

## **Chapter 1, Management of Oral Health Programs**

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## Introduction

The administration and the management of health programs for American Indians and Alaska Natives (AI/ANs) have changed progressively since their inception. The “Management of Oral Health Programs” section of this document provides a historical and legislative overview, followed by current information on the administration and management of healthcare programs for Native Americans. Included are the mission and goal of the Indian Health Service (IHS), a description of the diversity of health programs within the IHS infrastructure, a comparison of Title I and Title III legislation, references to various planning documents and management models that are applicable to health programs, a description of various legal issues relevant to the practice of dentistry, an overview of the Resource Requirement Methodology, a guide to completing a Request for Contract, information on oral health surveys, and a description of research activities in the IHS Dental Program, including a list of publications related to the oral health of AI/ANs.

*Note: For simplicity, the term “management” in this section refers to both the administrative and management aspects of programs.*

In general, healthcare for AI/ANs can be considered as a prepaid insurance plan. There are several mechanisms for carrying out this plan, including traditional IHS programs, Title I Tribal contract programs, Title III Tribal self-governance compacts, and Title V Urban Indian programs. Legislation during the last 20 years clearly shows the intent of Congress to achieve the maximum participation of Indian people in the administration and management of Indian healthcare programs. In the case of Tribal and Urban programs, the role of the IHS is becoming primarily consultative in nature. This chapter emphasizes that consultative role.

Additional information can be found on the IHS fact sheet at:

<http://info.ihs.gov/Files/IHSFacts-June2006.pdf>.

## Historical and Legislative Highlights

Article I of the Constitution of the United States reserves to the federal government the authority “...to regulate Commerce with foreign nations, and among the several states, and with Indian Tribes.”

In the early history of this country, the only federal health services available to Indian people were those provided by military physicians relative to the prevention of the spread of smallpox and other contagious diseases — diseases which were virtually unknown to Indian people before their contact with non-Indians. In 1849, Indian health policy shifted from military to civilian administration with the transfer of the Bureau of Indian Affairs (BIA) from the War Department to the newly-created Department of the Interior. Although some limited progress occurred under this new administrative arrangement, by 1875 there were only about half as many physicians as there were Indian agencies, and by 1900 the physicians serving Indians numbered only 83.

During this time, Indian health services were financed from miscellaneous funds appropriated to the BIA. Appropriations earmarked specifically for health services to Indians first occurred in 1911, in the amount of \$40,000. Dental services for Native Americans began in 1913, when the BIA assigned five dentists to travel among the reservations and Indian schools providing dental care. Since there were few roads, travel was often on horseback. A treadle handpiece, forceps, and the shade of a tree sometimes served as a clinic, and a bedroll as a home.

The Snyder Act of November 2, 1921, (25 USC 13), provided the formal legislative authorization for federal healthcare for Indian people. It authorized the Secretary of the Interior to expend funds for the “relief of distress and conservation of the health of Indians.” This short phrase of the Snyder Act continues to be the basic legislative statement of the Federal Government’s obligation to provide health services to Indian people.

In the mid-1920s, a more serious commitment was made to address the health needs of Indian communities. Civil service health professionals were aided by the assignment of commissioned officers of the United States Public Health Service (USPHS) to the BIA. While the increased number of professionals helped to some degree, the program was continually plagued with outdated facilities, severe understaffing, and inadequate appropriations. The Merian Report of 1928 described conditions and recommended additional Federal assistance to help the Indian people to once again become self-sufficient.

By 1934 there were 12 full-time dentists attempting to serve some 260,000 Indian people. Clinics were held in hospital rooms, school rooms, small adobe houses, or anywhere that space was available. There were still no fixed dental facilities, but in 1934 two dental trailers were purchased to serve as mobile clinics.

The number of professional staff serving Indian people declined during World War II. Several studies evaluated the BIA health program, including the 1948 Bureau of the Budget study, the 1949 report by the Hoover Commission, and a 1949 study by the American Medical Association, which identified the need for a new approach to Indian health programs through the USPHS.

In 1955, Public Law 83-568 (42 USC 2001), the Transfer Act, transferred responsibility for the healthcare of American Indians from the BIA to the USPHS with the establishment of the IHS. This act described the scope of the federal health program for Indian people in more detail than the Snyder Act. The Transfer Act made specific reference to the maintenance and operation of hospitals and health facilities.

By 1955 the Dental Program had 46 dentists and 22 auxiliary dental staff. The development of fixed clinics, the concept of preventive care, and the use of assistants to help dentists work more efficiently all had been incorporated into the program by the time the IHS came into existence.

In 1957, Public Law 85-151 (42 USC 2005) authorized federal assistance in the construction of community hospitals, thus making needed hospital facilities available to Indians. In 1959, Public Law 86-121 (42 USC 2004a) gave legislative form to IHS responsibilities for sanitation facilities and services. It provided specific legislative authority for domestic and community water systems, drainage, and sewage and waste disposal systems. Other laws, court decisions, and policies continued to clarify, increase flexibility, and add responsibilities to the IHS throughout the next two decades.

The Indian Self-Determination and Education Assistance Act, P.L. 93-638 (25 USC 450), was signed into law on January 4, 1975. Like the Transfer Act of 1955, the Self-Determination Act addressed questions of who would be the administrators of the Indian Health Program, rather than questions on the nature and extent of the program. The Act directed the IHS to turn over administrative and operational responsibility for all or parts of the IHS program to the Tribe(s) served by that program, upon the request of the Tribe(s), using the mechanisms of grants and contracts. The act authorized the IHS to make grants to Tribes for the planning, development, and facility construction of health programs.

With the passage of the Indian Healthcare Improvement Act, P.L. 94-437 (USC 1601), on September 30, 1976, the Congress defined the scope of the Indian Health Program by describing two major goals:

1. To ensure that the health status of Indian people is brought to the highest possible level
2. To achieve the maximum participation of Indian people in Indian health programs

This act was structured to address the backlog of unmet healthcare needs of Indian people in both reservation and urban settings, and to maintain a system for providing high-quality health services to these two groups. P.L. 93-638 provided the mechanism for utilizing resources provided by P.L. 94-437 and other authorities to fund the development of Indian self-determination.

Not only did P.L. 94-437 enumerate the nation's goals for Indian health, but it also explained in legislative language many of the programs and services already provided by the IHS. The law also established a number of new programs such as those that deal with Indian health manpower, alcohol abuse, the eligibility of IHS facilities for Medicare and Medicaid reimbursements, and services for Urban Indians. This provided the IHS with a broad legal base supporting the comprehensive health programs necessary to effectively advance toward the goals defined in P.L. 94-437.

More information on this Act can be found at [http://info.ihs.gov/Files/IHCIA\\_ReauthorizationAct-Jan%202006.pdf](http://info.ihs.gov/Files/IHCIA_ReauthorizationAct-Jan%202006.pdf).

In 1988 the Indian Self-Determination Act underwent a major revision, and the Self-Governance Demonstration Project (SGDP) was established. The SGDP gave a limited number of Tribes the ability to enter into compacts with the federal government, which

increased the scope of each participating Tribe's administrative control over its health programs (See "Title I and Title III Legislation Compared" subsection of Section I).

In 1994 the Indian Self-Determination Contract Reform Act was enacted, which enabled Title I Tribes (Tribes operating under Indian Self-Determination contracts) to have access to many of the same benefits as Title III Tribes (Tribes operating under Self-Governance compacts). Under both systems, Tribes now have access to "Tribal shares," which represent the proportion of funds, attributable to each Tribe, used to support IHS Headquarters and Area Office activities.

The 1994 legislation was a major step in achieving the goal of maximum participation of AI/ANs in Indian health programs. The IHS continues to move steadily from a management role to a consultative role, helping Tribes and Urban Indian programs to successfully manage their own health programs, including dental programs.

Additional information on the legal basis for the provision of IHS can be found on the IHS fact sheet at [http://info.ihs.gov/Files/BasisForServices\\_Jan2006.pdf](http://info.ihs.gov/Files/BasisForServices_Jan2006.pdf).

### **Mission, Goal, and Foundation of the IHS**

The IHS, an agency within the Department of Health and Human Services (HHS), is responsible for providing federal health services to AI/ANs. The provision of health services to members of federally-recognized tribes grew out of the special government-to-government relationship between the federal government and Indian tribes. This relationship, established in 1787, is based on Article I, Section 8 of the Constitution, and has been given form and substance by numerous treaties, laws, Supreme Court decisions, and Executive Orders. The IHS is the principal federal healthcare provider and health advocate for Indian people, and its goal is to raise their health status to the highest possible level. The IHS currently provides health services to approximately 1.5 million AI/ANs who belong to more than 557 federally recognized tribes in 35 states.

#### ***Mission***

The mission of the IHS, in partnership with AI/AN people, is to raise the physical, mental, social, and spiritual health of AI/ANs to the highest level.

#### ***Goal***

To assure that comprehensive, culturally acceptable personal and public health services are available and accessible to AI/AN people.

#### ***Foundation***

To uphold the Federal Government's obligation to promote healthy AI/AN people, communities, and cultures and to honor and protect the inherent sovereign rights of Tribes.

In order to carry out its mission, attain its goal, and uphold its foundation, the IHS:

- Assists Tribes in developing their health programs through activities such as health management training, technical assistance, and human resource development
- Assists Tribes in coordinating health planning, in obtaining and using health resources available through federal, state, and local programs, and in operating comprehensive healthcare services and health programs
- Provides comprehensive healthcare services, including hospital and ambulatory medical care, preventive and rehabilitative services, and development of community sanitation facilities
- Serves as the principal federal advocate in the health field for Indians to ensure comprehensive health services for Indian people

Additional information can be found at:

[http://www.ihs.gov/PublicInfo/PublicAffairs/Welcome\\_Info/ThisFacts.asp](http://www.ihs.gov/PublicInfo/PublicAffairs/Welcome_Info/ThisFacts.asp).

## **Diversity of Programs**

### ***IHS Programs***

Between 1955 and 1975, virtually all health programs that provided dental care for Native Americans were managed by the IHS. With few exceptions, the dentists were commissioned officers of the USPHS, and the dental auxiliary staff were federal civil service employees. Many of these “traditional” IHS programs are still in operation, but now they are only one of four different types of programs which provide health services for Indian people.

### **Tribal 638 Contracts**

Since the advent in 1975 of Public Law 93-638, the Indian Self-Determination and Education Assistance Act, many Tribes have elected to manage their own health programs, including the dental components. Funds that would have been used to operate an IHS program are transferred to the Tribe through a Title I “638 contract,” and the Tribe operates the program. Typically the dental staff are hired directly by the Tribe (Tribal-hires), but Tribes have the option of hiring PHS commissioned officer dentists through a Memorandum of Agreement (MOA) with the IHS. Civil service employees also can be detailed to Tribal programs for a limited tour through an Intergovernmental Personnel Agreement (IPA).

The 1994 Indian Self-Determination Contract Reform Act gave Tribes the right to gain access not only to funds used for the provision of direct services, but also to nonresidual funds (funds for services that are contractible by Tribes) which are used to support the IHS Area Offices and IHS Headquarters. These are known as “Tribal shares.” Using the Dental Program as an example, Tribes now have the right to determine whether they would like to continue to receive the dental support they have received from the Area Office and/or from Headquarters. If they decide to continue to receive support from the Area Dental Program, then that Tribe’s portion of those funds is left in the Area Office

budget. This is known as “retained Tribal shares.” If the Tribe decides to take its share of the Area Office dental funds, then the Tribe will provide administrative support to its own Dental Program, either internally, through the hiring of outside consultants, or via some other mechanism. A similar decision must be made by the Tribe regarding support from the IHS Headquarters Dental Program.

A detailed description of this process is included in the “Title I and Title III Legislation Compared” section below.

### **Self-Governance Compacts**

TheSGDP was initiated in the BIA in 1988 and applied to the IHS in 1992. It gave 30 Tribes (plus 30 additional Tribes each year) the right to assume administrative responsibilities beyond those provided by the original Indian Self-Determination Act. This was accomplished through compacts with the federal government that enabled Tribes to manage not only the operation of their health programs, but also to assume control over the administrative support provided by IHS Headquarters and Area Offices.

This demonstration project was the precursor of the 1994 Indian Self-Determination Contract Reform Act, which contains many of the same provisions. See the “Title I and Title III Legislation Compared” subsection for details.

### **Urban Indian Programs**

The legislative basis that supports health programs for Urban Indian people lies in two pieces of legislation: the Snyder Act of 1921 and Title V (Health Services for Urban Indians) of the Indian Healthcare Improvement Act of 1988 (P.L. 100-713). Although the arrangement is similar to the Tribal 638 contracting mechanism, there are differences. Urban programs exist through a contract or grant with a nonprofit Urban Indian organization. The eligible Indian population for Urban programs has been expanded to include American Indians who are from state-recognized Tribes and members of Tribes terminated by the federal government in the 1950s.

Approximately one-third of Urban Indian programs provide only information and referral (usually for behavioral health services such as substance abuse and mental health), one-third provide limited primary care, and the remaining one-third provide comprehensive primary care, including medical and dental services. The level of direct care available is related to the capability of the Urban programs to gain access to alternate resources from federal, State, and local sources to supplement the Title V funding.

As in Tribal programs, staff are usually hired directly by the Urban Indian program, but federal employees such as USPHS commissioned officers can be detailed to Urban programs. Staff from Urban Indian programs also are eligible for scholarship payback and the Loan Repayment Program, if funds are available.

Unlike Tribal programs, Urban Indian programs are not eligible to assume Tribal shares for services that they receive from Area Office or Headquarters, nor are they eligible to enter into self-governance compacts.

### **Additional Resources**

Tribal Programs: [http://www.ihs.gov/NonMedicalPrograms/Tribal/Tribal\\_index.asp](http://www.ihs.gov/NonMedicalPrograms/Tribal/Tribal_index.asp)

Urban Programs: [http://www.ihs.gov/NonMedicalPrograms/Urban/Urban\\_index.asp](http://www.ihs.gov/NonMedicalPrograms/Urban/Urban_index.asp)

Tribal Self Governance: <http://www.ihs.gov/NonMedicalPrograms/SelfGovernance/>

### **Program Management and Planning**

The management and planning of dental programs above all must address the needs of the customers (i.e., patients) who will receive the dental care. This includes stated needs that individual patients demand, such as having convenient access to emergency dental care, and unstated needs, such as a high prevalence of untreated oral diseases in the population being served by the program.

Ideally, services to be provided should be based upon the rates and types of disease among the total population, appropriateness of services for the total population, and demand of the total population, rather than upon ideal treatment for the individual patient. This is the public health principle of “doing the most good for the most people.”

When the issue of limited resources is added to the concept, this principle becomes, “doing the most good for the most people, at the lowest possible cost.” This implies the existence of community and clinical prevention programs, since in most cases it costs less to prevent dental disease than to treat it.

Finally, when the issues of patient satisfaction and provider satisfaction are added to the equation, the principle can be expanded to read, “doing the most good for the most people, at the lowest possible cost, and in a manner that is acceptable to those served and those serving.” This implies that customer expectations be assessed and addressed, and that working conditions, pay, and benefits meet the needs of the staff providing the services.

For these things to occur, the Dental Program must respond to community needs, the community must respond to the needs of the Dental Program, and decisions that affect the Dental Program must be made jointly. Rather than dental professionals making all the program decisions and doing things “to” and “for” people, as was often done in the past, program decisions now should be made in partnership with Tribal or Urban Indian boards and with the community as a whole.

Following are some specific concerns dental health providers should address when applying the public health approach to practice management:



1. Assuring access to oral health services for all AI/AN people for which the program is responsible.

Some questions to ask are: What is the oral health status of the community? What does the community perceive its oral health to be? Are the providers aware of and sensitive to oral disease rates and unique risk factors in the community? Does the practice respond to the actual treatment needs of the community or to those dictated by the Tribe, Service Unit, Area Office, or Headquarters?

2. Assessing the demand for care.

What are the barriers? What are the facilitators? Where is the community in terms of socioeconomic, cultural, ethnic, and educational achievement elements that relate to demand? What are the professional and personal health attitudes and values that control demand?

3. Determining the resources that are available to the community.

What number and types of manpower are there? What is their productive capacity and potential? Has every fiscal source been examined? Can the Tribe help? Are there concerned individuals and groups within the community that could be used as dental resources? Are volunteers available? Are there organizations (such as dental, dental hygiene, or dental assisting schools) or individuals outside the community that could be used as resources?

If these and similar issues are considered, the management of the program will better meet the oral health needs of the community, but first they need to be incorporated into a plan. The program planning mechanism most commonly used in the IHS Dental Program is Denniston's POARE model:

P	=	Problem Statement
O	=	Objectives
A	=	Activities
R	=	Resources
E	=	Evaluation

The first step is the development of a problem statement, which identifies a situation or condition of people or the environment that is considered undesirable by the program staff and the community. The problem statement identifies the gap between what exists and what the program and community would like to see exist.

The second step is the development of one or more objectives that address the problem. Each objective is a situation or condition that is desirable and which the program will attempt to attain or maintain. An objective should describe *what* condition will be addressed, *who* has the condition, *where* the condition exists, the amount or *extent* of the condition that is intended will exist, and *when* this is will be accomplished.

