding Clinical Efficiency & Effectiveness” which became an online continuing dental education course in the FY 2017 CDE catalog; and (4) through direct training of IHS and tribal dental chiefs/directors and Area Dental Officers through the quarterly dental chiefs conference call, through the “IHS Concepts in Dental Clinic Management” continuing education course, and through the monthly IHS Area Dental Officer/Dental Chiefs Leadership webinar series.

2. Creation of a Standardized Expanded Function Dental Assistant Position Description

One issue that was brought to this initiative planning committee was the differences in grade and position descriptions with the many different types of expanded function dental assistants (EFDAs) employed in IHS and tribal programs. Beginning in December 2015 and ending in July 2016, we collected 37 different position descriptions from IHS and tribal dental programs.

Working through the IHS Human Resources Office, the team was able to create two standardized EFDA position descriptions. By standardizing competencies and the position description, the committee felt that it would be easier for staff to move from location to location and it would also ensure that patients received the same high quality care regardless of the EFDA. The resulting forms (Attachments 2 & 3) combine periodontal, restorative, orthodontic, surgical, pediatric, and prosthodontic EFDAs under one position description at both the General Services 5 grade and 6 grade. IHS HR disseminated the final guidance to Area HR offices in August 2016, and the IHS Division of Oral Health disseminated the new position descriptions to Area Dental Officers and dental chiefs/directors in September 2016.

3. Development and Dissemination of the Alternative Dental Workforce Model Fact Sheet

In 2015, as the Community Health Aide Program (CHAP) expansion discussion was getting started, the team developed the Alternative Dental Workforce Model Fact Sheet (Attachment 4). This three-page document was aimed at educating IHS and tribal dental staff, and the general public, and described the long history of alternative dental workforce models in the IHS, the rationale for considering different alternative dental workforce models using disparities in dental disease in the AI/AN population, and the numerous models employed within and outside of the government system, with reference links for each type of model – community dental health coordinators, dental therapists, primary dental health aides, expanded function dental assistants, and dental hygiene therapists.

The document, upon approval of IHS leadership at the time, was disseminated in late 2015 on the IHS Dental Portal (in front of the firewall, available to the general public), to Area Dental Officers, to the Dental Clinical and Preventive Support Centers, and to all IHS and tribal dental staff subscribed to one of the three primary IHS dental listservs (IHS Dental, IHS Dental Chiefs, IHS Dental Hygienists).

4. Evaluation of Alternative Dental Workforce Models

In October 2016, the IHS Division of Oral Health began a contract with Johns Hopkins University's Bloomberg School of Public Health to evaluate different alternative dental workforce models. A copy of their very detailed report is found in Attachment 5. The purpose of this collaboration between the Indian Health Service (IHS) and Johns Hopkins University (JHU) was to evaluate the effect of alternative dental workforce models utilized currently or in the future in IHS, Tribal, and IHS-funded Urban (ITU) dental programs. With significant oral disease disparities in the American Indian and Alaska Native (AIAN) population, along with increasing dental professional vacancies in ITU programs throughout the country, the emergence of alternative dental workforce models offers promise and hope in reducing the disease burden of this historically underserved population. Outcomes of this analysis will help educate ITU providers, tribal communities, and outside organizations about alternative workforce models and promote such models to help address oral disease disparities in the AIAN population.

The analysis concluded in April 2017. 10 programs employing a combination of different alternative models and 10 programs employing only a traditional dental workforce model were compared through 10 separate indicators available through the National Dental Data Mart for FY 2016:

- a. Government Performance and Results Act (GPRA) Indicator: Access to Dental Care.* Access to dental care is a key measure of the Government Performance and Results Act, a set of measures established in 1992 by Congress for federal agencies to demonstrate accountability. Access to dental care is measured by the number of patients presenting

to an ITU program (measured by special IHS tracking codes) divided by the 3-year user population (the number of American Indians/Alaska Natives within a defined area around the facility that have utilized any aspect of the health program within the past three years).

- b. *GPRA Indicator: Proportion of 2-15 Year-Olds Receiving Sealants.* Because of the disparities and burden of oral diseases in AI/AN children, the IHS measures dental sealants, a clear or white filling material placed on deep grooves of back teeth, for its annual GPRA reporting. This indicator is measured by the proportion of AI/AN children aged 2-15 years receiving a dental sealant or with existing dental sealants and no further sealants indicated divided by the 3-year 2-15 year-old user population.
- c. *GPRA Indicator: Proportion of 1-15 Year-Olds Receiving Topical Fluoride.* Because of the disparities and burden of oral diseases in AI/AN children, the IHS measures the number of children receiving topical fluoride, a known preventive regimen, for its annual GPRA reporting. This indicator is measured by the proportion of AI/AN children aged 1-15 years receiving at least one application of fluoride divided by the 3-year 2-15 year-old user population.
- d. *Total Patient Visits.* The IHS has a specific tracking code for the software systems used in ITU programs to be able to count the total number of patient visits to dental programs. This is an important measure of both productivity and efficiency of the local program. Stratifying total patient visits by age group will identify the segment of the population receiving the greatest benefit from the alternative dental work force model that is being used at the ITU program.
- e. *Total Relative Value Units (RVUs).* Relative Value Units were created as a result of the Omnibus Budget Reconciliation Act of 1989 by the Centers for Medicaid and Medicare Services to be used in the reimbursement process for physician services. In the early 2000's, dentistry began using RVUs as a measure of productivity and reimbursement, and RVUs are set for specific dental procedures based upon the time the procedure takes, the skill level or complexity of the procedure, the risk of the procedure, and the resources needed to complete the procedure. Most ITU programs utilize clinic software that allow them to track total RVUs, a measure of clinical productivity.
- f. *RVUs by Level of Care.* The IHS divides dental services up by levels of care. Level I services are those which are considered emergency oral health services. Level II are those considered to be preventive oral health services. Level III are those considered to be basic oral health services, and most simple restorations and other procedures fit into this category. Combined, Levels I-III care represent 80-90% of all dental services provided in ITU dental programs. There are two advanced levels of care, level IV (basic rehabilitation oral health services) and level V (advanced rehabilitation oral health services) that consist of more complex procedures such as dental implants, complex restorations, complex root

canals, etc. The IHS considers Levels I-III as basic levels of care and the hallmark of a public health dental program.

- g. Total Dental Services.* The IHS uses numerous “count” or tracking codes in the two major clinical software systems used by ITU programs, the Resource and Patient Management System (RPMS) and the Electronic Dental Record (EDR). However, through these two software systems the IHS can count the total number of non-tracking codes which represent the total dental services provided by a facility.
- h. Total Services by Level of Care.* Through the Dental Data Mart, the IHS also can track total services by levels of care as defined under indicator #6. This indicator, along with RVUs by level of care, will be very important in looking at the impact of alternative dental workforce models on ITU dental programs. The IHS would expect that programs utilizing restorative EFDAs might have higher services and RVUs in Level III which includes basic restorations, that programs utilizing periodontal EFDAs might have higher services and RVUs in Level II which includes most preventive services, and that programs utilizing dental therapists might have higher services and RVUs in Levels I, II, and III especially. It is important to identify services and RVUs by type of provider so that these can be aligned to the type of alternative dental workforce model in operation at the ITU program.
- i. Total Services per Patient Visit.* An indicator that the IHS measures through the National Dental Data Mart is total services per dental patient visit, and this is a measure of clinical efficiency. One might expect that programs utilizing EFDAs might have a higher services per visit average than programs not utilizing those models.
- j. Total Services per Patient.* Another indicator that the IHS uses is total services per patient, also available through our Dental Data Mart. Again, one might expect that programs utilizing any alternative workforce model would see a higher average of total services per patient as access to dental services should be higher than in a traditional model.

It is important to note that this evaluation by Johns Hopkins is just the first step in measuring the effectiveness of alternative dental workforce models. Efforts are already underway to correct some of the flaws of this initial study and increase the number of programs evaluated in the future.

Future Implications

The goal of this initiative was to educate I/T/U programs about different alternative dental workforce models, standardize expanded function dental assistant duties, and set the stage for a possible future Community Health Aide Program (CHAP) expansion. While the initiative has concluded for now, it can be restarted depending on the needs of the IHS and the external environment regarding workforce efficiency models.

Appendix V: Efficiency and Effectiveness Data Indicators Worksheet

	Indicator	Calculation	Indicator
Resources	Population to Dentist Ratio	User population/# of FTE dentists ¹	1200:1
	Population to Staff Ratio	User population/# of FTE staff	500:1
	Assistant to Dentist Ratio	# of FTE DAs/# of FTE dentists	2:1
	Operatory to Dentist Ratio	# of non-RDH chairs/# of FTE dentists	2:1
Services	Services per Dentist per Year	# of services/# of FTE dentists	4,505
	Services per Hygienist per Year ²	# of services/# of FTE hygienists	1,992
	Services per Facility per Year ³	# of services of all providers/# of FTE dentists only	6,497
Relative Value Units	RVUs per Dentist per Year	# of RVUs by dentist/# of FTE dentists	7,092
	RVUs per Hygienist per Year ²	# of RVUs by hygienist/# of FTE hygienists	2,788
	RVUs per Facility per Year ³	# of RVUs by all providers/# of FTE dentists	9,880
	RVUs per Staff per Year	# of RVUs (clinic)/# of FTE dental staff	2,770
	RVUs per Visit per Year	# of RVUs (clinic)/# of 0000+0190 codes	5.0
	RVUs per Patient per Year	# of RVUs (clinic)/# of 0000 codes	11.2
	RVUs per Operatory per Year	# of RVUs (clinic)/# of operatories	3,293
Patient Visits	Visits per Dentist per Year	# of 0000+0190/# of FTE dentists	1,879
	Visits per Dentist per Day	# of 0000+0190/# of FTE dentist/218 days	8.62
	Visits per Hygienist per Year ²	# of 0000+0190 (hygienists)/# of FTE hygienists	1,357
	Visits per Hygienist per Day ²	# of 0000+0190 (hygienists)/# of FTE hygienists/218	6.40
	Visits per Facility per Year ³	# of 0000+0190 (all providers)/# of FTE dentists	3,236
Quality	Visits per Operatory per Year	# of 0000+0190 (clinic)/# of operatories	721
	Broken Appointment Rate ⁴	9986/(0000+0190+9986-9170)	≤21%
	% of Patient Treatment Planned ⁵	(0150+0145)/0000 x 100	≥53%
	% of Patients Completing Treatment ⁶	9990/(0150+0145) x 100	≥46%
	% of Level I-III (Basic) Services	# of Level I, II, III Services/# of Levels I-V Services	≥80%

The IHS Division of Oral Health (DOH) recommends that Area Dental Officers, Dental Support Centers, or Dental Chiefs/Dental Directors assess these indicators once every one to two years. Please refer to the online training “Understanding Clinical Efficiency & Effectiveness Indicators” for more detail about these references. The above indicators on services, RVUs, visits, and quality are based upon an average of 50 selected IHS, Tribal, and urban dental programs, while the resource indicators are long-standing DOH recommendations. Collectively, these indicators serve only as a recommendations for assessing clinical productivity, efficiency, effectiveness, and quality of care provided.