The third step is the development of activities, which are procedures that are carried out in order to accomplish the program objectives. Specification of activities should include *what* will be done, *when*, by *whom*, *where*, and *how*.

The fourth step is the identification of resources, which include the persons, money, equipment, facilities, technology, talent, and time involved in the performance of the activity or set of activities.

The fifth step in the planning process is identification of an evaluation process to determine the outcome of the activities and the effectiveness, efficiency, and acceptability of the outcomes.

Finally, the steps in the POARE model should be viewed as a circle, representing a continual process, because the results of the evaluation should be used in the development of future problem statements.

Additional information on POARE and the planning process can be found in Chapter 4 of this manual in the section titled “HP/DP Program Planning – POARE.”

Following is an excellent reference for information on the public health approach to dentistry:

Burt, Brian A. and Eklund, Stephen A. *Dentistry, Dental Practice, and the Community*, 6th edition, W.B. Saunders Co., 2005.

### **Legal Aspects of Medical/Dental Practice: Overview And Selected Issues**

*Disclaimer: All legal claims are unique, with their own circumstances and nuances. While the study of trends can yield useful information, legal counsel is suggested when addressing any individual legal claim.*

*The following introduction to dental malpractice issues was written by an HHS representative who at the time of writing serves as an HHS dental representative to the Medical Claims Review Panel (MCRP). In the course of these duties approximately 1,000 medical and dental malpractice claims have been reviewed over the course of 7 years. Trends and comments in this introduction are based on personal observation. This overview was not written by an attorney, and is not to be construed as legal advice.*

It is human nature to avoid detailed consideration of potentially disturbing issues. The thought of being involved in a malpractice claim, or of being named to the National Practitioner Data Bank (NPDB), is unsettling. Yet a basic knowledge of the system in which federal claims are handled in IHS, HHS, and the Department of Justice (DoJ),

along with strategies to minimize the probability of a successful claim, are of obvious value.

The set of topics related to malpractice claims in IHS, such as the Federal Tort Claims Act (FTCA), the NPDB, informed consent, standard of care, scope of work, and so on is reviewed in detail in “Risk Management and Medical Liability, A Manual for IHS and Tribal Healthcare Professionals” by Dr. Steve Heath. This document is available on the IHS Web site at [http://www.ihs.gov/NonMedicalPrograms/NC4/Documents/RM2\\_a.pdf](http://www.ihs.gov/NonMedicalPrograms/NC4/Documents/RM2_a.pdf). All dentists and hygienists are encouraged to review the pertinent detailed information in Dr. Heath’s document. If questions remain after review of the pertinent information, the reader should feel free to contact Dr. Patrick Blahut, or the current dental representative of HHS on the MCRP.

This introduction will address the questions most commonly asked by dentists and dental hygienists. These are:

- Who is at risk when a claim is filed, and exactly what specific risks are involved?
- How can I avoid being named in a malpractice claim?
- What dental procedures are most closely associated with successful dental malpractice claims?

There is a fourth set of questions that are not commonly asked, but should be:

- What is informed consent?
- Who can legally give consent?
- Do I need to obtain informed consent in order to treat minors when parents are not readily available?

### **Who is at risk? What are the specific risks?**

When a dental patient files a malpractice claim, the issues of “who is at risk?” and “what specific risks are involved?” can be very confusing. In order to shed light on these two seemingly simple questions, the reader must first have a rudimentary understanding of the FTCA and the NPDB.

Before 1946, the federal government could not be held liable for the actions of its employees because of the doctrine of sovereign immunity. The recourse of individuals injured by federal employees was limited to suing the employee and petitioning Congress. In 1946 Congress passed the FTCA, which provides that the United States may be liable for the negligent acts of its employees (and of certain contractors). It is under the FTCA that claims alleging negligent dental or medical care are made against the federal government.

The FTCA provides a limited waiver for the sovereign immunity of the federal government when a federal employee or employees are negligent within the scope of

their employment or their scope of work. Strictly speaking, it is the government and not the healthcare provider that is sued. Patients alleging under the FTCA can ask only for money; and since the request is directed at the government, it would seem that the answer to “who is at risk?” is “only the federal government.” This would be the case if it were not for the NPDB.

One common misconception is that the government provides malpractice insurance for its employees. Coverage under the FTCA is fundamentally different from private sector malpractice insurance. This distinction has important ramifications, both positive and negative, for the providers involved in malpractice claims. The primary positive attribute of the FTCA: it is free to all federal healthcare providers. The primary negative attribute: while the federal government is the defendant in any suit, the healthcare provider is at risk to being named to the NPDB. Since the government and not the provider is being sued, the provider’s opportunity for representation may be limited.

The NPDB is a clearinghouse or data warehouse that collects and releases information about payments made on behalf of physicians, dentists, dental hygienists, and other licensed healthcare providers as a result of malpractice actions and claims. The NPDB was created by Congress in 1986 in response to a number of perceived problems with our healthcare system:

- The number of malpractice claims against healthcare providers, and especially against physicians, was increasing rapidly.
- There were disturbing instances of physicians named in multiple malpractice claims moving from state to state to “start anew” and avoid detection. One specific practitioner with a string of serious malpractice claims, profiled in influential New York and Washington D.C. newspapers, provided Congress with the motivation to act.
- There was growing concern about the general quality of healthcare and the accountability of providers in the United States.

Healthcare providers are named to the NPDB for two general reasons:

1. If a hospital or clinic restricts or curtails privileges for 30 consecutive days or more based on conduct or competence, this action must be reported under law to the NPDB.
2. If any payment is made, including settlements or court judgments, as a result of a malpractice claim, the provider must be named to the NPDB.

The answer to “who is at risk?” is both the federal government and the individual healthcare provider. The specific risk to the government is financial; the risk to the provider is that of being named to the NPDB.

A number of misconceptions surround the FTCA and the NPDB. The following points are accurate, but often misconstrued:

- The FTCA covers some, but not all, contractors. Independent contractors are covered only if it can be shown that the government had authority to control the detailed performance of the contractor, and exercised substantial supervision over the contractor's day-to-day activities.
- The HHS cannot name to the NPDB individuals who are not covered by the FTCA. Nor can unlicensed individuals be named to the NPDB. Thus, if a dental assistant or unlicensed student injures a patient, it is the supervising federal employee who is at risk to being named to the NPDB.
- The respective roles of the Office of General Counsel (OGC), the DoJ, and the MCRP are understandably confusing to IHS healthcare providers. The OGC and DoJ defend the federal government, and are not involved in determination of who, if anyone, is named to the NPDB. The MCRP is the sole entity charged with the responsibility for identifying practitioners to be named to the NPDB.
- The significance of being named to the NPDB is unclear. Almost all state licensing boards ask about malpractice settlements during the process of license renewal. Dentists and hygienists seeking license in a new state will likely be asked to document any entries in the NPDB. Hospitals and Health Maintenance Organizations (HMOs) regularly query or check the NPDB during the credentialing process. The entry in the NPDB, accompanied by a brief narrative outlining the details of the case, is appropriately viewed as a "red flag" suggesting the need for further investigation. The practical significance of the entry in the NPDB, and the ramifications of the entry, rest in the perspectives of the investigating body. A provider seeking to change his state of practice or enter into an HMO may have some explaining to do. On the other hand, a practitioner in private practice and remaining in the same state may find an entry in the NPDB to be of little practical significance.

### **How Can I Avoid Being Named In A Malpractice Claim?**

Strictly speaking, there is no way to absolutely avoid being named in a malpractice claim. Good clinical skills and judgment, a pleasing chair-side manner, and attention given to receiving and documenting informed consent are all important factors that can minimize but not eliminate the risk of being named in a malpractice claim.

Since anyone can choose to file a lawsuit, a more practical question is "How can I avoid being named in a *successful* malpractice suit?" Specific suggestions include:

- Maintain your clinical competency. Be careful of getting into complicated procedures, especially if your local or immediate "back-up system" of expert clinical support is minimal.
- Document all professional communications, including telephone conversations.

- Make clear, legible, and complete record-keeping a high priority, identified as part of the clinical care process rather than as a necessary additional chore separate from the provision of care.
- Pay particular attention to clear communication with your patients. Foster realistic expectations, and obtain and document informed consent in writing.
- Pay particular attention to the dental procedures listed immediately below that are associated with malpractice claims.

### **What Dental Procedures And Treatment Decisions Are Most Closely Associated With Successful Dental Malpractice Claims?**

While the total number of medical and dental malpractice claims in HHS is increasing, and the number of IHS dental claims has increased gradually in recent years, the total number of IHS dental claims remains relatively small. Because of the small number of claims, any apparent trends are obscured by the general variability of claims from one year to the next. Also, a small number of similar claims in the coming years could alter the trends discussed herein. Nevertheless, approximately 12 years of HHS dental data yield the following associations:

- Oral surgery procedures are closely associated with successful malpractice claims. In this regard, two issues stand out:
  - Extraction of the wrong tooth. This specific claim is seen by the MCRP as somewhat analogous to a physician who operates on the wrong body part. All such claims received over the past decade, when substantiated, have been settled rather than defended. While the total number of claims over the years has been low, this is nevertheless the one most common specific clinical misadventure associated with successful dental malpractice claims.
  - Extractions that result in temporary or permanent nerve damage. Note that unlike the extraction of the wrong tooth, the infliction of nerve damage can sometimes be successfully defended. Less-than-ideal results from surgery are not necessarily grounds for a successful malpractice claim. The outcome of each individual case depends on the circumstances, general documentation, diagnostic records, and specific documentation with regard to informed consent.

These two oral surgery problems account for approximately one-half of all successful dental malpractice claims.

- Poorly documented informed consent, or lack of documentation in this regard, are both associated with successful malpractice claims. While lack of informed consent in lieu of any injury may constitute grounds for assault but is unlikely to result in a successful malpractice claim, any perceived injury whatsoever that triggers a claim is difficult to defend without carefully documented informed consent.

This last piece of advice leads into the final series of related questions concerning informed consent.

### **What Is Informed Consent?**

The concept goes back to the early years of the twentieth century, and gained widespread acceptance immediately after World War II. The underlying premise is that all competent adults have the right to determine what is done to their bodies. Informed consent includes discussion of diagnosis, proposed treatment, risks of proposed treatment, and alternatives, including the prognosis associated with no treatment whatsoever. Informed consent requires communication and information transfer; it is not a piece of paper with signature.

### **Who Can Legally Give Consent?**

The authority to consent to treatment lies solely with the patient, assuming he or she is a competent adult.

### **Do I Need To Obtain Informed Consent In Order To Treat Minors If Parents Are Not Available?**

This is a particularly relevant issue in many locations in Indian country. Many providers, support staff, and parents remember a time not long ago when informed consent was not consistently documented, and when complex treatment plans requiring multiple appointments were completed on youngsters without ever consulting with parents or guardians.

Documented informed consent is now considered mandatory prior to treating minors. The convoluted situations IHS provider encounter with regard to unavailable parents, expectations of Head Start programs, children cared for by relatives, and so on are beyond the scope of this introduction. Suffice it to say that with the exception of true emergencies, treatment should not be rendered to minors (defined in most states as individuals under the age of 18) without documented informed consent from the parent(s) or legal guardian(s).

Each malpractice claim is unique, in that the details and circumstances are always at least slightly different. Because of this, attorneys rarely speak in generalities, and prefer to focus on the particulars of individual cases. However, DoJ attorneys were recently asked the following questions:

- “What factors commonly result in settlement rather than defense of a malpractice claim?”
- “What do providers commonly do that results in losing a potentially defensible case?”

They offered three responses:

- Poor documentation of professional communications and poorly documented records in general. If something is stated in the patient's record, it is presumed to have occurred. Conversely, if it is not stated in the record, it cannot be assumed to have happened.
- Lack of documentation of informed consent, or poorly documented informed consent.
- Alteration or falsification of medical records. Such an act can be construed almost as a personal affront to the integrity of the federal District Court system.

Additional general information about Malpractice and Informed Consent can be found on the Safety Net Dental Clinic Manual Web site at:

[http://www.dentalclinicmanual.com/chapt4/section\\_03/topic\\_01/images/malpractice.doc](http://www.dentalclinicmanual.com/chapt4/section_03/topic_01/images/malpractice.doc)

and at <http://www.dentalclinicmanual.com/> Chapter 4 (Clinic Operations) Sections IV j, IV k, IV l, IV m, and IV n.

### **Resource Requirement Methodology**

The Resource Requirement Methodology (RRM) is a systematic process for determining the resource requirements, including personnel and contract dollars, that are necessary to provide effective, efficient, and acceptable dental services for eligible AI/ANs. The RRM provides a mechanism for all programs, Service Units, Tribes, or Areas Offices to be compared on the same relative scale with regard to resource requirements. The RRM also provides important supportive data for Congressional appropriation hearings.

The current RRM formula is based on oral health status and treatment needs data provided by the 1991–1992 IHS Oral Health Survey. While there are newer data from the 1999 IHS Oral Health Survey, it was decided that it would not be cost-effective to redo the RRM formulas with the new data. The survey data and official IHS population data are used as variables in a formula to calculate an RRM profile. Following are some of the assumptions used in the RRM calculation:

1. Approximately 70 percent of eligible Native Americans would seek dental treatment in a given year if relatively free access were available. This estimate is based on studies of utilization of dental care under various dental insurance coverage rates.
2. The backlog of treatment needs for a given population will not be reduced all at once, but over a period of eight years.

The calculation of annual workload per capita is accomplished by multiplying the eligible Indian population by the 70% utilization rate, and then multiplying the result by per capita annual treatment needs for incidence. A similar calculation is performed using a prorated portion (12.5%) of the per capita backlog needs. Then these two numbers are added together to provide an annual workload total. Finally, this total is adjusted by other



factors, such as the proportion of services typically referred to specialists or other contract dentists.

Because this calculation is cumbersome, a simplified method has been adopted that assumes that 95 service minutes are required per capita for all programs serving AI/ANs. Simply multiplying the official Indian population by 95 service minutes will provide an estimate of annual per capita treatment needs for a given population.

The RRM was originally calculated using service minutes as the workload measure. The IHS now uses Relative Value Units (RVUs) rather than service minutes as the workload measure, and there is no direct conversion factor between the two. Therefore, to eliminate the need to devise a new RRM based on RVUs, the RRM was converted to measure resource needs based on service population. An estimate of the resource needs of a dental program based on the size of the population it serves (dentists, auxiliaries, and operatories) can be found in Table 1.

**Table 1: Resource Requirements Methodology. Dental Staff and Facility Recommendations for Selected Ranges of Service Population**

Population Range	Dentists	Auxiliaries	Total Staff	Operatories
0–700	0	0	0	0
700–906	1	2	3	3
907–1284	1	3	4	4
1285–1789	1.5	5	6.5	5
1790–2421	2	7	9	6
2422–2673	2	8	10	7
2674–2926	2	9	11	8
2927–3431	3	10	13	9
3432–4042	3	12	15	10
4043–4547	4	13	17	11
4548–5052	4	15	19	12
5053–5557	4	17	21	13
5558–6063	5	18	23	14
6064–6315	5	19	24	15
6313–6821	6	20	26	16
6822–7073	6	21	27	17
7074–7578	7	22	29	18
7579–7831	7	23	30	19
7832–8336	8	24	32	20
8337–9094	8	27	35	21
9095–9600	9	28	37	22
9601–10,105	9	30	39	23
10,106–10,610	9	32	41	24
10,610 and over	Revert to the beginning of the chart to identify additional resources required to meet need in excess of 10,610 population			

It is recommended that no dental clinic be over 24 operatories. Larger clinics are inefficient. They also present access problems for dispersed populations.

Note: Auxiliaries include dental assistants, dental hygienists, and clerks.

The IHS Web page for the dental RRM is located at:

<http://www.ihs.gov/NonMedicalPrograms/PlanningEvaluation/rrm-ac-dental.asp>

### **Health Systems Planning Process Overview**

The IHS, in meeting its mission of providing healthcare to the Native American population of the United States, is involved in the design and construction of a wide range of healthcare facilities. IHS involvement in these healthcare facilities construction projects may be either planning, design and construction or if the project is to be managed by a tribe, funding and consultation with the tribal or Alaska Native organization. The IHS uses the Health System Planning (HSP) process to establish the IHS supportable project services, size, and design criteria for healthcare facility construction. The process uses specifically designed software to project space needs and layouts for the different components of a healthcare facility. The staffing projections from the RRM for the proposed facility are entered into the HSP system and in turn the HSP projects the space needs.

The goals of the HSP process are to provide the IHS with a better, faster and more cost effective way of developing Program Justification Documents (PJD), Program of Requirements (POR), and facility design.

### **Guide for Preparing a Request for Contract (RFC)**

Dental program personnel may find that their program is in need of goods or services (i.e., equipment or contract dental services from a specialist or general dentist) not readily available from federal government sources. When this occurs, an acquisition from the private sector may be necessary. Large purchases of goods or services require a contract between the government and the supplier of those goods or services. This includes obtaining bids from three different vendors ([www.gsa.gov](http://www.gsa.gov)). If only one source is available, then a Justification for Other than Full and Open Competition (JOFOC) has to be completed and submitted citing FAR 6.302-2- Unusual and Compelling need (<http://www.acquisition.gov>) The role of project officer for the acquisition is usually filled by the program personnel. The project officer is responsible for coordinating with acquisition officials on projects for which contract support is being considered, as well as for technical monitoring and evaluation of the contractor's performance after the contract has been awarded. Providers need daily supervision if they sign a personal services contract but do not if they sign a non-personal services contract. Nonpersonal services contracts are preferred over personal services contracts by most facilities. On the other hand, because of the required level of supervision, personal services contracts provide the contractor coverage under the federal Tort Claims Act whereas non-personal services contracts do not. Many providers therefore prefer the personal services contract because they are not responsible for personal malpractice coverage, which is required under

nonpersonal services contracts. This guide has been written to assist program personnel in the role of project officer.

### **Definition of a Contract**

A contract is a mutually-binding legal relationship obligating the seller to furnish the supplies or services (including construction) and the buyer to pay for them. It includes all types of commitments that obligate the Government to an expenditure of appropriated funds and that, except as otherwise authorized, are in writing. In addition to bilateral instruments, contracts include (but are not limited to) awards and notices of awards; job contracts; orders, such as purchase orders, under which the contract becomes effective by written acceptances or performance; and bilateral contract modifications.

### **The Contracting Process**

It is a requirement that anyone serving as a project officer must complete Basic Project Officer's Training. This is a five-day training course presented by the HHS. The Area Office Division of Acquisition Management can be contacted for enrollment information, availability, and scheduling.

When the need for a contract has been identified and the program staff have basic knowledge of the types of contracts available, they are ready to begin the contracting process. It is at this point that they are strongly encouraged to contact the Division of Acquisition Management. The contracting officer will assign a contract specialist to lead and assist them through the contracting process successfully.

The negotiated contracting process has three phases: preparation for solicitation, solicitation and award, and post-award administration.

## **I. Preparing for the Solicitation**

The first phase of the contracting process, preparing for the solicitation, is designed to produce two major documents: the Acquisition Planning Document (APD) and the Request for Contract (RFC).

### **A. Advance Planning**

Planning for an acquisition is the best way to ensure that the product or service will be acquired in the most efficient manner. Advance planning is critical to assuring that the contract award takes place in time to receive the goods or services when they are needed. Advance planning is comprised of three phases, which are briefly described below.

#### **1. Developing the Concept**

In this phase the agency realizes the need for an acquisition and defines, in broad terms, what effort will be required. Concept development serves to determine interest, scientific approaches,

technical capabilities, and the relevant state of the art. It may include the assessment of prior contract results, literature searches, and discussions with technical and scientific personnel.

Once the concept has been formulated, it must be reviewed for program relevance, need, merit, priority, and timeliness. It is beneficial to tie the concept development to the budget process, since the budget is the primary method of identifying, defining, and approving acquisitions.

## **2. The Acquisition Planning Document**

The Acquisition Planning Document (APD) is an administrative tool designed to enable the project officer and the contracting officer to accomplish the tasks required to acquire goods or services within a specified time schedule. This document is developed before the preparation and submission of the Request for Contract (RFQ). It outlines a schedule of the steps necessary to accomplish the acquisition, serves to avoid and resolve problems early in the acquisition cycle, and therefore avoids delay of the award.

The project officer usually assumes a lead role in developing an APD, while coordinating such development with the contracting officer. Project officer responsibilities also include finalizing the Statement of Work (SOW); preliminary development of the Request for Contract (RFC), including required cost estimates and delivery requirements; requesting the necessary funds; suggesting vendor sources; determining criteria for evaluation; obtaining required clearances; and submitting the completed RFC to the contract officer.

### **a. SOW**

The SOW is a critical document in the acquisition process. The SOW does the following:

1. Describes the work to be performed or the services to be provided
2. Defines the responsibilities of the IHS and the contractor
3. Provides an objective measure so that both the IHS and the contractor will know when the work is complete and payment is justified.

Ambiguous work statements can result in unsatisfactory performance, delays, disputes, and higher costs. It is highly

recommended to meet with the contract specialist for assistance in writing the SOW. Many service units have templates available for the preparation of SOWs (as well as JOFOCs).

#### **b. Government Cost Estimates**

The project officer must also prepare a detailed independent Government cost estimate for all requisitions. Unit-pricing, pricing by lot, or total pricing may be used when price is controlled by competition for specific off-the-shelf type items or services. This involves contacting vendors or contractors for their fee schedules. For a negotiated acquisition the estimate should include the following cost factors: labor hours by category, travel, per diem, malpractice insurance, materials, consultants, subcontracting, overhead, general and administrative costs, and fees. At the Service Unit, Contract Health Services (CHS) funds are used to pay for contractor services

Government cost estimates are privileged information and may not be disclosed to persons outside the Government or to any person who does not have a compelling reason to know. The exception is a solicitation for construction, which includes an estimated price range in the solicitation.

The Division of Acquisition Management has a standard format and set of instructions for completing the APD. It is imperative that program personnel contact the contracting officer before attempting to prepare this document.

### **3. Special Approvals and Clearances**

In addition to the standard approvals required on an APD, some types require particular approvals or clearances. Program personnel should consult with the contracting officer to determine if any of these special approvals and clearances are required on the APD. One thing is required: the APD must be completed and approved by personnel in Acquisitions Management before proceeding to work on the RFC

#### **B. The RFC**

The RFC is a request from the project officer that is needed to begin the process necessary to award a contract. It is vital to the quality of the acquisition and the timely placement of a contract that the RFC be transmitted to the contracting office as early as possible. As with the APD, the Division of Acquisition Management has a standard format and set of instructions for preparing the RFC. It is important that the project officer

work closely with the contracting officer in preparing the request for contract, in order to ensure its accuracy, completeness, appropriateness, and applicability.

## **II. Solicitation and Award**

The request for contract reflects the results of acquisition planning. It gives contracting personnel the information they need to make necessary determinations about how the acquisition will be conducted and how a contract will be awarded. It enables them to prepare and issue a solicitation document that tells prospective offerors what the Government needs, what terms will govern the anticipated contract, and how to submit proposals or bids. Advertisement is required in Fed Biz Ops for a period of 30 days ([www.fbo.gov](http://www.fbo.gov)).

The bids, or technical and cost proposals submitted by offerors, are evaluated separately by personnel working under the direction and supervision of the contracting officer. Usually a group called the Technical Evaluation Panel is assembled to evaluate the technical proposals. The criteria for evaluation developed in the APD are used at this point. The contracting officer retains the cost/price proposals and assesses them with assistance, as needed, from contracting, legal, and audit personnel. The contracting officer is responsible for the selection of the offeror to be awarded the contract. The contracting officer's decision should take into consideration the recommendations of the program official, Technical Evaluation Panel, or other personnel directly involved in the evaluation process. Of prime importance in making the selection is the solicitation language concerning the evaluation criteria and basis for award.

All contractors are subject to character investigations in accordance with P.L. 101-630 "Indian Child Protection and Family Violence Act of 1990."

## **III. Post-Award Administration**

Administration of a contract begins after negotiations have been successfully concluded and the contract has been signed; it ends at the closeout of the contract when performance has been completed and the contractor has received its final payment. The project officer must monitor a contractor's progress closely and make known to the contracting officer potential problems that threaten performance so that remedial measures may be taken. Contract administration includes all the functions and duties relating to such tasks as:

- Monitoring the contractor's technical progress This includes overseeing the contractor's time and daily attendance for a period of two weeks written on a self-certification form

- Approving invoices for payment in accordance with contractual terms and signing and submitting invoices to Acquisitions Management (AM) citing “certifying to the best of my knowledge that supplies and/or services have been received and are acceptable in accordance with the terms of the contract (signature)/Project Officer/Date.” Invoices need to be printed on the letterhead of the vendor’s or contractor’s stationary or they may not be processed by AM for payment. Electronic Funds Transfer shall be the utilized method of payment.
- Controlling government property. Contractors shall wear visible Government-provide identification at all times while on the premises of the IHS facility.
- Monitoring subcontractors.
- Reviewing purchase orders for accuracy and completeness.
- Overseeing contract modifications and terminations where authorized.
- Performing other administrative tasks required by the contract. Contractor shall provide worker’s compensation, income tax withholding, social security payments, and health insurance.

Contracts can be written for up to a five-year period.

#### Problems:

If this process is not followed and an invoice is received from a contractor or vendor for goods and services already received, then a *ratification* will need to be done by the project officer. However, a ratification also includes parties that have signed for the project officer but were not given signature authority for this individual. If the ratification is not approved by local administrative personnel, the project officer is responsible for payment of services out of pocket. *It is imperative to avoid a ratification because it is a very time-consuming process, puts the officer at financial risk, and could result in administrative action.*

Be aware that submissions of APDs and RFQs can take several months to process.

## References

*IHS Manual*, Section 5

*Basic Project Officer Student Manual*

*Advanced Project Officer Student Manual*

The above references can be obtained from the Division of Acquisition Management in the Area Offices.

## Oral Health Surveys

Periodically the IHS Dental Program conducts oral health surveys in order to determine oral health status, trends, and treatment patterns among AI/ANs. Data provided by these surveys are valuable for estimating the resources required to treat the oral health problems of Native Americans and for evaluating the effectiveness of interventions that have been initiated to reduce the prevalence of oral diseases in this population.

Until the late 1970s, periodic surveys were not considered a high priority because epidemiological data were collected on all patients via the dental examination forms and analyzed at Headquarters. This type of data collection was discontinued because the data did not vary significantly from year to year. It also required valuable dental resources to collect the data on every patient who received a dental exam.

Since the termination of routine data collection on all patients, three major oral health status surveys have been conducted to determine progress in reducing the prevalence of oral diseases among AI/ANs:

1. The 1983-1984 IHS Oral Health Survey was a nationwide dental patient-based survey which was instrumental in calling attention to the extensive oral health problems and needs of Native Americans. One of the findings of the survey was that the caries prevalence among AI/AN schoolchildren was approximately twice that of schoolchildren in the general U.S. population.
2. In 1988–1990, the IHS participated in the International Collaborative Study of Oral Health Outcomes (ICS-II). Two IHS areas and a total of four Service Units were included in the survey. A combined site made up of the Chinle and Shiprock Service Units represented the Navajo Area. In the Aberdeen Area, the Pine Ridge and Rosebud Service Units participated. Survey participants were drawn from a random sample of people registered at the local Indian hospital in each Service Unit. The ICS-II was designed to provide new information on the relative contributions of socioenvironmental, delivery system, and personal lifestyle factors to oral health status and the cost of care.

Compared to other ICS-II sites, findings from the Native American sites showed more caries, more periodontal disease (and higher severity of perio disease), more untreated oral disease, more missing teeth, more edentulism, and more compromises to quality of life of the people as a consequence of their oral conditions. In addition, the Native American groups tended to utilize fewer dental services, practiced less oral self-care, perceived their dental health to be worse, disliked the way their teeth looked, and perceived the acceptability of dental care available to them less favorably than people from other sites.

One of the important aspects of the ICS-II was that it enabled the IHS to compare survey results drawn from a random sample with past and future dental patient-based survey



results, as well as with other U.S. sites and other countries. Additional information on the ICS-II can be found in “The World Health Organization International Collaborative Study of Oral Health Outcomes (ICS-II): Preliminary Results from Indian Communities,” which is referenced in the bibliography at the end of Section I.

1. The 1991 IHS Oral Health Survey was a dental patient-based survey similar to the 1984 survey, except that the protocol had been updated considerably. Almost 25,000 dental patients of all ages were examined at over 100 IHS, Tribal, and Urban Indian clinics throughout the country. Items such as fluorosis, anterior tooth trauma, access to fluoridated water, medical conditions, oral lesions, and patient access issues were included in the survey. The results of the 1991 IHS survey are summarized in a monograph entitled, “Oral Health of Native Americans: A Chartbook of Recent Findings, Trends, and Regional Differences.”

The findings of the ICS-II survey and the 1991 IHS survey were quite similar, suggesting that the dental patient-based surveys typically used by the IHS are probably adequate for determining the health status of communities. Although using a community-based random sample is still the ideal method, a dental patient-based survey is logistically much easier to accomplish.

2. The 1999 IHS Oral Health Survey was also a dental patient-based survey similar to the 1984 and 1991 surveys. For the 1999 Oral Health Survey, the IHS collected data from 12,881 dental patients ranging from 2 to 96 years. In some cases, the findings point to conditions that are continuing to improve, such as children’s access to preventive dental sealants. But more often, the data reveal stable or even worsening oral health trends for thousands of AI/AN families. A copy of this survey can be found at: [http://www.ihs.gov/MedicalPrograms/Dental/downloads/Oral\\_Health\\_1999\\_IHS\\_Survey.pdf](http://www.ihs.gov/MedicalPrograms/Dental/downloads/Oral_Health_1999_IHS_Survey.pdf).

### **Pathfinder Surveys**

For local programs or IHS Area Offices wishing to conduct their own surveys, a pathfinder survey is suggested. The pathfinder methodology is a practical, economic survey sampling technique. The surveyor is able to use a smaller-than-normal sample by focusing on index ages such as 12, 15, 35–44, and 65–74, which allows the survey to be completed with less resources than a larger survey would require. Contact your Area Dental Officer or IHS Division of Oral Health for more information, or obtain a copy of the publication “*Oral Health Surveys - Basic Methods*, World Health Organization, 4th ed, Geneva, 1997.

### Scientific Inquiry (Research)

3. Continual observation and the formulation of opinions based upon these observations are activities in which virtually all dental professionals are involved. Formal scientific inquiry, or research, on the other hand, is conducted by relatively few dentists, either in private practice or in IHS Direct, Tribal, or Urban (I/T/U) Dental Programs. Nonetheless, formal research does have a place in the IHS Dental Program because of the benefits that it can provide for AI/ANs.

IHS-supported Dental Programs benefit from new knowledge in research areas being investigated by the National Institute of Dental Research, dental schools, state dental directors, schools of public health, and a variety of other dental and public health professionals. Therefore, relatively little emphasis should be directed toward scientific inquiry into basic research in anatomy, physiology, microbiology, chemistry, pharmacology, systemic and topical fluoride compounds, or basic education and behavioral science research.

When formal scientific inquiry is conducted in Dental Programs which serve AI/ANs, it should be directed toward those areas having the greatest potential impact on the oral health of the Indian people. Such research should emphasize methods of application of proven or promising oral disease prevention and control measures or techniques for the delivery of oral health services. For example, the 1993–1995 “Pima Periodontal Disease and Diabetes Clinical Trials” have provided the IHS with a new clinical regimen that has been shown to be effective in the treatment of periodontal disease.

Chapter 7 of Part 1 of the *IHS Manual* provides detailed information on “Research Activities in the IHS.” Anyone in I/T/U Dental Programs who is planning to attempt a research project should review this information before proceeding. The manual is available at IHS Headquarters in Rockville, MD, and can be accessed online from the IHS homepage. Part 1, Chapter 7 is available at <http://www.ihs.gov/PublicInfo/Publications/IHSMannual/part1/pt1chapter7/pt1chpt7.htm>.

Especially important is the approval process that is necessary before research can be conducted by Indian health programs. This includes the following:

- Local Approval
  - Tribal government
  - Service Unit or Tribal health program
- Area Office Approval
  - Area Research and Publication Committee (RPC)
  - Area Institutional Review Board

- National Approval
  - National Institutional Review Board

Research involving survey questionnaires must also be approved by the Office of Management and Budget (a time-consuming process), unless the survey is part of clinical care. Detailed information on the approval process can be found in the *IHS Research Manual*.

### **Emergency Medical Treatment and Labor Act**

In 1986, Congress enacted the Emergency Medical Treatment & Labor Act (EMTALA) to ensure public access to emergency services regardless of ability to pay. Section 1867 of the Social Security Act imposes specific obligations on Medicare-participating hospitals that offer emergency services to provide a medical screening examination (MSE) when a request is made for examination or treatment for an emergency medical condition (EMC), including active labor, regardless of an individual's ability to pay. Hospitals are then required to provide stabilizing treatment for patients with EMCs. If a hospital is unable to stabilize a patient within its capability, or if the patient requests, an appropriate transfer should be implemented.

[http://www.cms.hhs.gov/manuals/Downloads/som107ap\\_v\\_emerg.pdf](http://www.cms.hhs.gov/manuals/Downloads/som107ap_v_emerg.pdf)

Special responsibilities of Medicare hospitals in emergency cases

[http://a257.g.akamaitech.net/7/257/2422/09nov20051500/edocket.access.gpo.gov/cfr\\_2005/octqtr/pdf/42cfr489.24.pdf](http://a257.g.akamaitech.net/7/257/2422/09nov20051500/edocket.access.gpo.gov/cfr_2005/octqtr/pdf/42cfr489.24.pdf)

The *IHS Provider* published an update of EMTALA in Indian Country in 2004. This overview can be found at:

<http://www.ihs.gov/publicinfo/publications/healthprovider/issues/prov0804.pdf>

### **Health Insurance Portability and Accountability Act**

The Health Insurance Portability and Accountability Act (HIPAA) is also known as the Kennedy-Kassebaum bill. It was first proposed with the simple objective to assure health insurance coverage after leaving a job. Congress added an Administrative Simplification section to the bill.