Notes:

1. FTE is Full Time Equivalent. To calculate the FTE of a position, divide the total hours worked per week by 40 hours. For instance, to determine the FTE of a dentist working 2 8-hour days per week, one would divide 16 hours by 40, which would equal 0.4 FTE.
2. Includes community-based services and visits, and RVUs generated from those services.
3. If dentist and dental hygienist data cannot be obtained, use facility standards.
4. For previous years, 9130 should be substituted for 9986.
5. The proportion or percentage of patients treatment planned is contingent upon the program using 0150 or 0145 (age 3 and under) codes each year. If the clinic only uses these codes every three years, this indicator would need to be calculated in three-year increments.
6. The proportion or percentage of patients completing treatment is dependent upon the program using the 9990 code. If the clinic does not consistently use this code when a patient completes Level I-III services (note that all services do not need to be completed, only Levels I-III), this indicator would not produce reliable results.
7. These clinical productivity and efficiency indicators should be analyzed in total to gain a thorough understanding of a dental program. Individual indicators may fluctuate significantly and, if analyzed individually only, they may or may not indicate productivity or efficiency issues in the program.

DENTAL ASSISTANT (EXPANDED FUNCTION) – GS-0681 – 05

Position Description

PURPOSE OF POSITION AND ORGANIZATIONAL LOCATION:

This position is located at the _____ Service Unit in the _____ Area of the Indian Health Service. The purpose of this position is to perform routine and advanced chairside dental assistant services to enable the dental team to function efficiently and to improve the delivery of critical dental services to the population served.

ORGANIZATIONAL GOALS OR OBJECTIVES:

The Indian Health Service (IHS) provides health care to over 2.2 million American Indian/Alaska Native people through a system of IHS, Tribal, and Urban operated facilities in 35 states in the United States. The _____ Service Unit provides comprehensive health care to _____ American Indian/Alaska Natives. The mission of the Indian Health Service is to raise the physical, mental, social, and spiritual health of American Indians and Alaska Natives to the highest level, with a goal of ensuring that comprehensive, culturally acceptable personal and public health services are available to American Indian/Alaska Native people.

DUTY 1: Basic Dental Assisting Duties

60% Critical

Provides basic dental assisting duties such as chairside dental assisting, disinfection and sterilization procedures, radiographs, and inventory control.

Competencies:

- A. Provides routine maintenance of all dental equipment and instruments, including cleaning and oiling equipment, and sharpening instruments as needed.
- B. Disinfects dental equipment (chairs, surfaces) and sterilizes instruments using autoclave and other techniques in accordance with the clinic's standard operating procedures.
- C. Provides routine chairside dental assisting services including seating of patients, setting up proper instruments and trays for dental procedures, recording treatment rendered in the patient record, placing rubber dams and clamps for restorative and endodontic procedures, handing instruments to the dental provider as needed, providing irrigation and suctioning during dental procedures, and dismissing the patient with post-treatment instructions.
- D. Exposes, process, and mounts diagnostic radiographs.
- E. Maintains dental inventory of supplies and restocks supplies as necessary.
- F. Provides dental laboratory support services including pouring study models, trimming models, and other support services.

DUTY 2: Basic Expanded Function Dental Assisting Duties

40% Critical

Performs services beyond the scope of basic dental assisting as an expanded function dental assistant in ONE or more of the following specialties:

Competencies:

A. Periodontal Basic Expanded Functions

1. Relates Community Periodontal Index scores to a need for potential periodontal treatment.
2. Detects disease, supra- and subgingival calculus.
3. Provides thorough ultrasonic scaling of teeth.
4. Accurately codes for periodontal and hygiene procedures.
5. Recommends effective toothpastes, mouth rinses, and oral hygiene aids to patients.
6. Motivates patients to improve plaque removal and periodontal health.
7. Identifies who is at risk for periodontal breakdown.
8. Provides oral prophylaxis to adult and child patients using rubber cup coronal polishing.

B. Restorative Basic Expanded Functions

1. Places simple amalgam restorations (Class I, Class II two-surface, and Class V) using proper placement technique and condensation after tooth preparation by dentist.
2. Places simple composite or glass ionomer restorations (Class III and V) using proper technique and incremental curing.
3. Matches shade to existing tooth in an acceptable manner.
4. Places appropriate base and liner as directed by the dentist.
5. Uses an appropriate restorative adjunct when required – etchant, bonding agent, matrix band, etc.
6. Assures restoration is smooth without irritation to adjacent tissue.
7. Assures restoration contour is adequate and integrates into existing anatomy.
8. Checks occlusion and adjusts restoration as needed.

C. Orthodontic Basic Expanded Functions

1. Acquires and processes orthodontic records including intra- and extra-oral photographs, panoramic radiographs, cephalometric radiographs, and impressions for study models.
2. Performs all banding procedures including separation of teeth, selecting/fitting bands, taking impressions, seating bands in the impression, pouring up the impression, and helping to cement bands. Individual bands may be cemented or may be incorporated into holding arches, expanders and habit controlling appliances.
3. Performs orthodontic assisting duties which encompass all routine orthodontic adjustments in the specialty of orthodontics.
4. Prepares and places fixed retainers for cementation by the dentist. Performs fabrication of Essix retainers. Assists in delivery of removable retainers.

D. Oral & Maxillofacial Surgery Basic Expanded Functions

1. Understands and sets up all routine and specialty instrumentation and procedures including dental alveolar surgery, trauma, and pathologic surgery.

2. Understands and executes Operating Room protocols, including but not limited to proper sterile scrubbing and gowning techniques, draping of the patient, and maintaining proper sterile techniques as required by the Operating Room and having the ability to communicate properly with the anesthesiologist and circulating nurse.
 3. Provides post-operative surgical instructions concisely to the patient's understanding as well as motivating them in proper preventive techniques and oral hygiene.
 4. Maintains an efficient surgery schedule to maximize production and eliminate non-productive time.
- E. Pediatric Dentistry Basic Expanded Functions
1. Places simple amalgam restorations (Class I, Class II two-surface, and Class V) using proper placement technique and condensation after tooth preparation by dentist.
 2. Selects, trims, and crimps correct stainless steel crowns.
 3. Performs band fitting duties including the separation of teeth with elastic separators, takes an impression, and secures the bands in the impression prior to pouring the plaster model.
 4. Obtains and records oxygen saturation levels, blood pressure levels, and child's weight according to standard operating procedures.
 5. Performs basic behavioral guidance techniques such as positive pre-visit imagery, direct observation, tell-show-do, ask-tell-ask, teach back, motivational interviewing, voice control, non-verbal communication, positive reinforcement, memory structuring, and parental presence/absence
- F. Prosthodontic Basic Expanded Functions
1. Fabricates custom impression trays for selective pressure and monostatic complete denture impressions with appropriate border relief.
 2. Fabricates wax rims and base plates.
 3. Takes preliminary impressions, performs lab work, takes final impressions, bite registration, tooth selection, wax try-in and delivery of complete and partial dentures under the direction of the supervising dentist.
 4. Cleans and polish removable appliances.
 5. Provides prosthetic delivery and home care instructions to patients.
 6. Place and remove retraction cord.

FACTORS

Factor 1 – Knowledge required by position

Level 1-4 550 pts

Knowledge of dental anatomy, related oral anatomy, technical methods and practices of dentistry and the working characteristics of dental instruments and materials to perform a wide variety of intra-oral procedures including restoration of teeth prepared by a dentist and/or cleaning of teeth using mechanized or hand instruments. Knowledge of and ability to recognize common dental disorders and conditions such as tooth decay and periodontal diseases sufficient to perform as directed by a dentist.

Knowledge of and skills of proper dexterity in performing intra-oral procedures. Knowledge of current dental infection control practices and the ability to properly disinfect and sterilize instruments and environmental surfaces. Knowledge of operating room protocols for oral surgical procedures.

Factor 2 – Supervisory controls

Level 2-2 125 pts

Incumbent is under the indirect supervision of a dentist clinically and under the general supervision of a supervisory dental assistant or dentist administratively. The clinical supervisor provides individual clinical assignments including intra-oral procedures. Intra-oral expanded function procedures are provided under indirect supervision (alone, with supervising dentist in the facility). All intra-oral expanded function procedures are reviewed upon completion for technical accuracy by the clinical supervisor upon completion of the procedures and routine dental assistant duties are reviewed periodically for accuracy and compliance with instructions and established clinic policies and procedures by the administrative supervisor.

Definitions pertaining to supervision:

There are three levels of supervision:

1. Direct – dentist directly oversees dental assistant; this is the type that is used for regular chairside dental assistants
2. Indirect – dentist stays in the building and is able to check the work of the dental assistant; this is the type that is used for expanded function dental assistants
3. General – dentist is out of the building and cannot directly check work; this is usually reserved for other licensed professionals like other dentists and hygienists

For types of supervision:

1. Clinical – the person oversees the clinical procedures; since dental assistants operate under the dentist’s license, they are always clinically supervised by a dentist
2. Administrative – the person assigns work hours and support services (infection control, equipment maintenance, etc.); this person is sometimes a dentist but in larger facilities is a lead dental assistant or supervisory dental assistant

Factor 3 – Guidelines

Level 3-1 25 pts

Guidelines, consisting of hospital and clinic handbooks, memoranda and operating procedures, manufacturer's instructions and methods and procedures required to perform assigned intra-oral procedures, are very specific. The assistant uses very little judgment in selecting guidelines for application to individual cases. Guidelines are closely adhered to in the performance of duties and all deviations must be referred to dentist. Assignments allow little opportunity for employee to make choices

Factor 4 – Complexity

Level 4-3 150 pts

Incumbent performs a variety of intra-oral procedures involving many techniques and skilled, detailed workmanship to complete such as amalgam and composite restorations (restorative) or mechanized or hand scaling of teeth (periodontal). In completing these intricate procedures, incumbent must carefully consider detailed aspects of dental anatomy, occlusion, and the dental caries and/or periodontal disease process.

Factor 5 – Scope and effect

Level 5-2 75 pts

Full performance of a number of complex intra-oral procedures such as restoration of grossly decayed teeth (restorative) or scaling of teeth with advanced periodontal disease (periodontal) relieves the dentist or dental hygienist of many time-consuming tasks which are necessary to treat these conditions. Highly developed skills in performing these duties has a significant impact on the well-being of patients and improves the efficiency, effectiveness, and access to care for the dental program.

Factor 6 – Personal contacts

Level 6-2 25 pts

Contacts are with patients, patient families, and other employees of the healthcare facility.

Factor 7 – Purpose of contacts

Level 7-2 50 pts

Contacts with employees are to exchange information and coordinate healthcare services provided to patients. Contacts with patients is to provide information, schedule appointments, follow up on care provided, and motivate patient in preventive dental care.

Factor 8 – Physical demands

Level 8-2 20 pts

Work requires long periods of sitting, walking, standing and bending. Work sometimes including transferring patients into the dental chair. Work also requires unpacking and storing supplies.

Factor 9 – Work environment

Level 9-2 20 pts

Work involves exposure to communicable diseases, radiation, nitrous oxide, blood and other potentially infectious materials, and flying debris. The incumbent will be required to use personal protective equipment such as mask, eyewear, gown/coat, and gloves.