The goal of the Administrative Simplification section of the bill was to save money. It was requested and supported by the healthcare industry because it standardized electronic transactions and required standard record formats, code sets, and identifiers.

The impact of Electronic Standardization, however, was that it increased risk to security and privacy of individually identifiable health information. Because Congress did not provide legislation defining the privacy and security requirements of HIPAA, the HHS was required to provide them.

There are currently four proposed or final rules from DHHS for HIPAA:

1. Transaction and Code Set standards
2. Privacy standard
3. Security standard
4. Identifier standards

### **HIPAA Project Team**

The strategic plan developed by the headquarters HIPAA team calls for them to interpret the regulations and develop national policies needed to comply with them. The team will cooperate with regional and national I/T/U programs and provide them with related information and materials as they are developed for HIPAA compliance.

It is expected that the IHS Area Offices will develop Area HIPAA compliance plans that will include policy development needed to achieve HIPAA compliance at the area level. In addition, the Area Offices will work with the local I/T/U programs in helping them become HIPAA compliant.

### **Additional Information**

The IHS has developed multiple resources to aid in the implementation of the various HIPAA requirements. The home page for IHS HIPAA resources can be found at <http://www.ihs.gov/AdminMngrResources/HIPAA/index.cfm>.

By following the various links in the HIPAA home page, the reader can access IHS Forms and Policies and Procedures; Frequently Asked Questions (FAQs); Privacy, Security, and Identifier Standards; HIPAA training resources and other pertinent information.

More information about HIPAA can be found by clicking on the following links:

[Department of Health and Human Services Questions and Answers](#) (click on Question 15, “Generally, what does the HIPAA Privacy Rule require the average provider or health plan to do?”)

<http://www.hipaa.org/>

<http://www.ada.org/prof/resources/topics/hipaa/index.asp>

## **Service Unit Dental Program Budget Management**

### **Introduction**

Over the past several years, the IHS Dental Program budget has been decentralized in most areas from the Area Offices to the Service Unit level. This change has made it necessary for each Service Unit Dental Program Chief to become familiar with IHS dental budget allocation, tracking, and management. While there are many ways to keep

track of the local dental budget, the method listed below has proven to be useful in simplifying the process and making budget information readily available. The process described below consists of filling in local program numbers into an Excel spreadsheet in which the formulas needed to do various budget calculations have been embedded. A file containing this spreadsheet and a file with a sample spreadsheet with sample numbers already filled in are included in this chapter of the Oral Health Program Guide (OHPG).

### **Budget Spreadsheet Background**

The service unit budget worksheet is an Excel spreadsheet, which can be used to plan your fiscal year budget. By planning a fiscal year budget, you will have the information necessary to make decisions regarding personnel, supplies, equipment, and so forth. All too often, service unit leadership will come to the dental chief late in the fiscal year because the dental program is either out of money, or there is an excess that needs to be spent in a short period of time. Prior planning can assist the dental chief by identifying a budget surplus or shortfall early in the fiscal year when there is time to react in a calm and well thought out manner.

The budget worksheet can be used while meeting with finance or the clinical director. When a shortfall is projected, the dental chief can decide which spending areas can be reduced. The chief can also approach the leadership for additional funds from third-party collections. Without documentation such as the worksheet, it is often difficult to persuade leadership. When a surplus is projected, the dental program can review its equipment needs, or perhaps fund a new program.

The initial set-up of the worksheet will take about three hours. It could be delegated to a responsible clerk, once all of the information has been gathered. Subsequent years can then be set-up within one hour or so.

### **Information Needed to Fill in the Spreadsheet**

The information necessary to complete the worksheet is as follows. It should all be gathered prior to setting up the worksheet.

1. **Advice of Allowance:** This one-page document is available from your finance department. It documents the number of dollars which the dental line item budget will receive at your service unit. This memo is important, as it identifies the money to which the dental program is entitled.
2. **List of Employees.** This list is available from either finance or human resources. It should include the Position Control Number (PCN), Job Title, Employee Name, Personnel System (Commissioned Officer (CO) or Civil Service (CS)), Grade and Step for Civil Service and/or rank and number of creditable years for Commissioned Corps, Series number (680 for dentists, 681 for assistants), Status (full or part time) and CAN number. Some service units will apply a different CAN number for dental employees who work at satellite clinics.

3. Service Unit Flowback Sheet. This sensitive form is protected by the Privacy Act. But, the dental chief has a right to receive it, as they are responsible for the dental budget. This information should be entered into the worksheet by the chief only. It is inappropriate for a clerk to have access to this data. The flow back sheet contains, by civil service employee, the gross pay by pay period, the Federal Insurance Contributions Act (FICA) amounts, Federal Employee Health Benefits (FEHB or the dental program's portion of health insurance to be paid), Retirement (Civil Service Retirement System [CSRS] or Federal Employees Retirement System [FERS]), and federal Employees Group Life Insurance (FEGLI) which will come from the dental budget. CS salaries may also be found at <http://www.opm.gov/oca/06tables/indexGS.asp>
4. Cost of Living Allowance (COLA). This is the increase in pay that employees get each January. There are usually different amounts for CS and CO staff.
5. The amount of dollars for Continuing Dental Education (CDE) that is determined by either the chief or service unit leadership.
6. Title 38 Bonus Pay for any CS dentists. This is available from the human resources office.
7. Recruitment/Retention/Relocation Allowance (3R bonus) for any CS dentist who may receive it. Again, this is available from the human resources office.
8. Commissioned Officer Basic Pay and Subsistence rates can be found at [http://dcp.psc.gov/PDF\\_docs/2006\\_paychart.pdf](http://dcp.psc.gov/PDF_docs/2006_paychart.pdf)
9. Dental Special Pay Rates are available at [http://dcp.psc.gov/DSP\\_fact\\_sheet.htm](http://dcp.psc.gov/DSP_fact_sheet.htm)
10. Basic Allowance for Quarters (BAQ) can be found at: <http://www.military.com/benefits/military-pay/basic-allowance-for-housing-rates>

### **Instructions For Setting Up The Work Sheet**

1. Open the Excel spreadsheet. Notice the tabs at the bottom, "budget" and "salary". Click on these tabs to go back and forth.
2. Click on Salary tab. Fill in the following:
  - a. PCN
  - b. Category (full or part time)
  - c. Title

- d. Name
- e. Grade and step
- f. Series and CAN #

...for each civil service employee within the top table. PCNs are important to track as they are your allowable positions. It may be allowed by your service unit to change, for example, a dental assistant position into a dentist position. PCNs are also helpful in tracking vacancies, and in determining which position you will recruit. The grade and step are important in order to define an employee's base pay per the pay chart. The series number is used to determine continuing education dollars.

3. The spreadsheet is set up for pay period information. Therefore, if you enter the annual pay rate under CS Base Pay, you will need to divide by 26.2 pay periods. Use the formula: (=annual pay from pay chart)/26.2, without the parentheses (e.g. if the annual pay rate from the pay chart is \$26,311, the formula would be =26311/26.2). Enter the base pay for each CS employee.
4. For those not familiar with Excel, the "equals" sign (=) placed immediately before a number or symbol indicates that what follows is a mathematical formula: e.g., =A/B would mean A divided by B
5. Enter Title 38 bonus pay and 3R bonus in their respective columns for each employee who receives them.
6. For the column titled, "Pay Periods Filled", enter 26.2 if the position will be filled for the entire year. If you have a vacancy or expect a vacancy, reduce the 26.2 pay periods by an amount you figure that the position will go vacant. The dollars that go unused when a position is vacant are often referred to as lapsed salary dollars. These dollars can be used to balance a budget with a shortfall, or to purchase additional equipment. It is important to know of and to track this information.
7. Enter info for FICA, FEHBA, CSRS/FERS, and FEGLI from the flowback sheets. Again, these benefits are paid for through the dental line item budget.

The spreadsheet will then calculate the following:

- Total salary
- Total benefits
- Grand total (salary plus benefits)
- Percent benefits for each employee

Will give a total.

Percent benefits may be of benefit to the chief. It is IHS policy to determine an employee's benefits at a fixed percent (around 25%). However, if the employees choose to not partake of the health or life insurance benefits, then the program will see a total percent of less than 25%. It is important to know that this extra money exists, and it can be used for special projects.

The small table below the CS section calculates additional dollars that are required for:

- COLA.
- Any Within Grade Increase that may occur (a figure of 1.8% is the rule of thumb).
- Cash awards (figured at 2% of total salaries). The cash awards figure can be adjusted down in order to balance a budget, but gives the chief a figure to use when planning the awards program.

For the Commissioned Officer table:

1. Fill in all information for:
  - a. PCN
  - b. CAT
  - c. Title
  - d. Incumbent name
  - e. Rank/years
  - f. Series
  - g. CAN
2. CO Base Pay tables are set up on a monthly basis, as is the worksheet. Place the proper base pay amount for each employee, and place the Subsistence amount in Cell N59. There is a formula to place this amount in each employee's row.
3. Enter the number of months during which the position will be filled. Again, this can be used to determine lapsed salary dollars which may become available.
4. Total CO Salary is figured by formula.
5. Enter Additional Special Pay (ASP) and any Accession bonuses into their respective columns.



6. Enter any estimated change of station costs (including moving of household goods, travel, and dislocation allowance) for an officer who will move into or out of the service unit. The service unit is responsible for moving any CO into the area and for moving any officer away who separates. Travel costs for officers who transfer out are paid-by the receiving clinic.
7. FICA is figured by formula.
8. Enter Variable Special Pay (VSP), Basic Allowance for Housing (BAH), and any Multi-Year Retention Bonus (MRB).
9. CO Subsistence will enter automatically.
10. The remaining columns are filled by formula.

The small table below the CO section calculates additional dollars similar to that below the Civil Service Section.

Now, click on the Budget tab. You will notice several cells already filled in from data calculated from the Salary tab. There are a few cells that you will have to fill in manually.

1. Subobject 21.21, TDY is used for travel that is not CDE related. It should include travel for chiefs meetings, National Oral Health Conference representative's travel, and/or program reviews. You might use historical data by averaging those amounts actually used over a three-year period.
2. 21.61 and 21.63, Permanent Change of Station can be figured on vacancy rates. Your service unit travel clerk can provide an estimate for you.
3. 22.21 GSA vehicles. You can project this by historical data or by going to the GSA Web site at <http://apps.fss.gsa.gov/vehicles/leasing/2006/>
4. 23.80 Communication is used for cell phones or for beepers. Use current contract/Administrative Resources Management System (ARMS) document figures.
5. 24.00 Printing is used for superbills, medical history forms, pamphlets, and so on. Use historical data.
6. 25.00 Services. This is for laboratory services, copy/fax machine maintenance agreements, or dentist personal service contracts. Use current projections from ARMS documents.
7. 26.00 Supplies. Use last year's historical data from ARMS and add an amount for inflation.
8. 31.00 Equipment. Enter the amount from your equipment wish list.

Some of the amounts in 1–8 above may need to be adjusted up or down in order to balance your Total to the Advice of Allowance.

## **Policies and Procedures**

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) defines Policies and Procedures as the "formal, approved description of how a governance, management, or clinical care process is defined, organized, and carried out."

A Policies and Procedures (P&P) manual is, therefore, a series of documents that describe how the dental clinic functions. The manual provides instructions for all of the program's functions, including procurement, health records, recruitment and retention of staff, position descriptions, hours of operation, scope of services, evaluation, etc.

Staff members of any healthcare organization come from diverse educational backgrounds and points of view. Without guidance from an established set of P&Ps, each person would develop individual strategies to accomplish job responsibilities, which may be disjointed and lead to inefficient and possibly ineffective clinic operations. The P&P manual ties all functions together; it is the instruction manual that helps to ensure smooth and efficient operations. It should be used to help orient new staff to their jobs and to update current staff whenever policies or procedures are changed. Summaries of various P&Ps can be made available to the clinic's user population to explain why the clinic provides services the way it does.

Establish a uniform or standard format for all P&Ps used throughout the facility. A common format includes:

- Purpose of the policy
- Policy statement
- A step-by-step description of the procedures required to implement the policy

Most IHS facilities will already have an approved format for P&Ps that the dental program should follow in developing its manual.

All P&Ps should be marked as either "new" or "revised", and should be signed and dated by the person having authority to approve and implement them. Policies should be reviewed at least annually and revised as necessary.

## **Sample Table of Contents**

The following section provides a sample table of contents for a dental program P&P manual. The topics are only suggestions, as local service unit policies may stipulate other topics that should or should not be included in the manual. Many of the policies suggested in the Table of Contents can be service unit policies and may not need to be developed specifically for the dental program.

***Sample Policy and Procedure Manual Table of Contents***

Introduction

Facility or Service Unit Goals and Objectives

Facility or Service Unit Organizational Chart and Lines of Authority

Dental Program Goals and Objectives

I. Facility Dental Program

- Facility Dental Program Description
  - Policy
  - Purpose
  - Dental Scope of Services/Functional Statement
  - Description of Dental Facility
- Organization
  - Organization Chart
  - Qualifications of Staff
- Daily Program Operations and Priorities of Care
  - Clinic Hours
  - After Hours Procedures

II. Patients' Rights and Responsibilities

- Bill of Rights and Responsibilities
- Confidentiality/HIPAA
- Grievance Procedures
- Release of Information
- Informed Consent
- Patient Education
- Language Interpretation
- Handling of alleged or suspected child abuse cases

III. Referrals

- Emergency Patient (DDS unavailable)
- Medical Consultation and Follow-up

- Dental Specialist Consultation

#### IV. Emergency Procedures

- Medical Emergency (Code Blue)
- Fire Evacuation Plan
- Disaster Plan

#### V. Dental Program

- Continuous Quality Improvement/Performance Improvement Plan
- Technical Quality of Care Evaluations
- Program Reviews
- Prevention Programs
- Levels of Care
- Patient Management
  - Eligibility
  - Fee Schedule/Sliding Fee Schedule (if appropriate)
  - Outpatients
    - Emergency Patient
    - New Patient
    - Recall Patient
    - Checking Blood Pressures, Blood sugars, etc.
    - After-hours Emergency Coverage
    - Prescriptions
    - Narcotic Prescriptions
  - Inpatients
    - Admissions (Hospital and Emergency Room)
    - Consults
    - Inpatient seen in dental clinic
    - Inpatient seen in a hospital room
    - Inpatient prescriptions
    - Property of patient
  - Clinical Charts
    - Charting Symbols and Procedures
    - Approved Abbreviations
    - Retention of medical records
    - Retirement of inactive records

- Appointments/How to access the appointment system
- Broken and Cancelled Appointment Policy
- Recall Policy
- Deferred Services
- Referral Policy
- Use of Standing Orders
- Policy for Utilization of Dental Laboratories
- Adverse Drug Reaction Policy
- Drug Sample Policy
- Storage of Medications in the Dental Clinic
- Antibiotic Prophylaxis Policies
- Operational Procedures
  - Environmental Concerns
  - Safety Policies
  - Security Plan
  - Equipment Maintenance Schedules and Repair Policies
  - Inventory/Procurement Procedures
  - Infection Control Protocols
    - Needle Recapping
    - Autoclave use and Monitoring
    - Handwashing
    - Surface Disinfection
    - Exposure Control Plan and Bloodborne Pathogens
  - Mercury Safety
  - Biopsy Monitoring
  - Response to medical device recalls and hazard notices
  - Hazard Communications

## VI. Human Resources

- Billets/Job Descriptions
- Standards of Performance
- Career Plans with Educational Requirements
- Knowledge, Skills, and Abilities per Position

- Staff Training
- Volunteer Process
- Student Requirements
- Volunteer Process
- Temporary/Intermittent Employees
- Credentialing Process
- Privileging
- Orientation
- Provision for Employee Health Services and Screening
- Continuing Education Policy
- Staff Grievance Procedures
- Peer Review

VII. Short and Long-Term Plans

VIII. Listing of Standard Forms

IX. Dental Reference Documents

**Additional Resources**

Appendix I of this chapter contains samples of P&Ps that have been used in IHS dental programs in the past. These samples do not represent IHS policies or guidelines. Rather, they are examples that should be used as templates to help dental clinics develop policies and procedures for local circumstances.

The following links provide examples of P&P manuals and other clinic protocols currently in use by community dental clinics around the country:

[Tennessee Department of Health](#)

[Plan de Salud del Valle \(Salud Family Health Centers, Fort Lupton, CO\)](#)

[Dental Program Procedures](#)

**Incident Reporting**

In 2003, the IHS launched a new Web-based incident reporting system named *WebCident*. The new computer application, which meets all federal reporting requirements, was developed by IHS Environmental Health Officers to replace the old, paper-based system. *WebCident* was created by the IHS to document employee, patient, and visitor injuries and illnesses, as well as hazardous conditions and certain property and security incidents, all of which must be reported. This new system will greatly improve

the incident reporting process, which previously was impeded by difficulties in proper form completion and routing. Also, with the addition of computer support, the information can be better analyzed to identify incident rates and trends. Incident information will be made immediately available to supervisors and safety officers for follow-up and corrective actions that will help prevent future incidents.