OTHER SIGNIFICANT FACTORS

The work may include travel to satellite clinics or community locations to render services (schools, Head Start, etc.). This requires the incumbent to have a valid driver license in order to operate a government-owned vehicle.

CLASSIFICATION SUMMARY:

Applicants for Dental Assistant (Expanded Function) positions must have completed a certification course in expanded function dental assistant training or have at least two years of experience specifically related to the expanded function dental assistant position. Examples of acceptable training are:

- Courses in a dental hygiene or dental assistant program accredited by the American Dental Association's Commission on Accreditation that are directly related to the intra-oral procedures (also referred to as expanded functions) that are to be performed in the position to be filled.
- U.S. Army's Dental Therapy Assistant Training Program.
- Continuing education courses in expanded functions for dental assistants offered by the Indian Health Service of the Department of Health and Human Services.

- Other training comparable to the above in private or governmental hospitals, clinics, or schools that included formal classroom instruction and clinical training in the knowledge and skills required to perform intra-oral procedures in the position to be filled.
- At least two years of specialized experience in a practice setting, directly related to the expanded function dental assistant position.

CLASSIFICATION STANDARDS USED:

Dental Assistant Series, GS-0681 TS-29 September 1977

Series and Title Determination:

The position duties primarily involve the performance of reversible intra-oral procedures along with other supportive duties.

Dental Assistant (Expanded Function), GS-681-05

Grade Level Determination:

GS-6

Final Classification:

1040 pts GS-5 (855-1100)

Dental Assistant (Expanded Function), GS-681-05

CLASSIFICATION REMARKS:

DENTAL ASSISTANT (EXPANDED FUNCTION) – GS-0681 – 06

Position Description

PURPOSE OF POSITION AND ORGANIZATIONAL LOCATION:

This position is located at the _____ Service Unit in the _____ Area of the Indian Health Service.

The purpose of this position is to perform routine and advanced chairside dental assistant services to enable the dental team to function efficiently and to improve the delivery of critical dental services to the population served.

ORGANIZATIONAL GOALS OR OBJECTIVES:

The Indian Health Service (IHS) provides health care to over 2.2 million American Indian/Alaska Native people through a system of IHS, Tribal, and Urban operated facilities in 35 states in the United States. The _____ Service Unit provides comprehensive health care to ____ American Indian/Alaska Natives. The mission of the Indian Health Service is to raise the physical, mental, social, and spiritual health of American Indians and Alaska Natives to the highest level, with a goal of ensuring that comprehensive, culturally acceptable personal and public health services are available to American Indian/Alaska Native people.

DUTY 1: Basic Dental Assisting Duties

50% Critical

Provides basic dental assisting duties such as chairside dental assisting, disinfection and sterilization procedures, radiographs, and inventory control.

Competencies:

- A. Provides routine maintenance of all dental equipment and instruments, including cleaning and oiling equipment, and sharpening instruments as needed.
- B. Disinfects dental equipment (chairs, surfaces) and sterilizes instruments using autoclave and other techniques in accordance with the clinic's standard operating procedures.
- C. Provides routine chairside dental assisting services including seating of patients, setting up proper instruments and trays for dental procedures, recording treatment rendered in the patient record, placing rubber dams and clamps for restorative and endodontic procedures, handing instruments to the dental provider as needed, providing irrigation and suctioning during dental procedures, and dismissing the patient with post-treatment instructions.
- D. Exposes, process, and mounts diagnostic radiographs.
- E. Maintains dental inventory of supplies and restocks supplies as necessary.
- F. Provides dental laboratory support services including pouring study models, trimming models, and other support services.

DUTY 2: Basic Expanded Function Dental Assisting Duties

30% Critical

Performs services beyond the scope of basic dental assisting as an expanded function dental assistant, in ONE or more of the following specialties:

Competencies:

A. Periodontal Expanded Functions

1. Relates Community Periodontal Index scores to a need for potential periodontal treatment.
2. Detects disease, supra- and subgingival calculus.
3. Provides thorough ultrasonic scaling of teeth.
4. Accurately codes for periodontal and hygiene procedures.
5. Recommends effective toothpastes, mouth rinses, and oral hygiene aids to patients.
6. Motivates patients to improve plaque removal and periodontal health.
7. Identifies who is at risk for periodontal breakdown.
8. Provides oral prophylaxis to adult and child patients using rubber cup coronal polishing.

B. Restorative Expanded Functions

1. Places simple amalgam restorations (Class I, Class II two-surface, and Class V) using proper placement technique and condensation after tooth preparation by dentist.
2. Places simple composite or glass ionomer restorations (Class III and V) using proper technique and incremental curing.
3. Matches shade to existing tooth in an acceptable manner.
4. Places appropriate base and liner as directed by the dentist.
5. Uses an appropriate restorative adjunct when required – etchant, bonding agent, matrix band, etc.
6. Assures restoration is smooth without irritation to adjacent tissue.
7. Assures restoration contour is adequate and integrates into existing anatomy.
8. Checks occlusion and adjusts restoration as needed.

C. Orthodontic Expanded Functions

1. Acquires and processes orthodontic records including intra- and extra-oral photographs, panoramic radiographs, cephalometric radiographs, and impressions for study models.
2. Performs all banding procedures including separation of teeth, selecting/fitting bands, taking impressions, seating bands in the impression, pouring up the impression, and helping to cement bands. Individual bands may be cemented or may be incorporated into holding arches, expanders and habit controlling appliances.
3. Performs orthodontic assisting duties which encompass all routine orthodontic adjustments in the specialty of orthodontics.
4. Prepares and places fixed retainers for cementation by the dentist. Performs fabrication of Essix retainers. Assists in delivery of removable retainers.

D. Oral & Maxillofacial Surgery Expanded Functions

1. Understands and sets up all routine and specialty instrumentation and procedures including dental alveolar surgery, trauma, and pathologic surgery.
 2. Understands and executes Operating Room protocols, including but not limited to proper sterile scrubbing and gowning techniques, draping of the patient, and maintaining proper sterile techniques as required by the Operating Room and having the ability to communicate properly with the anesthesiologist and circulating nurse.
 3. Provides post-operative surgical instructions concisely to the patient's understanding as well as motivating them in proper preventive techniques and oral hygiene.
 4. Maintains an efficient surgery schedule to maximize production and eliminate non-productive time.
- E. Pediatric Dentistry Expanded Functions
1. Places simple amalgam restorations (Class I, Class II two-surface, and Class V) using proper placement technique and condensation after tooth preparation by dentist.
 2. Selects, trims, and crimps correct stainless steel crowns.
 3. Performs band fitting duties including the separation of teeth with elastic separators, takes an impression, and secures the bands in the impression prior to pouring the plaster model.
 4. Obtains and records oxygen saturation levels, blood pressure levels, and child's weight according to standard operating procedures.
 5. Performs basic behavioral guidance techniques such as positive pre-visit imagery, direct observation, tell-show-do, ask-tell-ask, teach back, motivational interviewing, voice control, non-verbal communication, positive reinforcement, memory structuring, and parental presence/absence
- F. Prosthodontic Expanded Functions
1. Fabricates custom impression trays for selective pressure and monostatic complete denture impressions with appropriate border relief.
 2. Fabricates wax rims and base plates.
 3. Takes preliminary impressions, performs lab work, takes final impressions, bite registration, tooth selection, wax try-in and delivery of complete and partial dentures under the direction of the supervising dentist.
 4. Cleans and polish removable appliances.
 5. Provides prosthetic delivery and home care instructions to patients.
 6. Place and remove retraction cord.

DUTY 3: Advanced Expanded Function Dental Assisting Duties

20% Critical

Performs services beyond the scope of basic expanded function dental assisting with advanced skills in ONE or more of the following specialties:

Competencies:

- A. Periodontal Advanced Expanded Functions
 - 1. Provides thorough scaling of teeth.
 - 2. Uses universal scalers correctly and efficiently.
- B. Restorative Advanced Expanded Functions
 - 1. Places more complex amalgam restorations (Class II two-surface and Cusp-Protected Alloys) using same quality criteria/competencies as listed in basic expanded function duties.
 - 2. Places more complex composite restorations (Class I, II, IV) using proper technique and incremental curing and using same quality criteria/competencies as listed in basic expanded function duties.
- C. Orthodontic Advanced Expanded Functions
 - 1. Acquires and processes orthodontic records including intra- and extra-oral photographs, panoramic radiographs, cephalometric radiographs, and impressions for study models.
 - 2. Performs all banding procedures including separation of teeth, selecting/fitting bands, taking impressions, seating bands in the impression, pouring up the impression, and cementing bands. Individual bands may be cemented or may be incorporated into holding arches, expanders and habit controlling appliances.
 - 3. Performs orthodontic assisting duties which encompass all routine orthodontic adjustments in the specialty of orthodontics.
 - 4. Prepares and places fixed retainers for cementation by the orthodontist. Performs fabrication of Essix retainers. Assists in delivery of removable retainers.
 - 5. Traces cephalometric radiographs accurately.
- D. Oral & Maxillofacial Surgery Advanced Expanded Functions
 - 1. Understands and sets up all routine and specialty instrumentation and procedures including dental alveolar surgery, trauma, and pathologic surgery.
 - 2. Understands and executes Operating Room protocols, including but not limited to proper sterile scrubbing and gowning techniques, draping of the patient, and maintaining proper sterile techniques as required by the Operating Room and having the ability to communicate properly with the anesthesiologist and circulating nurse.
 - 3. Provides post-operative surgical instructions concisely to the patient's understanding as well as motivating them in proper preventive techniques and oral hygiene.
 - 4. Maintains an efficient surgery schedule to maximize production and eliminate non-productive time.
- E. Pediatric Dentistry Advanced Expanded Functions

1. Performs the induction and / or reduction of nitrous oxide / oxygen sedation and records the dose and time in the patient chart and clinical log-book.
 2. Disinfects, organizes, and sets-up the equipment for a general anesthetic patient in the operating room utilizing standard hospital protocol including a formalized checklist.
 3. Delivers fixed appliances for space maintainers.
 4. Cements correct-sized, -trimmed, and -crimped SSCs with standard post-op examination for the appropriate occlusion, gingiva pressure, and removal of excess cement.
- F. Prosthodontic Advanced Expanded Functions
1. Adjusts full and partial dentures.
 2. Repairs full and partial dentures.
 3. Fabricates provisional crowns and bridges.

FACTORS

Factor 1 – Knowledge required by position

Level 1-4 550 pts

Knowledge of dental anatomy, related oral anatomy, technical methods and practices of dentistry and the working characteristics of dental instruments and materials to perform a wide variety of intra-oral procedures including restoration of teeth prepared by a dentist and/or cleaning of teeth using mechanized or hand instruments. Knowledge of and ability to recognize common dental disorders and conditions such as tooth decay and periodontal diseases sufficient to perform as directed by a dentist. Knowledge of and skills of proper dexterity in performing intra-oral procedures. Knowledge of current dental infection control practices and the ability to properly disinfect and sterilize instruments and environmental surfaces. Knowledge of operating room protocols for oral surgical procedures.