*WebCident* has many features that make it superior to the paper-based incident reporting system, and it is designed to be readily accessible by any IHS employee with access to the IHS intranet. Among its many features is that it will automatically generate reports required by the Occupational Safety and Health Administration (OSHA) and other agencies, it does not require installation of a computer program because it is Web-based, and it will provide a set of data that captures incidents nationwide. Personal information, such as employee names is kept confidential; however, safety officers or researchers may use the data set to identify injury and incident rates locally, regionally, or nationally.

WebCident can be accessed on the IHS intranet at: <http://webcident.ihs.gov/> or by clicking on the WebCident link on the Institutional Environmental Health Web site at <http://www.ihs.gov/NonMedicalPrograms/TEH/index.cfm>.

## Appendix I: Sample Policies And Procedures

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\_\_\_\_\_ **SERVICE UNIT**  
**POLICY/PROCEDURE**

Department: Dental

Subject: INSPECTION AND REVIEW OF EMERGENCY KIT

Effective Date:

Revision Date:

Supersedes:

Distribution: DENTAL STAFF, SAFETY COMMITTEE

**PURPOSE:** To ensure that the Dental Clinic's emergency kit is kept fully stocked at all times, and to ensure that all drugs in the emergency kit have not exceeded their respective expiration dates.

**POLICY:** A check list of all items in the Dental Clinic's Emergency Kit will be kept in the cabinet in which the kit is stored. On a monthly basis and any time that the kit is used, the contents of the kit will be checked against the list, and any missing or outdated items will be replaced by the person checking the kit. The responsibility for the monthly checking of the kit will be shared by all dentists on the staff. The Deputy Chief of the Dental Program will develop a monthly schedule for these reviews.

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**DENTAL CLINIC**  
**POLICY/PROCEDURE**

Subject: TREATMENT OF MINORS

Effective Date:

Revision Date:

Supersedes:

Distribution:

**PURPOSE:** To provide for obtaining legal informed consent for treatment of persons under the age of 18 years.

**POLICY:** Patients under the age of 18 must be accompanied by a parent or guardian to provide informed consent before any dental treatment will be rendered. This policy will be waived only under the following circumstances:

1. The minor patient is suffering from an acute dental emergency and the patient's health and well-being might be adversely affected if treatment is delayed.
2. The minor patient has suffered a traumatically avulsed or fractured tooth while at school and is accompanied by a school nurse or school official.
3. Once a treatment plan has been established, presented to the parent or guardian, and agreed to by the parent or guardian, then follow-up restorative work may be done without the presence of the parent or guardian. However, the parent or guardian must still accompany the minor patient if any extractions are to be performed.

**PROCEDURE:** When a patient under the age of 18 presents to the dental clinic unaccompanied by a parent or guardian for exam or walk-in care, and is not suffering from an acute emergency condition, the patient will be asked to return to the clinic when he/she can be accompanied by a parent or guardian. A copy of this policy will be presented to the patient to give to the parent or guardian. Older brothers, sisters, aunts, uncles, and grandparents are not to be considered as the guardian of the minor unless the minor is in their legal custody.

Legally emancipated minors will be treated as adults.

\_\_\_\_\_ **SERVICE UNIT**  
**POLICY/PROCEDURE**

Department: Dental

Subject: MAINTENANCE AND REPAIR OF DENTAL EQUIPMENT

Effective Date:

Revision Date:

Supersedes:

Distribution: DENTAL AND BIO-MED DEPTS.

**PURPOSE:** To insure that all dental equipment is maintained in safe and effective working condition so as to minimize risks to patients and staff and minimize down time due to equipment failures.

**POLICY:** Preventive maintenance of dental equipment will be the responsibility of the Area Bio-Medical Engineering Department, and will be conducted on a semi-annual basis according to their policies, procedures, and schedules. Unscheduled repairs of dental equipment will be the responsibility of the Bio-Medical Engineering Department and will be conducted according to the policies and procedures of that department. Preventive maintenance and repair logs are maintained by the Bio-Med department.

**PROCEDURES:** 1. The Area Bio-Medical Engineering department will be responsible for scheduling and conducting preventive maintenance in the \_\_\_\_\_ Dental Clinic.

2. For unscheduled repairs, Dental personnel will contact the \_\_\_\_\_ Bio-Med Department by phone, whenever possible, to apprise them of the needed repairs. Then a Bio-Med work order will be completed by the Dental staff member and forwarded to the Bio-Med Department, with the back, yellow copy kept in the Maintenance and Bio-Med Log in the Dental office.

**DENTAL CLINIC**  
**POLICY/PROCEDURE**

Subject: Broken And Cancelled Appointments		
Effective Date:	Revision Date:	Supersedes:
Distribution:		

**PURPOSE:** Due to the large number of people who make appointments but fail to show up for them or fail to give adequate advance notice when canceling them, it has become necessary to have a policy on appointment responsibility. Broken and cancelled appointments waste the clinic's very limited time and hinder the dental program's efforts to improve the oral health status of the people that we serve.

**POLICY:** The Dental Program will allow only 2 broken appointments per six month period. An appointment is considered to have been broken if any of the following occur:

1. The patient fails to show up for the appointment
2. The patient appears more than 15 minutes late for a scheduled appointment
3. The patient calls to cancel an appointment with too little advance notice to allow that appointment time to be rescheduled with another patient (24 hours will be considered to be the minimum time necessary to avoid a broken appointment ).

Patients who wish to cancel dental appointments must do so a minimum of 24 hours in advance of their scheduled appointment. If less notice is given without a valid excuse, the appointment will be considered to have been broken.

**PROCEDURE:** When a patient accumulates two broken appointments in a six-month period, that person will not be allowed to schedule any further routine appointments for a period of six months following the second broken appointment.

\_\_\_\_\_ **SERVICE UNIT**  
**POLICY/PROCEDURE**

Department: Dental

Subject: USE, STORAGE, AND TESTING OF LEAD APRONS

Effective Date:

Revision Date:

Supersedes:

Distribution: DENTAL STAFF, X-RAY DEPT.

**PURPOSE:** To provide guidelines for the use, storage, and testing of protective lead aprons in dental radiography.

**POLICY:**

1. Lead aprons shall be used for all dental x-rays.
2. Dual lead aprons shall be used whenever the patient is pregnant.
3. Lead aprons shall be stored by hanging them on wall-mounted hooks in such a manner as to prevent them from being folded or crimped, which could violate the integrity of the lead barrier.
4. In order to ensure the integrity of each lead apron in use in the dental clinic, all aprons shall be tested by being exposed to x-rays over flat plane films in the Radiology department on an annual basis. The films obtained in this manner shall be reviewed by the Chief, Dept. of Radiology for the purpose of certifying the integrity of the aprons.
5. Aprons not passing this test shall be removed from service by the Chief or Deputy Chief of the dental program.

**INDICATIONS FOR SEDATION IN THE DENTAL CLINIC**

1. The preoperative and the fearful, anxious, or uncooperative child whose disruptive behavior precludes the safe delivery of quality dental care and whose developing psyche should not be exposed to the potential emotional/psychological liabilities of treatment under duress.
2. A patient who has had prior sensitization to, or exhibits an acute anxiety reaction to the professional environment and has resisted reasonable behavior modification techniques.
3. A coexisting medical complication presenting either a relative or absolute contraindication to treatment outside a sedation modality (i.e. poorly controlled seizure disorder, severe cerebral palsy, etc.).
4. Patients who are physically, mentally, or sensorially compromised and whose disabilities present management problems in a fully conscious state.
5. Patients with severe orofacial trauma or requiring extensive oral surgical treatment.
6. The patient with extensive treatment needs who lives in a remote area and has a verifiable transportation constraint.

## **SHIPROCK SERVICE UNIT**

### **POLICY/PROCEDURE**

Department: Dental

Subject: ENDODONTICS POLICY

Effective Date:

Revision Date:

Supersedes:

Distribution:

**PURPOSE:** To establish a policy for the provision of endodontic services in the \_\_\_\_\_ Dental Program.

**BACKGROUND:** Endodontic services fall within the higher levels of the IHS Dental levels of care document. The majority of endodontic services are relatively time consuming, requiring from two to three hours of chair time per tooth from start to final restoration. In addition, most endodontic services, excepting those necessitated as the result of traumatic injuries to the teeth, are required because of previous long term neglect on the part of the patient.

**POLICY:** 1. Endodontic services in the \_\_\_\_\_ Hospital Dental Program will be offered to those patients who exhibit an adequate level of oral health and hygiene to make the long-term success of the procedure predictable. It shall be the sole responsibility of the treating dentist to make this determination. Patients whose past dental histories indicate long term neglect, frequent broken appointments, and/or high levels of caries and/or periodontal disease will be considered to be poor candidates for endodontics and will not be offered the option of endodontics unless the treating dentist feels that there are extenuating circumstances that justify the provision of endodontics.

2. Anterior and bicuspid endo will be routinely offered to those patients who meet the above criteria. However, due to the extreme amount of time required for molar endodontics, molar endodontics will not routinely be done. Molar endodontics may be offered to a few selected patients based on age, oral health and hygiene, and the strategic importance of the molar in the dental arch. Molar endodontics, when provided, will be limited to first molars, unless a second or third molar occupies the space of a first molar due to the previous loss of the first molar, or the second molar is to be used as the distal abutment for a dental prosthesis. The treating

dentist, in consultation with the Chief or Deputy Chief, Complex Dental Unit, will make these determinations.

3. All posterior endos will be restored with cusp-protecting restorations. This will include both cast crowns and onlays when levels of care allow for the provision of these services, and cusp protecting amalgams.

4. The dental program will make every effort to complete every endodontic procedure that is started by the program, except for those molar root canals that the patient(s) agreed to have completed at their own expense at a private dentist.

5. In general, endodontics will be treatment planned after other Level I through III services have been provided.

- PROCEDURES:
1. Endo patients who have root canals started in the walk-in clinic will be instructed that they must schedule an appointment for a routine examination before the root canal can be completed. If the patient fails to follow-up, and the tooth again becomes symptomatic, the patient will then be offered only extraction of the tooth, regardless of whether the tooth is an anterior or posterior tooth. An information sheet explaining these requirements will be given to all patients who have endos started, and this will be recorded in the progress notes.
  2. Patients who have endodontics treatment planned as part of a routine exam will, in general, have all other routine preventive and restorative services treatment planned ahead of the endo. Exceptions to this would include the tooth that is symptomatic and requires endodontic treatment to stop the pain or active infection.
  3. Patients with rampant caries or numerous teeth which are pulpally involved will be offered endodontics only for strategically important teeth; the others will be extracted.
  4. Patients who have exceeded the clinic's broken appointment limit will not be offered endodontics if they appear for treatment in the walk-in clinic; rather, they will be offered only extractions.



\_\_\_\_\_ **SERVICE UNIT**  
**POLICY/PROCEDURE**

Department: Dental

Subject: DENTAL CLINIC SCHEDULE AND HOURS OF OPERATION

Effective Date:

Revision Date:

Supersedes:

Distribution: DENTAL STAFF, CLINICAL DIRECTOR, DON

The dental clinic will be open to see patients from 8:00 AM until 12:30 PM Monday through Friday, and from 1:00 PM until 4:30 PM Monday, Tuesday, Thursday, and Friday. The clinic will be closed from 12:30 PM until 1:00 PM each day so that the staff can take a lunch break. The clinic will also be closed to patients every Wednesday from 1:00 PM until 4:30 PM to allow the staff to attend service unit committee meetings, to order and re-stock supplies, to participate in staff meetings and in-services, and other related non-clinical duties.

The dental clinic will be closed on all Government Holidays.

**CLINIC SCHEDULE**

A walk-in clinic will be scheduled every day that the clinic is open to see patients with urgent or emergent dental problems. The hours of the walk-in clinic will be the same hours that the clinic is open to see patients. Patients may sign in for the walk-in clinic each morning from 8:00 AM until 11:30 AM and on Monday, Tuesday, Thursday, and Friday afternoons from 1:00 PM until 3:00 PM. Patients will continue to be seen until closing time each clinic day. The walk-in clinic will be staffed by 1 dentist and 3 dental assistants, and 3 dental operatories will be used to see the walk-in patients.

In addition to the walk-in clinic, the dental clinic will also have appointment and expanded functions clinics, to be held during the same hours of operation. All exam, prophylaxis, periodontal, restorative, endodontic, prosthetic, and most surgical appointments will be scheduled for these clinics. Staffing of the appointment clinics will depend on the numbers of dentists and dental assistants available, and will usually consist of 3 chairs of expanded functions and 1 or more chairs of general clinic (where more specialized and time-consuming procedures are performed).

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**SERVICE UNIT**  
**POLICY/PROCEDURE**

Department: Dental

Subject: SAFETY POLICY

Effective Date:

Revision Date:

Supersedes:

Distribution: SAFETY OFFICER, DENTAL STAFF

**POLICY:** The dental clinic will be a safe place to work with any unsafe conditions corrected as soon as possible. All dental employees are required to adhere to the set policy as written.

**PURPOSE:** To minimize the possibility of injury while employees are on the job.

**PROCEDURE:** The following topics will be covered: responsibility, electrical and storage safety, smoking, eye and hand safety, dental lab, patient treatment areas, and environmental hazards.

**RESPONSIBILITY** As detailed by Presidential directive and subsequent organizational directives, supervisors have the responsibility to instruct all employees to see that any discrepancies from the policy are dealt with, and to have any unsafe conditions corrected as soon as possible. Employees have the responsibility to report any existing problem and to conduct themselves in a manner so as to eliminate any possibility of injury to themselves or to others. All employees have the responsibility to report any accidents. All employees should be familiar with hospital fire, safety, and disaster (FSD) plans. Supervisors must keep copies of these procedures readily available in the clinic. The FSD plans should be reviewed by each employee at least annually.

#### **ELECTRICAL AND STORAGE SAFETY**

Inadequacies must be presented in writing to the service unit Safety Committee. Corridors and working areas should be kept free of obstacles, debris, or clutter which could cause falling accidents. Any new appliances or electrical equipment must be safety tested prior to being placed into use following service unit policies.

#### **OXYGEN AND COMPRESSED GASES**

Emergency oxygen cylinders in the dental clinic will be stored on mobile carts. The pressure in emergency oxygen cylinders will be monitored and recorded by the dentists on a daily basis. Nitrous oxide cylinders will be kept on the Nitrous Oxide-Oxygen sedation

unit, as will the oxygen cylinders used for this purpose. The pressure in these cylinders will be checked by the dentist prior to the initiation of a Nitrous Oxide-Oxygen sedation procedure, and changed whenever the pressure is too low to allow the safe completion of the procedure. Oxygen and Nitrous carts will be stored in readily accessible locations, but out of normal traffic patterns.

#### FLAMMABLE LIQUIDS

All flammable liquids will be stored according to service unit policies, as determined by the Safety and Infection Control Committee.

#### HAZARD COMMUNICATIONS

All dental employees shall be required to undergo the annual training on Hazardous Materials and Hazard Communications as provided by the service unit and as mandated by service unit policies and procedures as implemented by the Safety and Infection Control Committee. Material Safety Data Sheets will be maintained, in a notebook kept in the dental office, for all potentially hazardous materials in use in the dental clinic, as per service unit policies. This register will be maintained by the Staff Dental Officer. All materials in use in the dental clinic will be labeled according to the criteria set out in the Hazard Communications Standard and service unit safety policies.

#### ON THE JOB INJURIES

All on the job injuries, needle sticks, etc. will be reported to the safety officer according to service unit safety policies using the standard incident report form.

#### DENTAL RADIOLOGY

Lead aprons are to be placed on *all* patients receiving x-rays. All permanent dental staff will wear monitoring badges. All x-rays will be taken from behind the protective shields.

#### MEDICAL EMERGENCIES FOR DENTAL PATIENTS

1. CPR: Dental staff will be trained to render cardio-pulmonary resuscitation (CPR) and receive refresher courses annually.
2. Emergency Life Support: The dental staff shall know where the emergency drugs are kept. The dental staff shall know where the emergency equipment is kept and how to operate it. The dental staff shall request medical staff support immediately at the onset of life threatening emergencies.

**MERCURY HYGIENE**

The dental staff will abide by the Mercury Hygiene guidelines as adopted by the American Dental Association.

**NITROUS OXIDE**

1. Nitrous Oxide equipment shall be of the fail-safe variety.
2. No Nitrous flows unless there is adequate pressure.
3. Nitrous will not exceed 50% of the gaseous volume.
4. All nitrous oxide equipment will be used with scavenging masks. All scavenging equipment will be vented to the outside.
5. Until supplementary ventilation can be installed in the dental clinic, the use of nitrous oxide will be limited to those cases where sedation is necessary and CHS dollars are not available to refer the patient.

**\_\_\_\_\_ DENTAL CLINIC**  
**POLICY/PROCEDURE**

Subject: RECALL POLICY		
Effective Date:	Revision Date:	Supersedes:
Distribution:		

**PURPOSE:** The presence of a recall program allows the dental department to follow-up on all patients who enter the recall system and thereby insure the quality and longevity of the services that have been provided, and to maintain a state of dental health once it has been achieved. In addition, the presence of a recall system helps to reinforce to the patients the need for routine dental examinations and routine care to protect their dental health.