Factor 2 – Supervisory controls

Level 2-2 125 pts

Incumbent is under the indirect supervision of a dentist clinically and under the general supervision of a supervisory dental assistant or dentist administratively. The clinical supervisor provides individual clinical assignments including intra-oral procedures. Intra-oral expanded function procedures are provided under indirect supervision (alone, with supervising dentist in the facility). All intra-oral expanded function procedures are reviewed upon completion for technical accuracy by the clinical supervisor upon completion of the procedures and routine dental assistant duties are reviewed periodically for accuracy and compliance with instructions and established clinic policies and procedures by the administrative supervisor.

Definitions pertaining to supervision:

There are three levels of supervision:

1. Direct – dentist directly oversees dental assistant; this is the type that is used for regular chairside dental assistants
2. Indirect – dentist stays in the building and is able to check the work of the dental assistant; this is the type that is used for expanded function dental assistants

3. General – dentist is out of the building and cannot directly check work; this is usually reserved for other licensed professionals like other dentists and hygienists

For types of supervision:

1. Clinical – the person oversees the clinical procedures; since dental assistants operate under the dentist’s license, they are always clinically supervised by a dentist

2. Administrative – the person assigns work hours and support services (infection control, equipment maintenance, etc.); this person is sometimes a dentist but in larger facilities is a lead dental assistant or supervisory dental assistant

Factor 3 – Guidelines

Level 3-2 125 pts

Incumbent may select from established instruments and techniques from which they have been trained in completing expanded function intra-oral procedures.

Factor 4 – Complexity

Level 4-3 150 pts

Incumbent performs a variety of intra-oral procedures involving many techniques and skilled, detailed workmanship to complete such as amalgam and composite restorations (restorative) or mechanized or hand scaling of teeth (periodontal). In completing these intricate procedures, incumbent must carefully consider detailed aspects of dental anatomy, occlusion, and the dental caries and/or periodontal disease process.

Factor 5 – Scope and effect

Level 5-3 150 pts

Full performance of a number of complex intra-oral procedures such as restoration of grossly decayed teeth (restorative) or scaling of teeth with advanced periodontal disease (periodontal) relieves the dentist or dental hygienist or many time-consuming tasks which are necessary to treat these conditions. Highly developed skills in performing these duties has a significant impact on the well-being of patients and improves the efficiency, effectiveness, and access to care for the dental program.

Factor 6 – Personal contacts

Level 6-2 25 pts

Contacts are with patients, patient families, and other employees of the healthcare facility.

Factor 7 – Purpose of contacts

Level 7-2 50 pts

Contacts with employees are to exchange information and coordinate healthcare services provided to patients. Contacts with patients is to provide information, schedule appointments, follow up on care provided, and motivate patient in preventive dental care.

Factor 8 – Physical demands

Level 8-2 20 pts

Work requires long periods of sitting, walking, standing and bending. Work sometimes including transferring patients into the dental chair. Work also requires unpacking and storing supplies.

Factor 9 – Work environment

Level 9-2 20 pts

Work involves exposure to communicable diseases, radiation, nitrous oxide, blood and other potentially infectious materials, and flying debris. The incumbent will be required to use personal protective equipment such as mask, eyewear, gown/coat, and gloves.

OTHER SIGNIFICANT FACTORS

The work may include travel to satellite clinics or community locations to render services (schools, Head Start, etc.). This requires the incumbent to have a valid driver license in order to operate a government-owned vehicle.

CLASSIFICATION SUMMARY:

Applicants for Dental Assistant (Expanded Function) positions must have completed a certification course in expanded function dental assistant training or have at least two years of experience specifically related to the expanded function dental assistant position. Examples of acceptable training are:

- Courses in a dental hygiene or dental assistant program accredited by the American Dental Association's Commission on Accreditation that are directly related to the intra-oral procedures (also referred to as expanded functions) that are to be performed in the position to be filled.
- U.S. Army's Dental Therapy Assistant Training Program.
- Continuing education courses in expanded functions for dental assistants offered by the Indian Health Service of the Department of Health and Human Services.
- Other training comparable to the above in private or governmental hospitals, clinics, or schools that included formal classroom instruction and clinical training in the knowledge and skills required to perform intra-oral procedures in the position to be filled.
- At least two years of specialized experience in a practice setting, directly related to the expanded function dental assistant position.

CLASSIFICATION STANDARDS USED:

Dental Assistant Series, GS-0681 TS-29 September 1977

Series and Title Determination:

The position duties primarily involve the performance of reversible intra-oral procedures along with other supportive duties.

Dental Assistant (Expanded Function), GS-681-05

Grade Level Determination:

GS-6

Final Classification:

1215 pts GS-6 (1105-1350)

Dental Assistant (Expanded Function), GS-681-06

CLASSIFICATION REMARKS:

Fact Sheet: Alternative Dental Workforce Models

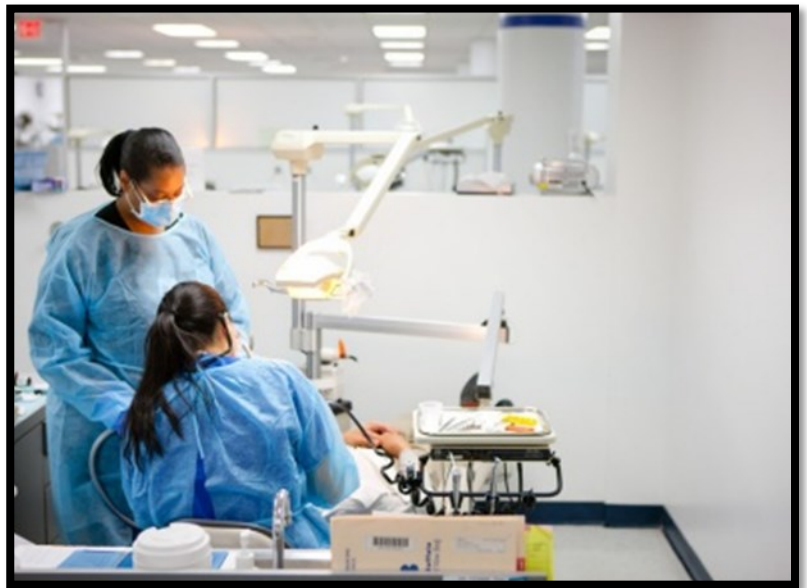
Definition

Traditionally, oral health services have been provided by a licensed dentist, a licensed/registered dental hygienist, and a dental assistant. The dentist, a graduate of a 3-5 year dental school, leads the dental team, diagnoses oral diseases, develops a treatment plan with the patient, and carries out that treatment with chairside assistance by a dental assistant. The dental hygienist, operating under the supervision of a dentist, provides oral hygiene instruction, preventive and periodontal care to the patient.

Alternative dental workforce models are any deviations from the above described traditional model. These include the Dental Health Aide Therapist Program (DHAT) used in the Alaska Area, but also many other models described within this fact sheet.

How did alternative models originate?

Access to oral health care is not evenly distributed in the United States. While the American Dental Association estimates that there may be as many as 200,000 practicing dentists in the nation by 2030, the vast majority of these dentists practice in metropolitan areas or areas where underserved populations cannot access care.¹ In non-metropolitan areas, people are less likely to report a dental visit in the past year than residents of large metropolitan areas.² An estimated 5.5% of the population is unable to get dental care when needed, a percentage higher than that of people unable to get needed medical care or prescriptions.³ Among children under the age of 18, only 25.9% of those uninsured receive routine dental checkups compared to 40.5% for those covered by public or private insurance.⁴



Because of these sobering statistics, organizations, foundations, and states across the U.S. have been exploring ways to improve access to needed dental care. The goal for these alternative dental workforce models is consistent: to provide oral health care to underserved populations.

The Indian Health Service (IHS) has been among the pioneers in alternative workforce models. Long before the Alaska Native Tribal Health Consortium, in collaboration with Alaska's Tribal Health Organizations, developed the Dental Health Aide Initiative in 2004, the IHS spearheaded training and use of Expanded Function Dental Assistants, the first alternative workforce model used in the IHS, in 1961.

Current Alternative Workforce Models



Alternative Workforce Models currently used in the U.S.

Model	Role	States or IHS Areas/Sites Using This Model	Reference
Community Dental Health Coordinators (CDHC)	Educate, prevent dental disease, and connect patients to dentists	8 states At least two IHS sites	http://www.ada.org/en/public-programs/action-for-dental-health/community-dental-health-coordinators
Oral Health Practitioner (Basic & Advanced Therapists)	Basic: extraction of primary teeth, administration of local anesthetic, restorations; Advanced: Same as basic plus oral evaluation, treatment plan, provide and administer non-narcotic drugs; both operating under general supervision of a collaborating dentist	Minnesota	http://www.dentalboard.state.mn.us/Portals/3/Licensing/Dental%20Therapist/DTSCOPE.pdf http://www.dentalboard.state.mn.us/Portals/3/Licensing/Dental%20Therapist/ADTSCOPE.pdf
Expanded Function Dental Assistant (EFDA)	In addition to chairside assisting duties, placing restorations, taking impressions, other duties defined by each state	Every U.S. state Most larger IHS, tribal, and urban dental programs	http://www.aapd.org/assets/1/7/StateLawsonDAs.pdf http://jada.ada.org/article/S0002-8177(72)56031-2/pdf
Primary Dental Health Aides (PDHA)	Preventive services at the community level	Alaska Area IHS	http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3753165/pdf/IJCH-72-21198.pdf
Expanded Function Dental Health Aides (EFDHA)	Simple and complex tooth restoration and supra-gingival dental cleanings under direct or indirect supervision of dentists.	Alaska Area IHS	http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3753165/pdf/IJCH-72-21198.pdf
Dental Health Aide Hygienists (DHAH)	Expanded hygiene duties including local anesthesia	Alaska Area IHS	http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3753165/pdf/IJCH-72-21198.pdf
Dental Health Aide Therapists (DHAT)	Treatment plan, restorations, simple extractions under the general supervision of a dentist by phone or tele-health	Alaska Area IHS	http://www.nihb.org/docs/05212014/Dental%20Health%20Aide%20Therapists%20Presentation%201.pdf
Dental Hygiene Therapist	Expanded duties including extractions, restorations, placement of crowns, dispensing medications	Maine	http://www.udhaonline.org/sliders/dental-hygiene-therapist-new-law-passes-in-maine/

The dental access and disease burden in Indian Country

Historically, access to dental care in IHS, tribal, and urban programs has been lower than the general U.S. population. An estimated 44.5% of persons aged 2 years and older had a dental visit in the past year in the United States⁵, while only 28.8% of American Indians and Alaska Natives (AIAN) accessed dental care in 2014. This low access rate was despite the fewest number of dentist vacancies in the IHS in the past decade.

At the same time, the burden of dental disease in Indian Country continues to loom large. AIAN children have more than double the caries (tooth decay) experience of U.S. Hispanic children, the next highest minority group, and almost four times as many teeth with caries experience than U.S. white children. Among 6-9 year-old AIAN children, 83% have caries experience and 47% have untreated decay, compared to 45% and 17% in the general U.S. population, respectively. Among adolescents, 80% of 13-15 year-old AIAN youth have caries experience compared to just 44% for the general U.S. population, and almost five times as many AIAN youth (53%) have untreated decay compared to the general U.S. population (11%).



Because of this dental disease burden and low access to dental care for many, the Indian Health Service has successfully employed alternative workforce models to help address the needs of the population we serve. The Alaska DHAT program,

for example, has already increased access to dental care to an additional 45,000 Alaska Natives in its short existence.

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Expanded Oral Health Workforce: <http://www.mcdph.org/docs%5CNew%20or%20Expanded%20Oral%20Health%20Workforce%20Models%20-CHWS.pdf>

State Table of Alternative Workforce Models: http://www.adea.org/uploadedFiles/ADEA/Content_Conversion/policy_advocacy/

FINAL REPORT

Evaluation of Alternative Dental Workforce Models

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In Collaboration With:

Indian Health Service
Division of Oral Health

Timothy L. Ricks, DMD, MPH

April 28, 2017

EXECUTIVE SUMMARY

Background

American Indian and Alaska Native communities experience significant oral health disparities and an increasing number of vacancies at Indian Health Service (IHS) dental facilities. Due to a successful initiative in the IHS Alaska Area that stationed alternative (i.e., mid-level) dental providers in rural Alaska Native villages to increase access to care and address oral health disparities, the IHS is currently considering a recommendation that would expand use of alternative providers across the continental United States. The alternative dental providers under consideration for the recommendation include Expanded Function Dental Assistants, Independent Registered Dental Hygienists, Primary Dental Health Aides and Dental Health Aide Therapists. To inform the recommendation, the IHS sought to evaluate the impact of these alternative workforce models on access to care and workforce efficiency at IHS dental programs. This study marks the first-ever attempt to evaluate the impact of multiple alternative dental workforce models employed in IHS, tribal, and IHS-funded urban dental programs.

Methodology

IHS facilities employing an alternative dental workforce model were identified by a questionnaire emailed to dental program personnel. Among questionnaire respondents, IHS service unit facilities employing an alternative workforce or a traditional workforce in fiscal year 2016 (October 1, 2015-September 30, 2016) were selected. Data for ten indicators representing access to dental care and workforce efficiency were exported from the National Dental Data Mart (NDDM) for programs using alternative and traditional workforce models. Service units employing the same alternative model were grouped together and overall model indicators were calculated by dividing the combined indicator value by the combined service unit user population.

Results

There were 159 responses to the questionnaire, and one to three programs utilizing each alternative model and 10 programs utilizing a traditional model were selected. Most alternative models were associated with increased access to care compared to traditional models whereas the effects on dental program efficiency were variable across alternative models compared to traditional models.

Conclusion

Limited data restricted a definitive conclusion regarding the impact of alternative dental workforce models on the selected indicators compared to the traditional dental workforce model. Further study is needed to adequately isolate and evaluate programs with alternative dental workforce models, but this study shows at least some positive impacts to access to care and clinical productivity of various alternative dental workforce models.

Limitations

Most selected service units employed more than one alternative model, which prevented establishing the effect of a single alternative model. This is the major limitation of this analysis, as the inability to isolate any specific alternative dental workforce model affected an assessment of the true impact of each individual model. A second limitation was the number of programs evaluated; for future evaluations, more programs utilizing different models should be analyzed. Other limitations included lack of information on the characteristics and oral health needs of the populations served by the various programs and a lack of information about when and how often alternative dental workforce models were utilized in the programs studied.

Recommendations

Future studies that evaluate the impact of alternative dental workforce models may consider incorporating more information on the facility and user population characteristics, collecting data at the facility level (rather than service unit) and identifying facilities employing a single alternative workforce model. This analysis was not designed to be the only evaluation of alternative dental workforce models, but was intended to lay the foundation for future evaluative studies.

Background

American Indian and Alaska Native (AI/AN) populations experience the poorest oral health outcomes compared to other population groups in the United States. AI/AN children have the highest rate of tooth decay at four times higher than Caucasian children.¹ Similarly, adults suffer a disproportionate burden of periodontal disease at rates twice as high as the general population of the United States.² AI/AN communities also experience challenges accessing care due to a low provider to population ratio. In 2000, the IHS Alaska Area took steps to address the disparity in disease and access to care by implementing the Dental Health Aide Therapist (DHAT) initiative that created several alternative (i.e., mid-level) dental positions that support the dentist and increase the level of care provided to the population. In 2016, the then Acting Principal advocated for the expansion of the Community Health Aide Program (CHAP), a program authorized under the Indian Health Care Improvement Act that is designed to create and utilize many different types of mid-level providers – medical, behavioral health, and dental – to improve access and quality of care to the AI/AN population.

In anticipation of the CHAP expansion, which would include dental models congruent with the Alaska DHAT program, the IHS contracted with the Johns Hopkins Center for American Indian Health (JHCAIH) to evaluate access to dental care and workforce efficiency among IHS, Tribal and IHS-funded Urban (ITU) programs employing an alternative workforce model. We hypothesized that ITU programs employing an alternative workforce would increase access to dental care and measurements of workforce efficiency compared to ITU programs using a traditional workforce.

Collaboration and Roles

The Indian Health Service Division of Oral Health, one of the divisions of the IHS Office of Clinical and Preventive Services, developed and oversaw the conduct of this evaluation. IHS selected the ITU programs, indicators and alternative dental workforce models for inclusion in the analyses, exported the indicator data from the National Dental Data Mart (NDDM), contributed to, and approved this final report.

The JHCAIH has a 25-year history of conducting research and evaluating interventions with tribes in the Southwest United States. The JHCAIH team is composed of physicians, epidemiologists, social scientists and community health paraprofessionals who work closely with personnel at local IHS facilities and with the communities at large. For this collaboration, JHCAIH assisted IHS in designing and administering the survey to ITU programs, managing and analyzing the data exported from the NDDM and preparing this report.

Methodology

Questionnaire: JHCAIH administered a questionnaire to ITU programs to identify the type of workforce model(s) in use (traditional vs. alternative) and to characterize the type and number

of full-time alternative dental personnel employed during the 2016 Fiscal Year (FY; October 1, 2015-September 30, 2016). Types of alternative workforce models queried include: Expanded Function Dental Assistant (EFDA; Restorative, Periodontal, Pediatric, Orthodontic, Oral Surgery), Dental Community Health Representative, Independent Registered Dental Hygienist (RDH), Primary Dental Health Aide (PDHA), and Dental Health Aide Therapist (DHAT). JHCAIH summarized the results of the questionnaire in an Excel file that listed all programs using the various alternative workforce models (number of FTEs, population served) at each ITU program during FY 2016.

Selection of Programs and Models: IHS selected ITU program(s) representing each type of alternative workforce model and programs representing a traditional workforce model. Programs with a stable workforce that served both the pediatric and adult populations during FY 2016 were considered for selection. IHS queried the NDDM for ten indicators of access to dental services (indicators 1-3) and workforce efficiency (indicators 4-10) for FY 2016.

The 10 indicators were:

1. Percent who accessed dental care: total number of services divided by number of services per patient multiplied by the user population (this was an indirect calculation, since access to dental care is not one of the NDDM reports)
2. Government Performance and Results Act (GPRA) Indicator: Percent of 2-15 Year-Olds Receiving Sealants: percent of AI/AN children aged 2-15 years receiving a dental sealant or with existing dental sealants and no further sealants indicated divided by the 3-year 2-15 year-old user population
3. GPRA Indicator: Percent of 1-15 Year-Olds Receiving Topical Fluoride: percent of AI/AN children aged 1-15 years receiving at least one application of fluoride divided by the 3-year 2-15 year-old user population
4. Total Patient Visits: total number of patient visits to a dental facility
5. Total Relative Value Units (RVUs): a count that represents a measure of clinical productivity that incorporates information on the time the procedure takes, the skill level or complexity of the procedure, the risk of the procedure, and the resources needed to complete the procedure
6. RVUs by Level of Care: RVUs are divided into five levels of care (I-V) according to complexity of the care provided
 - a. Level I: emergency oral health services (e.g., emergency diagnostics, x-rays, simple extractions)
 - b. Level II: preventive oral health services (e.g., cleanings)
 - c. Level III: basic oral health services (e.g., exams, basic restorations, simple root canals)
 - d. Level IV: basic rehabilitation oral health services (e.g., complex restorations, more complicated root canals, crowns)
 - e. Level V: advanced rehabilitation oral health services (e.g., orthodontics, surgical extractions, implants, dentures, periodontal surgeries)
7. Total Dental Services: total number of non-tracking codes which represent the total dental services provided by a facility
8. Total Services by Level of Care (I-V): see levels of care as defined above in #6

9. Total Services per Patient Visit: total number of services completed by a facility divided by the total patient visits to that facility (tracking codes 0000 and 0190)
10. Total Services per Patient: total number of services completed by a facility divided by the number of patients seen in a particular facility during the fiscal year (tracking code 0000)

Exclusions: Programs were excluded if there was a known recent turnover of dental staff or the facility did not export data to the NDDM. The Pediatric EDFA model was excluded because data from the NDDM included individuals of all ages who accessed dental care within the service unit. Therefore, it was not possible to isolate indicators for the specific population served by this model. The Dental Community Health Representative model was excluded because the activities performed by a Dental Community Health Representative are not defined by a standard curriculum and vary by site.

Data Export: IHS exported IHS user population denominators and indicator data from the NDDM according to service unit where the selected ITU program was located. For service units with more than one dental program, a follow-up questionnaire was sent to the original respondents to identify the type and number of alternative workforce personnel employed, if any, at other IHS clinics in the service unit during FY 2016. The total number of alternative workforce personnel within the service unit was calculated based on the responses of the first and second questionnaires.

Data Analysis: JHCAIH completed the following analyses:

1. Indicator to User Population ratios were calculated for Total Visits, RVUs and Services by program (e.g., Lawton) and overall for alternative and traditional workforce models (e.g., Restorative EFDA) to account for differences in the size of the User Population between service units. Percentages were calculated for the “access to care” and GPRA indicators overall for alternative and traditional workforce models. Indicator to User Population ratios and access to care and GPRA indicator percentages for alternative and traditional workforce models were compared and expressed as a percent change.
2. Weighted indicator to User Population ratios for Total Visits, RVUs and Services were calculated overall for alternative workforce models. The program-level indicator values were multiplied by a “provider ratio” that was calculated by dividing the number of alternative workforce providers by the User Population to equalize differences in the size of the user population across model types. The number of traditional providers simultaneously serving the population also served by the alternative models, the number of alternative providers at private facilities and the number of providers at traditional facilities were unknown. The resulting values were summed together and divided by the provider ratio. This value was then divided by the User Population to get the weighted indicator to User Population ratio. Weighted indicator to User Population ratios were summarized for alternative workforce models.

Results

There were 159 responses to the first questionnaire and 102 (64%) were fully completed. The number of recipients of the first questionnaire is unknown. Models used by the questionnaire respondents to serve pediatric (<18 years) and adult (18+ years) patients in FY 2016 are summarized in Table 1. One to three programs were selected for each type of alternative workforce model. There were 28 programs identified that employed a traditional workforce model, and nine were selected for analysis (Table 2).