**POLICY:** At the completion of all planned treatment, each patient will be offered the opportunity to be placed on recall status. The recall period for those patients who choose to enter the recall system will be established by the treating dentist and will be individualized to the patient's needs based on previous disease rate, presence of space maintainers, presence of prostheses, oral hygiene, etc.

**PROCEDURE:** 1. Upon completion of all planned treatment, each patient will be offered the opportunity to enter the recall system.

2. Patients choosing to enter the recall system will be asked to self-address a postcard or franked envelope.

3. The dental receptionist will mark in the lower left-hand corner of the card or envelope the month and year that the dentist has selected as the recall period for the patient.

4. The card or envelope will then be placed in the recall file in the month that the recall is to occur.

5. Once each month, the receptionist will remove all of the cards and envelopes in the file for that month, attach a recall notice, and mail the cards and envelopes to the patients.

6. Recall notices will serve as a reminder only to the patients, appointment slips will not be mailed with the notices. It will remain the responsibility of the individual patients to schedule the recall exam according to normal appointment procedures (see

appointment policy). The dental staff is too small to provide services to everyone in the service population, so to provide open access to exam appointments to those people in the recall system would in the long run end up denying access to exam appointments to new patients who wish to avail themselves of the services of the dental clinic. Therefore, the recall system will serve as a reminder only.

\_\_\_\_\_ **DENTAL CLINIC**  
**POLICY/PROCEDURE**

SUBJECT: Prosthodontics		
EFFECTIVE DATE:	REVISION DATE:	SUPERCEDES:
DISTRIBUTION:		

**PURPOSE:**     Prosthetics are very expensive both in terms of dollars and clinical time. It is therefore necessary to insure that all prosthodontic services provided in the \_\_\_\_\_ Dental Clinic go to only those patients who have demonstrated the oral health practices necessary to maintain the prosthetic device after it has been completed.

**POLICY:**       In keeping with the public health concept of providing emergency, preventive, and routine restorative procedures before more complex rehabilitative services, all patients receiving prosthetics must first receive all basic levels of care (i.e., periodontal, preventive, restorative care) before prosthetic services are offered, without exceeding the clinic's broken appointment limit.

Patients' treatment planned for prosthetics must prove that they can maintain an adequate level of oral hygiene to ensure the long term success of the prosthesis.

All periodontal services needed to bring the teeth involved in the prosthesis, both as abutments and as opposing occlusion, to PSR level I or better must be provided prior to the prosthesis. Teeth not meeting PSR level I criteria are not eligible for prostheses.

Stainless steel crowns are not acceptable as permanent restorations on permanent teeth. They should be treatment planned for replacement with a cast or porcelain crown.

If clinic scheduling should become overly backlogged, with scheduling extending significantly more than three weeks in advance, prosthetic services may be eliminated from the schedule of direct care services being provided.

Because of the lengthiness of prosthetic appointments, broken appointments will not be allowed. If a patient breaks a prosthetic appointment, his/her treatment will be halted at that point.

**PROCEDURE:** Patients may be required to undergo an oral hygiene program to reduce plaque indices to acceptable levels prior to receiving prosthetic services.

Prosthetic services needed as a result of traumatic tooth fractures or avulsions are to be prioritized higher than services needed as a result of caries or periodontal neglect. In general, the prognosis for long-term success is greater in these cases.

Once prosthetic treatment has started, no broken appointments will be allowed. If a patient breaks an appointment after prosthetic work has started, the treatment will be terminated at that point and any unused portions of their laboratory fees will be requested from the lab and returned to the patient.

An information sheet detailing the requirements for prosthetics will be provided to all patients entering that portion of their treatment plan.



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**\_\_\_\_\_ SERVICE UNIT**

**POLICY/PROCEDURE**

Department: Dental

Subject: GRANTING OF DENTAL PRIVILEGES

Effective Date:

Revision Date:

Supersedes:

Distribution: ALL NEW DENTISTS, CLINICAL DIRECTOR

**PURPOSE:** To establish guidelines by which initial clinical privileges will be granted to Dentists coming on duty in the \_\_\_\_\_ Service Unit.

**POLICY:** Full clinical privileges will be granted for all level I, II, and III services (from the IHS dental Schedule of Services). In general, level IV and V services not pertaining to complex oral, periodontal, or endodontic surgery, conscious sedation, reduction and fixation of fractures of the jaws, and comprehensive orthodontics will also be granted as full privileges. In general, privileges for the services contained in the above list of exceptions (see attached copy of the Dental Privileges Form for the specific procedures) will be granted as limited until proof of additional training, experience, and competence, as indicated by records of CDE, quality assurance activities, peer recommendations, and peer review are available.

**PROCEDURE:** 1. Initial privileges are granted using the standard Navajo Area Dental Privileges form (copy attached).

2. Dentists wishing to increase their privileges must do so by applying to the Medical-Executive Committee, through the Chief, Complex Dental Unit, in writing for the increased privileges, and including documentation of their training, competence, and experience to justify the requested increase.

\_\_\_\_\_ **SERVICE UNIT**  
**POLICY/PROCEDURE**

Department: Dental

Subject: ELIGIBILITY FOR DENTAL CARE

Effective Date:                      Revision Date:                      Supersedes:

Distribution: DENTAL STAFF, MEDICAL RECORDS, ALL COMMISSIONED OFFICERS

**PURPOSE:**        To establish a policy that insures that all eligible patients have access (at minimum) to services falling within level I of the IHS Dental Schedule of Services at the \_\_\_\_\_ Service Unit.

**POLICY:**        Eligibility for care in the \_\_\_\_\_ Service Unit will be determined by the Patient Registration Office and/or Medical Records. In general, Native Americans and their descendants, and Commissioned Officers of the USPHS and their dependents are eligible for care.

**PROCEDURE** Due to the extreme backlog of services needed by the local Native American population, services for the dependents of Commissioned Officers may be provided on a "Space Available" basis only (i.e. no appointments may be given, dependents must wait for broken appointments and other unscheduled openings in the appointment system in order to be seen). Care for Commissioned Officers may be provided by appointment (see Appointment Policy) but is limited to the same levels of care that are provided to the Native American population. Dental care for all non-beneficiaries, including dental emergency care, must be approved in advance by the Service Unit administration and all necessary non-beneficiary forms and arrangements for payment must be completed before services will be rendered.

\_\_\_\_\_ **DENTAL CLINIC**  
**POLICY/PROCEDURE**

Subject: Conscious Sedation		
Effective Date:	Revision Date:	Supersedes:
Distribution:		

**PURPOSE:** To ensure the safety of the patients and staff of the \_\_\_\_\_ Dental Clinic.

**POLICY:** A. *Anyone seeking to perform conscious sedation must meet all of the following qualifications and must be granted specific clinical privileges for the use of the techniques:*

1. Must have graduated from a school accredited by the American Dental Association, American Medical Association or the American Osteopathic Association. If an individual is a graduate of a foreign school, the requirements mandated by each of the above named associations for foreign graduates must be met.
2. Must have received formal training via residency or internship in the use of conscious sedation techniques; or must have received formal training in the administration of conscious sedation from an ADA or AGD certified continuing education course. The training should include a hospital anesthesia rotation with emphasis on airway management, management of emergencies, pharmacology of sedative drugs, physical evaluation of patients, and risk assessment.
3. Formal training must include the use of equipment, the recognition of medical problems which may exist, indications and contraindications to conscious sedation, limitations of sedation, signs and symptoms of adequate and inadequate sedation, complications that may arise, and the treatment of these complications.
4. Must maintain annual certification in CPR.
5. Must demonstrate continued clinical competence in the use of conscious sedation.

B. *Documentation and Limitations*

All sedation techniques used will be maintained at levels defined as conscious sedation.

At the termination of a sedation procedure, the dentist will record in the patient's chart all pertinent events that took place during the course of sedation, including the dose of all drugs used, vital signs obtained pre-op, post-op, and at a minimum of 15 minute intervals intraoperatively, adequacy of the depth of sedation obtained, and the patient's condition upon discharge from the dental clinic.

A log of all sedation procedures, including date, patient's name, and chart number will be kept.

C. The appropriate equipment and personnel must be present for the use of conscious sedation.

Stethoscope and appropriately sized sphygmomanometer must be present.

For all sedation techniques except anxiolytic sedation a pulse oximeter must be used throughout the duration of the procedure.

For all sedation techniques except anxiolytic sedation, monitoring of the vital signs must be done by an appropriately trained member of the operating team other than the dentist or chairside assistant.

#### D. Procedural Controls for all Sedations

1. Conscious sedation will be used only on those patients on whom other forms of behavior modification are either contraindicated or ineffective (i.e. indications for its use must exist and be stated in the patient's records).
2. A complete and current medical history, including appropriate medical consultations, current weight of the patient, and indication for using the sedation must be documented in the chart.
3. Conscious sedation in the dental clinic will be limited to American Society of Anesthesiologists (ASA) Class I and II patients.
4. Use of any restraints, including the papoose board, must be documented.
5. After any conscious sedation procedure, the patient will not be discharged until fully recovered or until the patient is oriented to time, place and person and is accompanied by a responsible adult.

6. All patients receiving conscious sedation must be NpO for at least 4 to 6 hours prior to the sedation procedure, and have this documented in the dental record.

7. All patients scheduled to receive conscious sedation will receive both verbal and written instructions concerning the sedation procedure prior to the appointment, and the provision of such instructions will be documented in the dental chart. In addition, written consent must be obtained prior to the procedure.

#### E. Nitrous Oxide-Oxygen Sedation

1. All gauges and flow meters will be in full view while in use.

2. All rubber goods will be inspected prior to each use.

3. Ambient atmospheric levels of waste gases will be measured twice a year.

4. Leak testing will be performed quarterly.

5. Hoses and breather bags will be replaced when visual inspection reveals deterioration or whenever leaks are found during testing.

6. Equipment will be inspected for leaks and operational status prior to each use.

#### 7. Procedural Controls for Nitrous Oxide

- a. N<sub>2</sub>O will be used only in operatories that have proper plumbing and ventilation for the scavenging and elimination of waste gases
- b. Patient speech should be minimized and rubber dam should be used whenever possible.
- c. The proper sized mask should be used to ensure a tight seal.
- d. N<sub>2</sub>O will not be used if any dental staff member is pregnant or is suspected of being pregnant unless that person can be isolated from waste gasses until ambient levels have returned to zero.

\_\_\_\_\_ **SERVICE UNIT**  
**POLICY/PROCEDURE**

Department: Dental

Subject: STANDING ORDERS FOR DENTAL ASSISTANTS AND RECEPTIONIST

Effective Date:

Revision Date:

Supersedes:

Distribution: DENTAL STAFF

Staff members will assemble and properly fill out forms 42-1, Patient Service Record, and 42-2, Patient Progress Notes. The assistant will verbally review the patient's Health History, check with the patient for any changes in health status, and date and initial the health status section of the 42-1 form.

Dental auxiliaries trained and certified in dental radiography shall take bitewing x-rays for each exam patient according to FDA guidelines on frequency of radiographs, copy attached. A panoramic x-ray shall be taken on all new patients 8 years and older every 5 years. Emergency patients shall have a periapical x-ray taken of the area of the chief complaint. The dental officer shall be consulted in the case of "loose", exfoliating primary teeth prior to taking a periapical radiograph. Pregnant patients shall not have any x-rays taken without the order of a dentist.

\_\_\_\_\_ **SERVICE UNIT**  
**POLICY/PROCEDURE**

Department: Dental

Subject: SUCCESSION TO AUTHORITY IN THE DENTAL CLINIC

Effective Date:

Revision Date:

Supersedes:

Distribution: DENTAL STAFF, CEO, CLINICAL DIRECTOR, CHS DIRECTOR

**PURPOSE:** To allow for the orderly transfer of administrative authority in the dental program whenever the Chief and/or Deputy Chief of the Dental program are away from the Service Unit.

- POLICY:**
1. In the absence of the Chief of the Dental Program, the Deputy Chief will assume all of the duties and responsibilities of the Chief.
  2. In the absence of the Deputy Chief of the Dental Program, the Chief of the program will assume all of the duties and responsibilities of the Deputy Chief.
  3. In the absence of both the Chief and Deputy Chief of the Dental Program, the Staff Dental Officer, Advanced billet will assume the duties and responsibilities of both the Chief and Deputy Chief of the program.
  4. In the unlikely event that the Chief, Deputy, and Advanced Staff Dentist are all absent from the Service Unit at the same time, the Chief (or acting Chief) will designate by memo one of the remaining Staff Dental Officers to assume the role of Acting Chief until the return of one of the higher ranking members of the staff.

\_\_\_\_\_ **SERVICE UNIT**  
**POLICY/PROCEDURE**

Department: Dental

Subject: TREATMENT OF DENTAL EMERGENCIES IN THE WALK-IN CLINIC

Effective Date:              Revision Date:              Supersedes:

Distribution:

**PURPOSE:**      To establish a policy for the appropriate use of the dental walk-in clinic.

**POLICY:**              1. The dental clinic will operate a walk-in clinic for the treatment of urgent and emergent dental problems during all hours that the clinic is open to see patients. Urgent and emergent dental problems include, but are not limited to pain, infection or swelling, broken fillings, loose teeth, broken prostheses, loose or broken space maintainers, and similar complaints.

2. The minimum staffing for the walk-in clinic will be one dentist and two assistants, utilizing 3 chairs.

3. Care provided in the walk-in clinic will be directed towards the relief of the patients' chief complaints. If other dental problems are noted during the emergency oral exam, the patient will be apprised of the problem but will be required to use the normal appointment system if further care is desired (see appointment policy).

4. The walk-in clinic will not be used to by-pass the normal appointment system or to receive routine care.

**PROCEDURE:** Patients who wish to be seen in the walk-in clinic must first sign in at Medical Records to have their chart sent to the Dental Clinic, and then proceed to the Dental reception desk where they must sign in to be seen.

1. Patients will be seen first-come, first-served in the walk-in clinic. Exceptions to this rule can be made by the Office of the Director (OD) to allow for the immediate treatment of patients with true emergencies such as fractured or avulsed teeth, fractured jaws, rapidly progressing odontogenic infections with facial swelling and/or cellulitis, etc. In cases such as this, the dental assistant working in the walk-in clinic should inform the OD that such a patient is present in the waiting room and allow the OD to triage.



2. The walk-in clinic may also be used to schedule such procedures as suture removals, follow-up visits, simple orthodontic extractions, etc. as time and experience permit. The dental receptionist will routinely schedule visits such as these at times when the walk-in clinic is usually less busy so as to not prolong the time that walk-in patients must wait to be seen.

**PHS INDIAN HOSPITAL****ABBREVIATIONS COMMONLY USED IN THE DENTAL CLINIC**

A	assessment (as in SOAP)
AAA	Acute Apical Abscess
ABU	amalgam build-up
amal	amalgam
AAP	Acute Apical Periodontitis
AF	apical file
ant	anterior
ANUG	Acute Necrotizing Ulcerative Gingivitis
appt	appointment
B	buccal
BA	broken appointment
BBTD	baby bottle tooth decay
BP	blood pressure
BW	bitewing x-ray
c	with
CA	cancelled appointment
calc	calculus
CaOH	Calcium hydroxide
Carbo	Carbocaine
CB	cement base
C&B	crown and bridge
CD	complete denture
CMCP	Camphorated parachlorophenol

Cl	cavity liner, copalite
cop	copalite
Comp	composite restorative material
CPA	cusp protected alloy
CPITN	Community periodontal index of treatment needs
Crn	crown
D	distal
d	deciduous
DF	defective filling ( restoration )
Dx	diagnosis
Dent	dental
Dy	dycal
Ed D	diabetes education
Ed P	Perio Education
Ed C	caries education
Ed F	fluoride education
Ed MCH	Maternal Child Health Education
Ed BBTD	Baby bottle tooth decay education
Ed ST	smokeless tobacco education
EF	expanded function dentistry
Emer	emergency
endo	endodontics
epi	epinephrine
ept	electric pulp tester
ER	emergency

eval	evaluate
ext	extraction
F	facial
F/U	full upper denture or follow-up
F/L	full lower denture
FF	final file
FGC	full gold crown
Fl	fluoride
FM	full mouth
FMX	full mouth extractions
FC, FMC	formocresol
F/P	full over partial denture
Fx	fracture
form	formocresol
GG	gates glidden
ging	gingival
GI	glass ionomer cement
GP	gutta percha
I	incisal
I&D	incision and drainage
Imp	impacted
imp	impression
inf	inferior, informed
IRM	intermediate restorative material
IV	intravenous

IM	intramuscular
L	lower, lingual, left
LA	local anesthetic
lab	laboratory
LLQ	lower left quadrant
LRQ	lower right quadrant
lat	lateral
LT	length of tooth
LKP 1	leukoplakia I
LKP 2	leukoplakia II
LKP 3	leukoplakia III
LMP	last menstrual period
M	mesial, missing
mand	mandibular
max	maxillary
MB	Maryland bridge
med(s)	medication
MI	mechanical instrumentation of the root canal
Md	mandible
MH	medical history
Mx	maxilla
N2O-O2	nitrous oxide/oxygen
NTI	no treatment (indicated)
NV	non-vital
O2	oxygen

O	occlusal or objective (as in SOAP)
occ	occlusal, occlusion
OH	oral hygiene, or overhang
OHI	oral hygiene instruction
op	operative ( procedures )
ortho	orthodontic (s)
OS	oral surgery
OD	officer of the day
ops	operative dentistry
P	plan (as in SOAP)
P/	partial denture (s)
PA	periapical x-ray
Pal	palatal
Pan	panoramic x-ray
PAP	periapical pathology
PE	partially erupted
pedo	pedodontic (s)
perc	percussion
perio	periodontic/periodontal
PI	partially impacted, patient informed
PMH	past medical history
PO	post operative, by mouth
POI	post operative instructions
POIG	post operative instructions given
Post	posterior

PPC	personal plaque control
PPD	periodontal pocket debridement
prep	preparation
prn	as needed
prophy	prophylaxis
prosth	prosthodontics
Pt	patient
PTC	planned treatment completed
PTF	prophy and fluoride treatment
pulp	pulpotomy
q	quadrant
quad	quadrant
R	right
RCT	root canal therapy
R/O	rule out
RPD	removable partial denture
RT	root tip
RTC	return to clinic
Rx	prescription or therapy
ref	reference point
S	sealant, or subjective (as in SOAP)
SA	silver amalgam
SBE	subacute bacterial endocarditis
SC	space closed
SI	sealant intact

SM	space maintainer or study model
SOAP	subjective, objective, assessment, plan
STWNL	soft tissue within normal limits
SR	suture removal
SSC	stainless steel crown
Sp Maint	space maintenance
TA	toothache
Temp	temporary restoration
TMJ	temporomandibular joint
TX	treatment
TBP	tooth brush prophylaxis
TB	tooth brush
U	upper
UE	unerupted
URG	upper right quadrant
ULQ	upper left quadrant
Wl	working length
WNL	within normal limits
w/o	with out
x	times
XC	extraction due to caries
XO	extraction for orthodontic reasons
XP	extraction due to periodontal disease
XX	extraction for other reasons
Xylo	xylocaine 2% with epinephrine 1:100,000



ZOE	zinc oxide and eugenol
ZnPO	zinc phosphate cement

**DENTAL CLINIC**  
**POLICY/PROCEDURE**

SUBJECT: TREATMENT OF INTOXICATED PATIENTS		
EFFECTIVE DATE	REVISION DATE:	SUPERCEDES:
DISTRIBUTION:		

**PURPOSE:** To provide a protocol for the treatment of intoxicated persons who present themselves to the dental clinic requesting care.