Table 1. Alternative model types identified among respondents of the first questionnaire (n=102)

Model type	n	%
Restorative EFDA	33	32%
Periodontal EFDA	25	25%
Orthodontic EFDA	2	2%
Oral Surgery EFDA	2	2%
Independent RDH	20	20%
PDHA (AK only, n=8)	1	13%
DHAT (AK or Portland only)*	0	0%

* Follow-up communications were sent to AK programs known to be utilizing the DHAT model to obtain information on use

Table 2. Selected service units (programs) representing each type of workforce model

Type of Workforce Model	Program name* (n of model type)	IHS Area**	User population	Other workforce models used by the program (n)
<i>Restorative EFDA</i>	Lawton (3)	OKC	23,485	Independent RDH (1), Periodontal EFDA (3)
	Kayenta (4+)	NAV	19,125	Periodontal EFDA (4+)
	Sells (3)	TUC	21,106	Oral Surgery EFDA (1)
<i>Periodontal EFDA</i>	Red Lake (1)	BEM	8,293	None
	Whiteriver (4+)	PHX	16,959	Restorative EFDA (4), Pediatric EFDA (2)
	Zuni-Ramah (3)	ALB	11,044	None
<i>Orthodontic EFDA</i>	Albuquerque IHS Dental Clinic (4+)	ALB	10,741	Restorative EFDA (4+), Periodontal EFDA (4+)
<i>Oral Surgery EFDA</i>	Tuba City Regional Health (4)	NAV	30,164	Restorative EFDA (4+), Periodontal EFDA (4)
<i>Independent RDH</i>	Northern Cheyenne (1)	BIL	6,341	Restorative EFDA (3)
	Taos-Picuris (1)	ALB	2,117	None
<i>PDHA</i>	Mt. Edgecumbe (8)	ALA	16,328	None
<i>DHAT</i>	Yukon-Kuskokwim (11)	ALA	27,215	Periodontal EFDA (2)
	Bristol Bay (3)	ALA	5,400	No response to survey
<i>Traditional</i>	Cherokee	NAS	11,746	None
	Mescalero	ALB	4,674	None
	Colorado River	PHX	9,238	None

Schurz	PHX	15,755	None
Eastern Michigan	BEM	25,019	None
Neah Bay	POR	4,537	None
Uintah-Ouray	PHX	3,992	None
Catawba	NAS	1,800	None
Coushatta	NAS	539	None

* Additional personnel of same model type used in service unit: Lawton, n=3; Kayenta, n=4; Sells, n=9

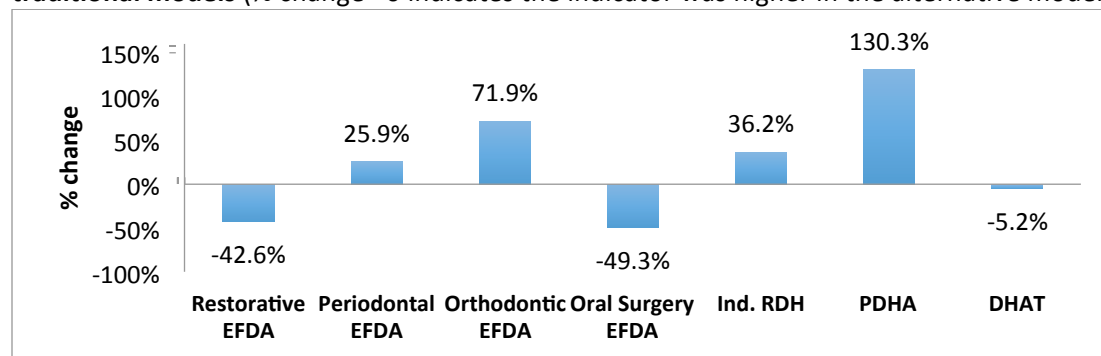
** ALB = Albuquerque, ALA = Alaska, BEM = Bemidji, BIL = Billings, OKC = Oklahoma City, NAS = Nashville, NAV = Navajo, PHX, Phoenix, POR = Portland, TUC = Tucson

Results by Indicator

The comparison of alternative and traditional models for eight indicators - access to care, sealant application, fluoride varnish application, total visits, total RVUs, total services, services per patient and services per patient visit compared to use of a traditional model - is presented as a percent difference in Figures 1-8. A percent change value above zero indicates that the indicator was higher in the alternative model.

Access to care: Employment of a Periodontal EFDA, Orthodontic EFDA, Independent RDH or PDHA was associated with an increase in access to care compared to a traditional model (Figure 1). The selected service units that employed a Periodontal or an Orthodontic EFDA could have patient populations with greater periodontal disease and orthodontic needs compared to the selected service units using a traditional model or could be in areas with few non-IHS providers available. Characterizing the oral health status and other dental providers of the population would improve our interpretation of the change in access to care for service units employing a Periodontal or an Orthodontic EFDA. Employing an Independent RDH could increase the availability of clinic appointments and a PDHA could increase community-based referrals to a dental clinic; however, without data on the activities performed by the independent RDH and PDHA models at these sites, our interpretation is limited. Private dental clinics may operate in service units employing Restorative and Oral Surgery EFDAs such that increased access to care is not observed in service units employing these models.

Figure 1. Percent of the user population who accessed care in service units comparing alternative vs. traditional models (% change >0 indicates the indicator was higher in the alternative model).



Sealant and fluoride varnish use: Employment of nearly any type of alternative model correlated with increased sealant and fluoride varnish application compared to use of a traditional model (Figures 2 and 3). Greater availability of skilled dental personnel to apply sealants and varnish, either by the model identified here or by other models simultaneously working within the service unit may be associated with this increase. Oral Surgery EFDA may not apply sealants or fluoride varnish if their focus is on more emergent dental needs. Lack of information about the tasks performed by these models and other alternative models working within the service units prevents attribution of these results to use of a single alternative model.

Figure 2. GPRA percent of children 2-15 years who received sealants in service units comparing alternative vs. traditional models

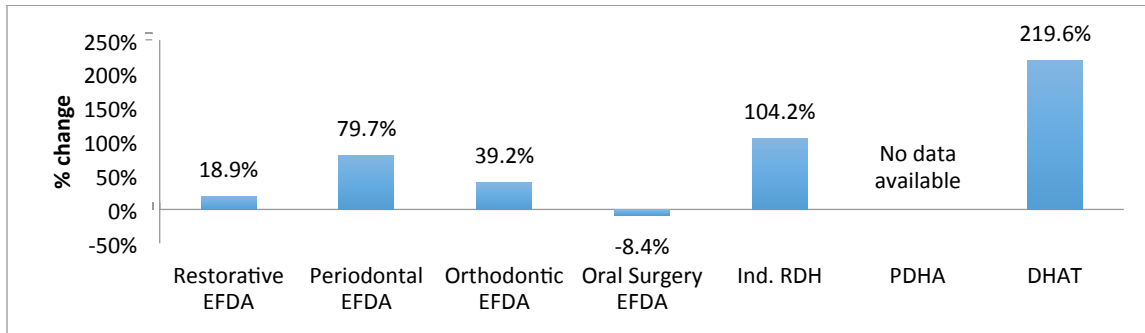
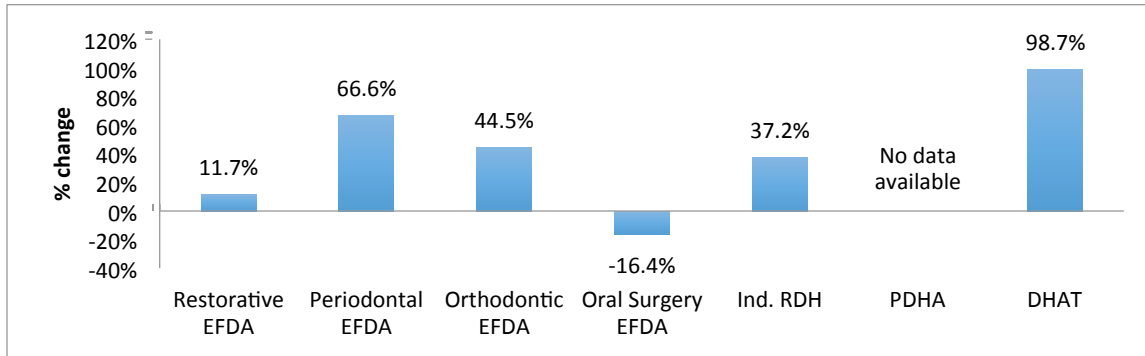


Figure 3. GPRA percent of children 1-15 years who received fluoride varnish in service units comparing alternative vs. traditional models



Total visits: Employment of an Orthodontic EFDA, Independent RDH, PDHA and DHAT were associated with an increase in total visits, RVUs and services compared to the traditional model (Figures 4-6). Clinic-based alternative models such as the Orthodontic EFDA, Independent RDH and DHAT may improve access to a range of oral health services, including specialized orthodontic services or restorations and extractions. A community-based PDHA could indirectly contribute to increased visits, RVUs and services by referring community members to seek care. Lack of data related to the tasks performed by these models or the dental needs of the population restricts our ability to attribute increases in visits, RVUs and services to use of these alternative models. Restorative, Periodontal and Oral Surgery EFDA may provide similar services as service units utilizing a traditional model. Facility-level data on the tasks performed by these alternative models would improve the comparison to traditional models.

Figure 4. Total visits in service units comparing alternative vs. traditional models

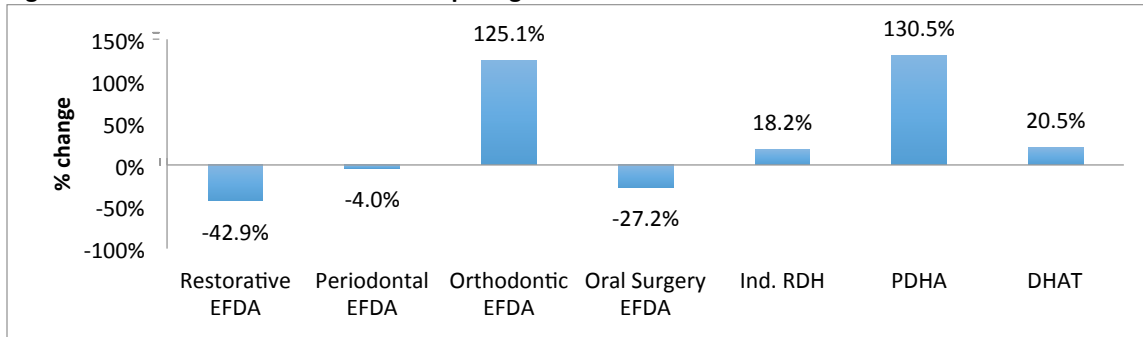


Figure 5. Total RVUs in service units comparing alternative vs. traditional models

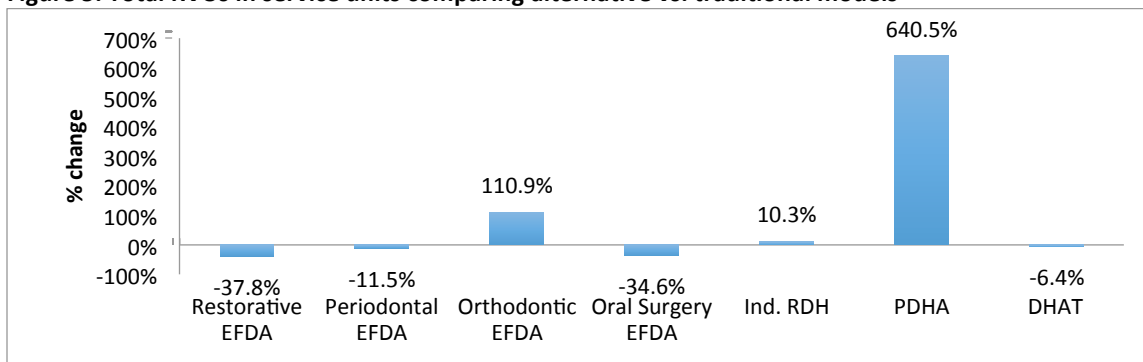
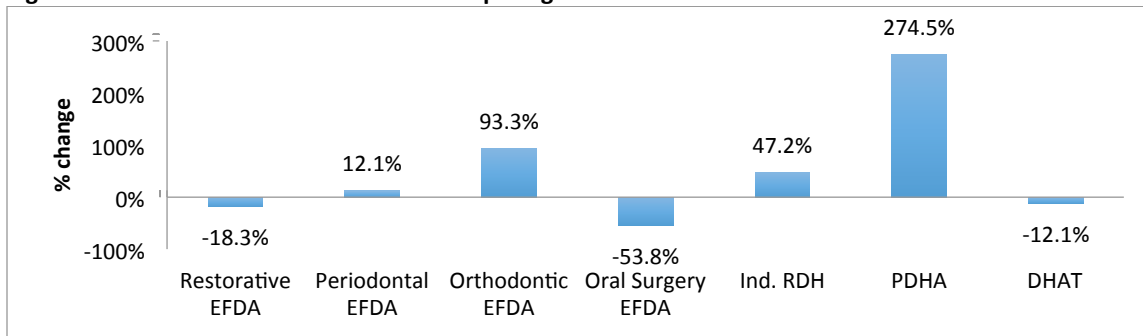


Figure 6. Total services in service units comparing alternative vs. traditional models



Services per patient: Employment of an Independent RDH was associated with an increase in the services per patient visit and per patient (Figures 7 and 8). Facilities employing an Independent RDH may offer a greater range of services to patients and may provide multiple services per patient during a single visit. Identifying the tasks assigned to an Independent RDH and the specific services provided to each patient would provide a more accurate evaluation of the benefits of employing an Independent RDH. Service units using the other alternative models where an increase in services per patient and per patient visit was not detected may utilize dental personnel similarly to service units using a traditional model.

Figure 7. Services per patient comparing alternative vs. traditional models

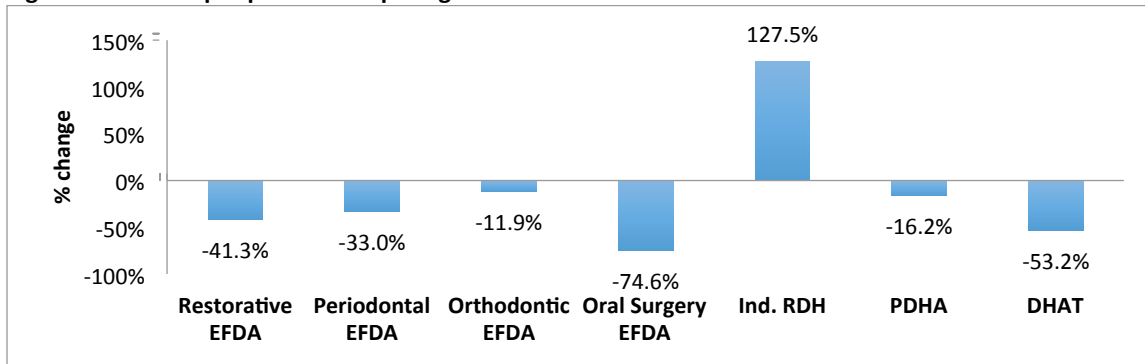
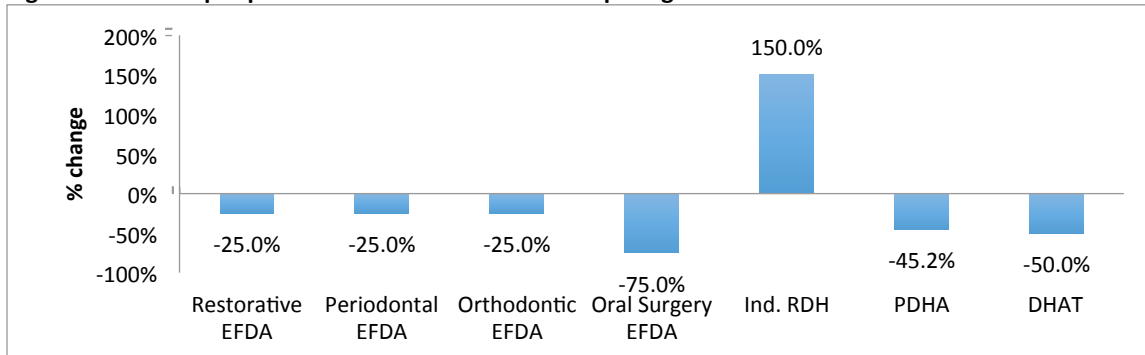


Figure 8. Services per patient visit in service units comparing alternative vs. traditional models



Results by Type of Alternative Model

In addition to impacts in total visits, RVUs and services, use of an alternative model was expected to increase specific RVU and service levels as summarized in Tables 3-9 according to each type of alternative model.

Restorative EFDA

Use of Restorative EFDAs was expected to increase Level III-V RVUs and Services compared to traditional workforce models. A Restorative EFDA could do simple restorations (Level III) enabling the dentist to complete more basic (Level IV) or complex rehabilitative procedures (Level V). Overall, use of the Restorative EFDA model in FY 2016 in the Lawton, Kayenta and Sells service units did not correlate with an increase in RVUs or services for Levels III-V (Table 3). The tasks performed by the Restorative EFDAs in these service units are unknown and may not impact the Level III-V indicators as expected. Characterizing the clinic workforce and needs of the user population in these service units could improve our understanding of which indicator level could be impacted.

Table 3. Percent change in indicator to User Population ratios comparing the Restorative EFDA and Traditional models

Indicator	Indicator to User Population Ratios by Model Type			
	Traditional	Restorative EFDA	% change	
Total Visits	0.85	0.48	-42.9%	
Total RVUs	4.38	2.73	-37.8%	
RVU Level	III	1.18	0.80	-31.7%
	IV	0.44	0.12	-72.6%
	V	0.65	0.22	-65.9%
Total Services	3.72	3.04	-18.3%	
Service Level	III	0.82	0.59	-28.1%
	IV	0.08	0.03	-60.9%
	V	0.05	0.03	-40.1%
Services per Patient Visit	0.0004	0.0003	-25.0%	
Services per Patient	0.0011	0.0006	-41.3%	

Periodontal EFDA

Use of Periodontal EFDAs was expected to increase Level II-V RVUs and Services compared to traditional workforce models. A Periodontal EFDA could provide preventive services (e.g., cleanings) (Level II) freeing up a hygienist to complete basic oral health services (e.g., exams) (Level III) and a dentist to complete more basic (Level IV) or complex rehabilitative procedures (Level V). Use of the Periodontal EFDA model in FY 2016 in the Red Lake, Whiteriver and Zuni-Ramah service units did not correlate with an increase in RVUs or services for Levels II-V (Table 4).

Table 4. Percent change in indicator to User Population ratios comparing the Periodontal EFDA and Traditional models

Indicator	Indicator to User Population Ratios by Model Type			
	Traditional	Periodontal EFDA	% change	
Total Visits	0.85	0.81	-4.0%	
Total RVUs	4.38	3.88	-11.5%	
RVU Level	II	1.10	0.82	-25.1%
	III	1.18	1.07	-8.9%
	IV	0.44	0.38	-13.1%
	V	0.65	0.48	-26.0%
Total Services	3.72	4.17	12.1%	
Service Level	II	0.96	0.88	-8.2%
	III	0.82	0.64	-22.0%
	IV	0.08	0.07	-13.9%
	V	0.05	0.04	-30.9%
Services per Patient Visit	0.0004	0.0003	-25.0%	
Services per Patient	0.0011	0.0007	-33.0%	

Orthodontic EFDA

Use of Orthodontic EFDAs was expected to increase Level IV-V RVUs and Services compared to traditional workforce models. An Orthodontic EFDA could provide basic (Level IV) or complex rehabilitative procedures (Level V). Use of the Orthodontic EFDA model in FY 2016 at the Albuquerque IHS Dental Clinic correlated with an increase in RVUs or services for Levels IV-V (Table 5). The Albuquerque IHS Dental Clinic is unique in that it only provides care to individuals 21 years of age and younger, which includes the ages associated with significant orthodontic needs. The user population for Albuquerque IHS Dental Clinic aligns with this specific population, and may be significantly younger than the user populations receiving care by traditional models. As a result, using Albuquerque IHS Dental Clinic to represent the Orthodontic EFDA model may prevent comparison with traditional models.

Table 5. Percent change in indicator to User Population ratios comparing the Orthodontic EFDA and Traditional models

Indicator	Indicator to User Population Ratios by Model Type			
	Traditional	Orthodontic EFDA	% change	
Total Visits	0.85	1.91	125.1%	
Total RVUs	4.38	9.25	110.9%	
RVU Level	IV	0.44	1.26	189.0%
	V	0.65	2.89	345.2%
Total Services	3.72	7.19	93.3%	
Service Level	IV	0.08	0.51	514.6%
	V	0.05	0.31	477.3%
Services per Patient Visit	0.0004	0.0003	-25.0%	
Services per Patient	0.0011	0.0010	-11.9%	

Oral Surgery EFDA

Use of an Oral Surgery EFDA was expected to increase Level I and V RVUs and services compared to traditional workforce models by providing emergency services (Level I) or complex rehabilitative procedures (Level V). Use of the Oral Surgery EFDA model in FY 2016 at the Tuba City Regional Health Care Center was correlated with an increase in Level I RVUs and Level I and V services, but not Level V RVUs (Table 6).

Table 6. Percent change in indicator to User Population ratios comparing the Oral Surgery EFDA and Traditional models

Indicator	Indicator to User Population Ratios by Model Type			
	Traditional	Oral Surgery EFDA	% change	
Total Visits	0.85	0.62	-27.2%	
Total RVUs	4.38	2.87	-34.6%	
RVU Level	I	0.70	0.80	13.4%
	V	0.65	0.39	-40.0%
Total Services	3.72	1.72	-53.8%	
Service Level	I	0.54	0.63	16.5%

V	0.05	0.06	13.9%
Services per Patient Visit	0.0004	0.0001	-75.0%
Services per Patient	0.0011	0.0003	-74.6%

Independent RDH

Use of an Independent RDH was expected to increase Level I, II and possibly III RVUs and services compared to traditional workforce models by taking x-rays (Level I), cleaning teeth (Level II) or performing basic oral health services such as periodontal scaling and root planing (Level III). Use of the Independent RDH model in FY 2016 at Northern Cheyenne and Taos-Picuris was correlated with an increase in Level I-II RVUs (but not Level III) and Level I-III services (Table 7). The increase in these levels could be attributed to alignment of patient population needs and the services provided by the Independent RDH.