**POLICY:** Intoxicated individuals will not be treated in the dental clinic.

**PROCEDURE:** If a patient, in the judgment of the treating dentist, is under the influence of alcohol or other intoxicating substances, he/she will be asked to leave the clinic and return when sober for care. Security will be called to remove the intoxicated patient if he should become belligerent or abusive. This policy is necessary for the following reasons:

1. Intoxicated patients are often unable to remember or to follow post-operative instructions.
2. Intoxicated patients are more likely to become nauseated during or after dental treatment.
3. Intoxicated patients cannot give adequate medical histories.
4. Intoxicated patients cannot be given appropriate pain medications due to the possible interactions between the pain medication and the intoxicating substance.
5. Intoxicated patients have in the past become abusive, unmanageable and violent while receiving treatment.

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**SERVICE UNIT**  
**POLICY/PROCEDURE**

Department: Dental

Subject: DRUG STORAGE REVIEW IN THE DENTAL CLINIC

Effective Date:

Revision Date:

Supersedes:

Distribution: CHIEF, PHARMACY, AND P&T COMMITTEE

**POLICY:** The members of the Dental Staff shall make quarterly reviews of all Pharmaceutical items stored in the dental clinic.

**PURPOSE:** To insure that all Pharmaceutical items used in the dental clinic are stored properly and safely and have not exceeded their expiration dates.

**PROCEDURE:** 1. Once each quarter, a dental officer, to be designated by the Dental Chief, will be responsible for surveying all dental units and storage areas for the storage of Pharmaceutical items. The dental officer will look specifically for expiration dates on such items, and for the safe and appropriate storage of such items.

2. Any outdated Pharmaceutical products will be immediately removed from the clinic and disposed of in a manner consistent with the policies and procedures of the Pharmacy department.

3. Pharmaceutical items which are used internally will be stored separately from pharmaceutical items which are used externally.

4. All drugs will be stored separately from other chemical products which are covered by the Hazard Communications policy.

5. A report of each drug storage review will be made available to the Dental QA Coordinator, to the Chief of the Pharmacy Department, and to the P&T Committee.

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**SERVICE UNIT**  
**POLICY/PROCEDURE**

Department: Dental

Subject: Deferred Services

Effective Date:

Revision Date:

Supersedes:

Distribution:

**PURPOSE:** Contract monies are usually available to cover services falling within Levels I through III of the IHS Schedule of Services. In addition, clinical backlogs often make it impossible for the dental program to provide anything but Level I through III care. Many of our patients would benefit from the provision of higher levels of care but cannot receive them due to the unavailability of funds to pay for the services or the lack of time for the clinic to provide them. This policy will identify a method of tracking and prioritizing these deferred needs.

**POLICY:** In order to become eligible to be placed on the deferred services list, a patient must first complete all needed services within levels I through III without exceeding the broken appointment limit, and agree to be placed on recall status. At the completion of this treatment, the patient will be offered the option of continuing with the higher level services at his/her own expense (ONLY WHEN THE CLINIC IS ABLE TO PROVIDE THESE SERVICES WITHIN ITS CURRENT SCHEDULE OF SERVICES), or having his/her name placed on the deferred services list. Patients choosing to have their names placed on the deferred services list will be listed by name, service (and level of service) needed, and the date their name was placed on the list.

If, due to excessive backlogs in the appointment system, no level IV, V, and VI services are being provided, then all patients requiring such services will have their names placed on the deferred services list at the time their routine care is completed and they are placed on recall status. Whenever it becomes possible to provide deferred services, patients will be called in the order in which their names appear on the list, for the levels of care that are authorized.

**PROCEDURE:** Patients must complete treatment and be placed on recall status before they qualify to be placed on the deferred services list. The requirement to be placed on recall is to help emphasize to

the patient the need to maintain an active participation in his/her own healthcare, and to insure that when deferred services can be provided, the patients who are called will still have an adequate level of oral health to justify the provision of the higher level of care. This requirement will be waived for edentulous patients who seek full dentures.

1. All prosthetic services provided with deferred monies must meet all other requirements of the service unit prosthetics policy (i.e. periodontal health, broken appointments, Ante's rule, etc.).
2. Patients who agree to be placed on recall status but then later fail to schedule a recall visit after their recall notice has been mailed will have their name removed from the deferred services list.
3. Patients on the deferred services list who later exceed the broken appointment limit will have their names removed from the list.

**DENTAL CLINIC**  
**POLICY/PROCEDURE**

Subject: BROKEN AND CANCELLED APPOINTMENTS		
Effective Date: 10/01/90	Revision Date:	Supersedes:
Distribution:		

**PURPOSE:** Due to the large number of people who make appointments but fail to show up for them or fail to give adequate advance notice when canceling them, it has become necessary to have a policy on appointment responsibility. Broken and cancelled appointments waste the clinic's very limited time and hinder the dental program's efforts to improve the oral health status of the people that we serve.

**POLICY:** The Dental Program will allow only two broken appointments per six-month period. An appointment is considered to have been broken if any of the following occur:

1. The patient fails to show up for the appointment
2. The patient appears more than 15 minutes late for a scheduled appointment
3. The patient calls to cancel an appointment with too little advance notice to allow that appointment time to be rescheduled with another patient ( 24 hours will be considered to be the minimum time necessary to avoid a broken appointment ).
4. Patients who wish to cancel dental appointments must do so a minimum of 24 hours in advance of their scheduled appointment. If less notice is given without a valid excuse, the appointment will be considered to have been broken.

**PROCEDURE:** When a patient accumulates two broken appointments in a six-month period, that person will not be allowed to schedule any further routine appointments for a period of six months following the second broken appointment.

\_\_\_\_\_ **SERVICE UNIT**  
**POLICY/PROCEDURE**

Department: Dental

Subject: BIOPSIES

Effective Date:

Revision Date:

Supersedes:

Distribution: TISSUE AND BLOOD COMMITTEE

**PURPOSE:** To establish guidelines to aid in the determination of which tissues removed in the course of dental treatment need to be submitted for pathologic review, and to establish a policy for the tracking and follow-up of all pathology reports thereby generated.

**POLICY:** All pathologic tissues removed from a patient in the course of dental treatment will be submitted to the Navy Oral Pathology Service as per the attached memo, with the following exceptions:

1. Teeth and associated soft tissue removed in the course of routine and surgical extractions.
2. Gingival tissue removed during the course of routine periodontal procedures such as curettage and gingivectomy.
3. Soft and hard tissue removed during the course of routine alveoloplasty, other preprosthetic surgery, and operculectomy.

**PROCEDURE** All tissue submitted for pathologic examination will be recorded in a log to be kept in the dental files labeled "BIOPSIES".

All specimens submitted for pathologic review will be promptly immersed in 10% formalin.

Each specimen shall be properly identified and accompanied by a corresponding pathologic report (SF-515, copy attached), with appropriate data filled in by the attending dentist or his designee.

The reply from the pathologist shall be reviewed and signed by the attending dentist and then entered into the patient's medical record.

Patients having tissues submitted for pathologic examination will be informed of the pre-op diagnosis at the time of the biopsy procedure and will be notified by mail or Public Health Nurse if

the biopsy report differs from the pre-op diagnosis. Appropriate follow-up for the patient shall be provided.



**PHS INDIAN HOSPITAL****DENTAL CLINIC****POLICY AND PROCEDURES MANUAL****PROCEDURE AND TRAY SETUPS FOR DENTAL ASSISTANTS****I. ROUTINE EXAMINATION, ADULT**

- a. mirror
- b. explorer
- c. CPITN probe
- d. 2x2 gauze pads

**II. ROUTINE EXAMINATION, CHILD (UP TO AGE 12)**

- a. mirror
- b. explorer
- c. 2x2 gauze pads

**III. OPERATIVE, AMALGAM**

- a. mirror
- b. explorer
- c. syringe and needle (blue for 4-13(and d), yellow for all others),  
anesthetic, needle guard
- d. spoon
- e. condensers, large and small
- f. ball burnisher
- g. amalgam carrier
- h. carvers (walls, cleoid-discoid, and JPC)
- i. rubber dam, appropriate clamp, punch, clamp forceps, scissors,  
young's frame
- j. 330, 557, or 558 bur in high speed
- k. round bur in slow speed
- l. matrix band and retainer, with wedges, for MO, DO, MOD, etc.
- m. floss
- n. articulating paper
- o. cavity liner

- p. dycal
- q. amalgam well
- r. cotton rolls and gauze
- s. acorn burnisher

#### IV. SEALANTS

- a. sealant kit
- b. etching liquid, not gel
- c. pumice or hydrogen peroxide and prophylaxis brush
- d. cotton rolls, holders, and dry angles, or rubber dam

#### V. OPERATIVE, COMPOSITE

- a. mirror
- b. explorer
- c. syringe and needle (blue for upper anteriors, yellow for lowers) and anesthetic, needle guard
- d. rubber dam, punch, clamp and forceps if needed, young's frame
- e. floss ligatures
- f. 330 bur in high speed
- g. round bur in slow speed
- h. plastic instrument
- i. composite
- j. bonding agent
- k. Dycal or Vitrabond when available
- l. Ketac-conditioner, when available
- m. mylar matrix and wedge(s)
- n. curing light
- o. light shield
- p. finishing burs, strips, and discs
- q. articulating paper
- r. etching gel not liquid
- s. brush
- t. cotton rolls and gauze

#### VI. PULPOTOMY, PRIMARY TOOTH

- a. mirror
- b. explorer
- c. syringe and needle (blue for 4d-13d, yellow for all others) and anesthetic, needle guard
- d. spoon
- e. round bur in slow speed
- f. cotton pellets
- g. formocresol
- h. IRM
- i. rubber dam, punch, clamp forceps, #4 clamp(usually), young's frame, scissors
- j. cotton rolls and gauze

#### VII. PULPECTOMY, PRIMARY TOOTH

- a. mirror
- b. explorer
- c. syringe and needle (blue for 4d-13d, yellow for all others) and anesthetic, needle guard
- d. spoon
- e. round bur in slow speed
- f. cotton pellets
- g. formocresol
- h. IRM
- i. endo files, gates glidden burs
- j. endo irrigation
- k. paper points
- l. ZOE paste
- m. CR syringe and needle tube
- n. rubber dam, punch, clamp forceps, clamp (#4 usually), young's frame, scissors
- o. cotton rolls and gauze

#### VIII. STAINLESS STEEL CROWN

- a. mirror
- b. explorer

- c. syringe and needle (blue for 4d-13d, yellow for all others) and anesthetic, needle guard
- d. spoon
- e. round bur in slow speed
- f. 169 or 699 bur or diamonds in high speed
- g. Flecks or Durelon
- h. contouring and crimping pliers
- i. crown and collar scissors
- j. rubber dam, punch, clamp forceps, clamp (#4 usually), young's frame, scissors
- k. orangewood stick or band seater
- l. cotton rolls and gauze

IX. ENDO, ALL BUT MOLARS, ONE APPOINTMENT FILE AND FILL

- a. mirror
- b. explorer
- c. syringe and needle (blue for 4-13, yellow for all others) and anesthetic, needle guard
- d. endo spoon
- e. round bur in slow speed
- f. endo explorer
- g. files and gates glidden burs
- h. endo irrigation
- i. paper points
- j. hemostat or film holder and x-ray film
- k. spreader
- l. plugger
- m. gutta percha
- n. sealer
- o. chloroform
- p. cavit or IRM
- q. endo ruler
- r. rubber dam, punch, clamp forceps, clamp, young's frame for 6-11 or ostby frame for all others

- s. cotton rolls and gauze
- t. scissors

#### X. ENDO, MOLAR, FILING APPOINTMENT

- a. mirror
- b. explorer
- c. syringe and needle (blue for 4-13, yellow for all others) and anesthetic, needle guard
- d. endo spoon
- e. round bur in slow speed
- f. endo explorer
- g. files and gates glidden burs
- h. endo irrigation
- i. paper points
- j. hemostat or film holder and x-ray film
- k. rubber dam, punch, clamp forceps, clamp, ostby or young's plastic frame
- l. plugger
- m. cavit or B&T
- n. endo ruler
- o. cotton rolls and gauze

#### XI. ENDO, MOLAR, FILLING APPOINTMENT

- a. mirror
- b. explorer
- c. syringe and needle (blue for 4-13, yellow for all others) and anesthetic, needle guard (may not be needed)
- d. endo spoon
- e. round bur in slow speed
- f. endo explorer
- g. files and gates glidden burs
- h. endo irrigation
- i. paper points
- j. hemostat or film holder and x-ray film
- k. rubber dam, punch, clamp forceps, clamp, ostby frame

- l. gutta percha
- m. chloroform
- n. sealer
- o. spreader
- p. plugger
- q. cavit or IRM
- r. endo ruler
- s. cotton rolls and gauze
- t. scissors

## XII. CUSP PROTECTED AMALGAM BUILDUP (CPA or ABU)

- a. mirror
- b. explorer
- c. syringe and needle (blue for 4-13(and d), yellow for all others) and anesthetic, needle guard (may not be needed)
- d. spoon
- e. condensers, large and small
- f. ball burnisher
- g. amalgam carrier
- h. carvers
- i. rubber dam, appropriate clamp, punch, clamp forceps, and scissors, young's frame
- j. 330, 557, or 558 bur in high speed
- k. round bur in slow speed
- l. matrix band and retainer, with wedges and extra piece of band material, or automatrix
- m. floss
- n. articulating paper
- o. cavity liner and cotton pellets
- p. amalgam well

## XII. SURGICAL EXTRACTION, FLAP KIT

- a. mirror
- b. syringe, yellow needle, anesthetic, needle guard
- c. Minnesota retractor

- d. periosteal elevator
- e. double ended surgical curette
- f. scalpel with 15 blade
- g. mouth prop
- h. bone bur, straight handpiece
- i. high volume suction tip
- j. surgical suction tip
- k. rongeur
- l. bone file
- m. irrigation
- n. hemostat
- o. straight elevators
- p. needle holders
- q. Dean scissors
- r. suture material
- s. gauze
- t. AM-40 or surgical handpiece, sterile
- u. Sterile suction hose and clip
- v. Surgical suction light source and tips

### XIII. FRACTURE SET-UP

- a. Panorex
- b. syringe, needle, anesthetic, needle guard
- c. mirror, 2
- d. Minnesota retractor
- e. mouth prop
- f. wire twisters, 2
- g. 24 and 25 gauge wires
- h. wire cutters
- i. Erich arch bar material
- j. wire director
- k. suction tip, surgical, high volume
- l. elastics

m. sterile suction hose and clip



\_\_\_\_\_ **SERVICE UNIT**  
**POLICY/PROCEDURE**

Department: Dental

Subject: MANAGEMENT OF APPOINTED PATIENTS

Effective Date:

Revision Date:

Supersedes:

Distribution: DENTAL STAFF

**PURPOSE:** To define the routine scope of care for patients receiving either an initial examination or a recall examination.