Table 7. Percent change in indicator to User Population ratios comparing the Independent RDH and Traditional models

Indicator	Indicator to User Population Ratios by Model Type			
	Traditional	Independent RDH	% change	
Total Visits	0.85	1.00	18.2%	
Total RVUs	4.38	4.84	10.3%	
RVU Level	I	0.70	1.24	76.6%
	II	1.10	1.64	49.3%
	III	1.18	1.12	-4.5%
Total Services	3.72	5.48	47.2%	
Service Level	I	0.54	1.04	92.1%
	II	0.96	1.75	81.7%
	III	0.82	0.85	3.9%
Services per Patient Visit	0.0004	0.0010	150.0%	
Services per Patient	0.0011	0.0025	127.5%	

Primary Dental Health Aide (PDHA)

Use of a PDHA was expected to increase Level I and II RVUs and services compared to traditional workforce models by increased referral of community members to dental care for emergency services (Level I) and routine teeth cleanings (Level II). Use of the PDHA model in FY 2016 at Mt. Edgecumbe was correlated with an increase in Level I-II RVUs and services (Table 8). The PDHA model was implemented in Mt. Edgecumbe in FY 2014 and could be associated with the increases observed across many of the indicators; however, RVU and service levels III-V also unexpectedly increased (data not shown). Selected indicator counts for Mt. Edgecumbe in FY 2015 and 2016 were substantially higher in compared to FY 2012-2014 (Table 9). Besides implementing the PDHA model in the Mt. Edgecumbe service unit, it is also possible that other factors such as improved data reporting to the NDDM could also account for these increases.

Table 8. Percent change in indicator to User Population ratios comparing the PDHA and Traditional models

Indicator	Indicator to User Population Ratios by Model Type			
	Traditional	PDHA	% change	
Total Visits	0.85	1.95	130.5%	
Total RVUs	4.38	32.46	640.5%	
RVU Level	I	0.70	3.03	331.7%
	II	1.10	5.16	369.6%
Total Services	3.72	13.94	274.5%	
Service Level	I	0.54	2.15	297.8%
	II	0.96	4.72	390.0%
Services per Patient Visit	0.0004	0.0002	-45.2%	
Services per Patient	0.0011	0.0009	-16.2%	

Table 9. Counts for selected indicators from FY 2012-2016 for Mt. Edgecumbe

Selected indicators	Fiscal Year (October 1-September 30)				
	2012	2013	2014	2015	2016
Total patient visits	29,957	30,622	32,605	35,654	31,890
Relative Value Units (RVUs)	33,607	107,322	185,294	687,243	530,028
Total dental services	27,555	59,897	91,391	300,910	227,598

Dental Health Aide Therapist (DHAT)

Use of the DHAT model was expected to increase Level I-III and possibly IV and V RVUs and services compared to traditional workforce models by increased referral of community members to dental care for emergency services (Level I) and routine preventive services (e.g., cleanings) (Level II). Use of the DHAT model in FY 2016 at Yukon-Kuskokwim and Bristol Bay was correlated with an increase in Level I RVUs and services, Level II services and Level III RVUs and services (Table 10). Level V RVUs and services also increased in Yukon-Kuskokwim and Bristol Bay possibly due to referrals made by DHATs for more complex restorative treatment. The DHAT's scope of work aligns with increases in Levels I-III; however, the characteristics of the workforce at Yukon-Kuskokwim and Bristol Bay was not captured via the questionnaire, so it is unknown if other alternative models are also employed in these areas. There are 41 and 19 satellite facilities operating in Yukon-Kuskokwim and Bristol Bay, respectively. Level I RVUs and services could be higher in Yukon-Kuskokwim and Bristol Bay compared to the traditional model because of services provided at the satellite facilities rather than services provided by the DHAT model.

Table 10. Percent change in indicator to User Population ratios comparing the DHAT and Traditional models

Indicator	Indicator to User Population Ratios by Model Type		
	Traditional	DHAT	% change
Total Visits	0.85	1.02	20.5%
Total RVUs	4.38	4.11	-6.4%

	I	0.70	0.88	25.3%
	II	1.10	1.00	-8.9%
RVU Level	III	1.18	1.21	3.0%
	IV	0.44	0.19	-56.9%
	V	0.65	0.68	4.6%
Total Services		3.72	3.27	-12.1%
	I	0.54	0.70	29.9%
	II	0.96	1.17	21.8%
Service Level	III	0.82	0.87	6.8%
	IV	0.08	0.05	-35.7%
	V	0.05	0.12	132.6%
Services per Patient Visit		0.0004	0.0002	-50.0%
Services per Patient		0.0011	0.0005	-53.2%

Comparison of Alternative Models

After weighting each indicator by the ratio of number of alternative providers to the total user population (“provider ratio”), the highest weighted indicator ratios were observed for service units employing an Orthodontic EFDA and PDHA (Table 11). However, the provider ratio does not account for utilization of other alternative models operating within the service unit at the selected IHS facilities or at private facilities. There are four Restorative EFDA and four Periodontal EFDA employed at the Albuquerque IHS Dental Clinic - the facility selected for evaluation of the Orthodontic EFDA model. Some of the effect that is observed for the Orthodontic EFDA model could be attributed to utilization of these eight additional employees whose tasks are expected to impact similar indicators (e.g., RVU and service levels).

As described above for the PDHA model, the Mt. Edgecumbe indicator counts rose substantially in FY 2015-2016 compared to previous years (Table 9). The PDHA is a community-based layperson with one to two weeks of training who provides preventive services to other community members. Despite the valuable role that the PDHA likely plays in the Mt. Edgecumbe community (16,328 individuals), it seems highly unlikely that a single PDHA could generate dramatic increases across all 10 indicators. Exploring other explanations for these observations such as changes to data reporting practices or implementation of new facility-level dental practices are necessary.

Table 11. Comparison of weighted indicator to User Population ratios for alternative models

Indicator*	Alternative Models						
	<i>Restorative EFDA</i>	<i>Periodontal EFDA</i>	<i>Orthodontic EFDA</i>	<i>Oral Surgery EFDA</i>	<i>Independent RDH</i>	<i>PDHA</i>	<i>DHAT</i>
Total Visits	0.18	0.28	1.91	0.62	0.44	1.95	0.46
Total RVUs	0.96	1.27	9.25	2.87	1.97	32.46	1.85
RVU Level							
I	0.20	0.33	0.75	0.80	0.52	3.03	0.39
II	0.29	0.28	1.13	0.47	0.57	5.16	0.46
III	0.30	0.34	2.84	0.84	0.45	6.75	0.55
IV	0.04	0.12	1.26	0.25	0.09	4.58	0.08

V	0.07	0.15	2.89	0.39	0.23	10.79	0.29
Total Services	1.07	1.41	7.19	1.72	2.11	13.94	1.50
Service Level							
I	0.17	0.27	0.55	0.63	0.45	2.15	0.32
II	0.31	0.29	1.63	0.43	0.57	4.72	0.53
III	0.22	0.21	1.81	0.51	0.34	4.19	0.40
IV	0.01	0.02	0.51	0.06	0.02	0.70	0.02
V	0.01	0.01	0.31	0.06	0.03	0.59	0.05
Services per Patient Visit	0.0001	0.0001	0.0003	0.0001	0.0004	0.0002	0.0001
Services per Patient	0.0002	0.0002	0.0010	0.0003	0.0011	0.0009	0.0003

*Access to care and GPRA sealants and fluoride varnish were not included in the weighted calculations

Study Limitations

Selection of programs

- Many (8/13) of the selected programs simultaneously employed more than one type of alternative workforce model in FY 2016 (Table 2). In some cases, as many as eight additional alternative model personnel were employed at a selected facility. Multiple alternative workforce models impact the indicators, and for these programs, changes in the indicators cannot be attributed to one type of alternative model.
- Mt. Edgecumbe service unit experienced dramatic increases in indicator values in FY 2015-2016 compared to prior years (Table 9). It is unlikely that these changes are attributed to use of a single PDHA model operating in the community. Instead, the changes could be attributed to improved systematic collection of data or data reporting practices.
- The selection of programs required detailed insights about the stability of the workforce at each program. As a result, a bias may have been introduced that could affect the outcomes of the analysis.
- The selected programs may not be representative of all ITU programs employing alternative workforce models.

User population

- The effect of the Pediatric EFDA alternative workforce model could not be evaluated because the data that is reported to the NDDM is for all ages rather than pediatric ages only.
- Comparing the Orthodontic EFDA model employed by the Albuquerque IHS Dental Clinic that serves individuals 21 years of age and younger to service units employing a traditional model that have a user population consisting of all ages may not provide accurate estimates of Orthodontic EFDA impact.
- Programs with alternative workforce models that served both pediatric and adult populations were eligible to be included in the analysis because the data in the NDDM is for persons of all ages.

- The NDDM data and the user population represent service units as a whole, which could include satellite clinics that could affect the access and efficiency indicators.

Model characteristics

- The questionnaire sent to IHS dental programs did not capture information regarding the tasks assigned to alternative workforce models or the workforce characteristics of traditional models. Therefore, we lacked information about whether the activities performed by the alternative models align with the activities associated with RVU and services levels.
- Weighted indicators that account for the ratio of providers to population could only be calculated and compared among alternative workforce models. The provider ratio was calculated using the total number of alternative workforce personnel employed within a service unit at IHS facilities. The number of traditional providers at the IHS facilities using an alternative workforce model and the number of traditional or alternative providers serving the community at private facilities were not accounted for. In addition, the number of providers used by programs with a traditional model was unknown and a provider ratio could not be calculated for this group.

Recommendations

Alternative dental workforce models are a compelling approach to improve access to care and reduce oral health disparities in AI/AN communities. To enable an epidemiologically robust evaluation of alternative dental workforce models in the future, the following steps are recommended:

- Collecting data on the number of dental personnel and the specific tasks assigned and performed by dental personnel would facilitate comparison across different programs.
- Understanding the oral health characteristics and needs of the user population (by collecting data directly from the facility through provider interviews and exports of electronic dental record data) would facilitate comparison across different programs.
- Identifying facilities that employ a single alternative model would provide the opportunity to evaluate the impact of that model alone.
- Collecting data on facility and patient characteristics and then matching alternative and traditional model facilities would assist in isolating the impact of alternative models on productivity and efficiency.
- Assessing indicators before and after the initiation of alternative models at a given clinic – if such data are available – may provide a better estimate of the impact of any given model because it would minimize bias arising from the comparison of sites with different demographics and characteristics.
- Assessing the impact of alternative models on oral health outcomes (e.g., caries experience) could generate compelling data on the benefits to the patients derived from such models. This would require the systematic collection of oral health outcome data and prospective or retrospective comparison of outcomes before and after the initiation of such models or comparison of clinics with traditional and alternative workforces.

Evaluating the impact of alternative models on oral health outcomes was not possible because use of alternative models predated administration of the oral health surveys.

- Conducting a targeted study to assess the population characteristics, attitudes, and beliefs related to dental care utilization of ITU programs operating under a traditional dental workforce model and an alternative dental workforce model would enable a more thorough understanding of the facilitators and barriers to care-seeking. Factors unrelated to the specific model in use (e.g., approach to scheduling, community attitudes toward oral health, lack of oral health knowledge, transportation and economic challenges) are also essential to understanding utilization of dental services by a population.

References

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