**POLICY:** The following services shall constitute the routine scope of care for all examination patients.

**PROCEDURE:** A. A new patient or one who has not had a dental exam in over 1 year will receive the following services, as needed:

1. Examination
2. Bitewing radiographs (see radiology policy)
3. Review of medical history
4. Oral hygiene instructions as needed
5. Dental prophylaxis as needed
6. Fluoride treatment as per Area guidelines
7. Panorex if none is available or is over 5 years old, and the patient is 8-10 years of age or older
8. Treatment plan for all services falling within current levels of care guidelines
9. Follow-up appointments until all planned treatment is completed or until the broken appointment limit is exceeded

**B. Recall Examination**

1. Review and update of medical history
2. Examination

3. Bitewing or PA x-rays as ordered by the treating dentist to follow-up on the previous treatment plan
4. Updated treatment plan
5. Oral hygiene reinforcement as needed
6. Dental prophylaxis as needed
7. Follow-up appointments as needed to complete treatment

\_\_\_\_\_ **SERVICE UNIT**  
**POLICY/PROCEDURE**

Department: Dental

Subject: ACCESS TO MEDICAL RECORDS IN THE DENTAL CLINIC

Effective Date:

Revision Date:

Supersedes:

Distribution: DENTAL STAFF, MEDICAL RECORDS

**PURPOSE:** To insure that the privacy and confidentiality of all patients' medical records is maintained according to federal law and \_\_\_\_\_ Hospital policy.

**POLICY:** Only those persons having a compelling professional need to see the contents of medical records shall have access to medical records in the Dental Clinic. This shall include all staff involved in direct patient care (i.e. Dentists, Dental Assistants, Hygienists, and Dental Students) as well as the clinic's receptionist who prepares the dental portion of the medical record prior to the patient's being seen.

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**SERVICE UNIT DENTAL PROGRAM****POLICY/PROCEDURE**

SUBJECT: \_\_\_\_\_ Service Unit Dental Program CHS Referral Policy

EFFECTIVE DATE:

REVISION:

SUPERSEDES:

DISTRIBUTION: SU Clinical Director, SU Dental Staff, Contract Health Services

**PURPOSE** To establish a policy by which patients, who require dental care which falls within the currently approved levels of care but cannot be properly provided in the \_\_\_\_\_ Service Unit Dental Program, can be referred to appropriate IHS and non-IHS clinics for the required care; and to establish a policy for the handling of referrals made through the \_\_\_\_\_ Service Unit Dental Program from other dentists, both IHS and non IHS, and from other healthcare providers in the \_\_\_\_\_ Service Unit.

**POLICY** A. Referrals made:

Patients may be referred to other IHS facilities, to private dentists, or to other healthcare providers for the following reasons:

1. The patient with a toothache or other urgent/emergent dental condition that cannot be adequately temporized by the medical staff with analgesics and/or antibiotics, when *no dentist is available in any Service Unit facilities*.
2. The patient requires level I dental care which cannot be provided in the \_\_\_\_\_ Service Unit Dental Program due to lack of appropriate training among the dental staff, lack of appropriate facilities or equipment in the service unit, or medical conditions of the patient that may increase the risk of adverse events during the dental procedure. Examples would include: complex jaw fractures requiring open reduction and fixation, uncontrollable pediatric patients requiring full-mouth rehabilitation where treatment in the operating room (OR) would be indicated, and any patient requiring hospitalization.
3. The patient who receives emergency care while visiting a facility in the \_\_\_\_\_ Service Unit but who permanently resides in the Contract Health Service Delivery Area (CHSDA) of another IHS facility, may be referred under alternate resources or self-pay but not \_\_\_\_\_ Service Unit CHS.
4. Eligible Native American Head Start students being referred for routine care as part of the Head Start Program.

5. Students away at school or other people living away from the reservation but qualifying for CHS care due to the 180 day rule (see CHS policy – must have a completed student form on file every semester).
6. Patients with acute dental emergencies when no dentist is available at the service unit (see Emergency Policy ).
7. Dental patients with acute or chronic medical conditions which, in the opinion of the treating dentist, require acuity of care not available within the \_\_\_\_\_ Service Unit.
8. Eligible Native Americans living away from the direct service delivery area of the \_\_\_\_\_ Service Unit, if within the 180-day rule.

#### B. Referrals received:

The dental program will accept referrals directly into the appointment system for the following reason:

The patient's dental problems are a contributing factor in the treatment of a medical condition. Examples of this would include the uncontrolled diabetic with periodontal disease or other active dental infections, the end-stage renal patient being prepared for kidney transplant, etc. This does not include patients whose only medical problem is severe caries or periodontal disease because this describes a significant proportion of the total population being served. This also does not include the pregnant patient because routine dental care is in many cases not appropriate during the first and third trimesters of pregnancy.

All other patients referred to the dental program will first be scheduled to be seen in the walk-in clinic for evaluation and appropriate disposition of the problem for which they have been referred. The treating dentist will decide if it is appropriate to allow any patient so referred to enter directly into the regular appointment system or whether the patient should be required to go through normal appointment procedures along with all of the other regular dental patients. Because of the inability of the clinic to appoint all patients who need to be seen (due to staffing) and the demand care nature of the appointment system, referrals to the dental clinic cannot be allowed to have priority for the limited appointments except under the circumstances listed above.

#### C. Priority I Dental Procedures

Specific dental procedures that may be approved through Contract Health Services for referral to non-IHS providers include, but are not limited to, the following:

1. The extraction of third molars when all of the following conditions are met:
  - a. The tooth (teeth) is mesioangular, distoangular, or horizontally impacted;
  - b. The tooth (teeth) is causing the patient pain (subjective evaluation);
  - c. The removal of the teeth may prevent destruction of the second molars;
  - d. The extraction(s) cannot be performed safely in one of the service unit dental facilities.
2. Treatment of pediatric patients (under age 12) and special needs patients (documented disability or mental impairment) when one of the following conditions is met:
  - a. The pediatric patient requires extensive rehabilitation – greater than six teeth with dental caries or greater than four teeth with interproximal dental caries requiring stainless steel crowns or other justifiable reasons – that would be best performed by a pediatric dentist.
  - b. The pediatric patient is unable to be treated in one of the service unit dental facilities due to situational anxiety, disability, or a large geographic distance from the patient's home to the nearest service unit dental facility.
  - c. The pediatric patient is currently receiving orthodontics and requires multiple extractions or other oral surgery procedures that cannot be performed in a service unit dental facility.
  - d. The pediatric patient requires space maintenance following premature loss of a deciduous tooth, and such procedure cannot be performed at the service unit dental facility.
3. Oral surgery when one of the following conditions is met:
  - a. The service unit dentist cannot perform the simple or surgical extraction due to (1) inability to obtain sufficient anesthesia to the affected tooth; (2) inoperable dental equipment or due to conditions beyond the dentist's control (such as loss of electricity); (3) removal of a tooth from the maxillary sinus or inferior alveolar canal; (4) sustained infection (abscess or cellulitis) that cannot be reduced after repeated tries;

- b. Multiple extractions are necessary but the patient has either experienced past difficulties by the providing dentist or is medically compromised;
- c. The patient desires an immediate denture and multiple extractions (greater than 10 at one time) are required.
  - 4. Periodontal surgery when all of the following conditions are met:
    - a. The patient has received comprehensive Phase I (non-surgical) therapy in one of the service unit dental facilities;
    - b. The patient is diagnosed with refractory or rapidly progressive adult periodontitis, localized or general juvenile periodontitis, prepubertal periodontitis, or another severe periodontal condition and treatment for the condition cannot be adequately performed by the dental provider (hygienist and/or dentist);
    - c. The patient has been given the treatment alternative of extracting the affected teeth and desires a periodontal referral to potentially save the teeth;
    - d. The patient is in compliance to directions from the dental provider, including the respective dental clinic's broken appointment policy, adequate oral hygiene as determined by the provider, etc.
  - 5. Pathology referral for patients with suspected oral pathology, if a biopsy or more thorough evaluation cannot be completed by the dental provider.
  - 6. Temporomandibular joint dysfunction (TMJD) evaluation only, when such evaluation cannot be completed by the dental provider.
  - 7. Emergency dental treatment, including access/instrumentation of abscessed teeth (but not obturation or the permanent restoration), pending approval of the service unit dental chief.

#### D. Dental Procedures Outside CHS Priority I Requirements

Currently, the \_\_\_\_\_ Service Unit operates under Priority I ("life or limb") CHS requirements. As such, there are numerous procedures that should not, except under extenuating circumstances, be approved for referral to a non-IHS entity under CHS. These include:

- 1. Endodontic treatment (root canal therapy), except under the following condition: retreatment of a previously treated tooth when two of the three criteria below (must include c.) are met:

- a. The tooth is vital to the patient's occlusion or esthetics (would not include second or third molars)
- b. The tooth serves as an abutment to a bridge
- c. The patient has, or agrees to purchase, appropriate coronal coverage following the root canal therapy (crown or bridge abutment)
  - 2. Orthodontic treatment, except under condition C.2.c. above
  - 3. Fixed and removable prosthodontics, including surgical implants and implant prostheses
  - 4. Routine restorative, preventive, surgical, endodontic, and periodontal services
  - 5. Temporomandibular joint dysfunction treatment
  - 6. Cosmetic bleaching, veneers, etc.

PROCEDURE 1. The referring dentist or medical provider (in the absence of the dentist) will determine the need for an appropriate referral to a dental or medical specialist (oral surgeon, periodontist, pediatric dentist, ENT, pathology, etc.)

2. The referring dentist will then prepare a Referral Form (IHS 199-1) in triplicate, and submit all but one copy for his/her records. One copy should be retained by the dental department. The Referral Form should include the following:

- a. Item 1: specialty of provider (even if name is unknown, the type of specialist should be written or typed in this box)
- b. Priority Box: Priority I should be marked only if the referral meets the criteria as set forth above in Section C above. Otherwise, the appropriate priority should be listed (if unsure, the dental provider can consult his/her CHS clerk).
- c. Items 2-4: the demographic information should be entered (CHS clerks will complete 5-9).
- d. Item 10: the dental provider should write down the exact reason for the referral and reference the exact criteria that supports such a referral (from section C above), if the service unit CHS funding is anticipated for the referral. A few examples are given below:

*“39 year-old male with mesioangular impacted teeth #17 and #32, causing pain for 3 weeks. Referral to an oral and maxillofacial surgeon, under local anesthesia, to extract teeth #17 and #32 (Reference C1)”*



*“3 year-old female with nine carious lesions - #a,b,c,d,e,f,g,h,I – needing comprehensive rehabilitation by a pediatric dentist under IV sedation or OR care, and unable to treat in a general dentistry setting (Reference C2a)”*

It is the dental provider’s responsibility to write this section of the referral, including the referral reference code.

- e. Item 11: the dental provider should be more specific and write down the diagnosis and recommended treatment for the patient. A few examples are given below:

“Panoramic radiograph shows mesioangular impactions #17 and #32. Clinical evaluation shows pericoronitis. Prognosis for the teeth is poor.”

“Caries #a-OL, #b-DO; #c-F, etc. Recommend stainless steel crowns #a, #b, and possible pulpotomy #a”

- f. Item 12: the dental provider should not complete this section, but instead allow the CHS clerk at the respective facility to complete it.
- g. Signature – the dental provider must sign and date the referral.

3. Again, one copy of the dental referral should be kept in the dental department of the referring facility. The patient should not be given a copy of the referral until it has been approved, if the service unit CHS funding is anticipated. Otherwise (if the patient will self-pay for the referral or if there are non-IHS alternate resources), the patient or parent/guardian should receive a copy of the referral form with “self-pay” clearly marked on the IHS-199 form. In any case, the dental provider should provide the CHS clerk/office with the referral form regardless if CHS funding is being sought (i.e., every referral goes to the CHS clerk).

4. If copies of dental records or x-rays are also being sent, the patient will be required to complete a Release of Information form prior to releasing the documents or x-rays.

5. If the patient is being referred for treatment with anticipated service unit CHS funding, all aspects of this Dental CHS policy and Levels of Care guidelines will be adhered to. This includes emergency patients, students, Head Start students, etc. (see CHS policy).

6. Dental patients who are found to have medical problems that require follow-up or treatment (such as untreated hypertension, uncontrolled diabetes, etc.) will be referred to the medical clinic by preparing an IHS-199 and sending the patient with a copy of the

referral form to the medical appointment desk for a medical appointment. If the problem is thought by the treating dentist to be urgent, the dentist will contact a physician and refer the patient directly to the walk-in clinic.

7. Once a referral is complete, the CHS clerk should enter an electronic (Resource and Patient Management System [RPMS] Mailman and/or Referred Care Information System [RCIS]) message to the service unit dental chief, writing in everything entered by the dental provider in Item 10, including the CHS dental criteria reference number (see Section C, above).

8. The \_\_\_\_\_ Service Unit Dental Chief will make the final determination as to whether the referral fits the criteria as outlined in Section C or if there are extenuating circumstances that warrant the referral, and shall timely (within seven days) inform the appropriate CHS clerk of the decision. The service unit dental chief may request additional documentation or explanations from the referring dental provider prior to any decision.

9. For CHS referrals that are denied by the service unit dental chief, the dental providers and/or facilities should keep a list of denials under a Deferred Services List. This list is critical to further amending the service unit dental CHS policy in the future, as well as if unexpected funding occurs during the fiscal year.

10. Patients referred from other IHS clinics (non- \_\_\_\_\_ Service Unit) or private dentists for follow-up on emergency care that was begun at the other clinic will first be seen as a walk-in in one of the service unit dental clinics to determine the nature of any follow-up needs. Appointments may be given to complete treatment of the emergency procedure (if doing so falls within local Levels of Care guidelines). Once the emergency follow-up is completed, the patient will be required to go through normal appointment procedures for any further care.

11. Patients referred from other IHS clinics or private dentists for routine dental care when there is no underlying medical priority for the treatment will be informed of the appointment system and will be required to follow normal appointment procedures.

12. The service unit dental program dentists should not refrain from an appropriate referral solely on the basis of whether the referral qualifies under Section C above. *If a patient's condition warrants a referral, the dentist is ethically and legally bound to refer the patient to an appropriate dental or medical specialist.* The dentist should mark "Priority I" if the referral meets, or may

meet, the CHS dental criteria listed in Section C, and any other priority if the referral definitely does not meet the CHS dental criteria.

Review of the \_\_\_\_\_ Service Unit Dental Referral Policy and Procedure shall be done annually.

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**\_\_\_\_\_ Service Unit Dental Program****Policy & Procedures**

**SUBJECT** Disposal of extracted teeth and oral tissues

**EFFECTIVE DATE**

**DISTRIBUTION** \_\_\_\_\_ SUDP Policy Manual, Service Unit Director, Clinical Director, Dental Staff, Health Directors

I. POLICY Disposal of extracted teeth and oral tissues.

II. PURPOSE To establish a policy for the disposal of teeth and soft tissue following dental treatment.

III. PROCEDURE A. INTRODUCTION. All patients will be offered the opportunity to keep their extracted teeth or oral tissue removed during a dental surgery. If a patient wishes to save an extracted tooth it will be cleaned and surface-disinfected with an Environmental Protection Agency- (EPA-) registered hospital disinfectant with intermediate-level activity and placed in a water-resistant bag or other suitable container.

B. All oral hard and soft tissues shall be disposed of according to guidelines established by the Centers for Disease Control (CDC) and prevention, and comply with regulations set forth by OSHA and the EPA.

Disposal -Extracted teeth that are being discarded are subject to the containerization and labeling provisions outlined by OSHA's bloodborne pathogens standard. OSHA considers extracted teeth to be potentially infectious material that should be disposed in medical waste containers. Extracted teeth sent to a dental laboratory for shade or size comparisons should be cleaned, surface-disinfected with an EPA-registered hospital disinfectant with intermediate-level activity (i.e., tuberculocidal claim), and transported in a manner consistent with OSHA regulations. However, extracted teeth can be returned to patients on request, at which time provisions of the standard no longer apply. Extracted teeth containing dental amalgam should not be placed in a medical waste container that uses incineration for final disposal.

D. Teeth saved for educational purposes: Extracted teeth are occasionally collected for use in preclinical educational training. Written consent from the patient shall be obtained for teeth collected for use in training or research. These teeth should be cleaned of visible blood and gross debris and maintained in a

hydrated state in a well-constructed closed container during transport. The container should be labeled with the biohazard symbol. Because these teeth will be autoclaved before clinical exercises or study, use of the most economical storage solution (e.g., water or saline) is practical. Liquid chemical germicides can also be used but do not reliably disinfect both external surface and interior pulp tissue. Before being used in an educational setting, the teeth should be heat-sterilized to allow safe handling. Microbial growth can be eliminated by using an autoclave cycle for 40 minutes.

## **Clinical Education Affiliation Agreement**

### **Education Affiliation Agreement for Placement of Institution Students in a Clinical Experience at a Hospital/Facility or Other Facility**

This Agreement is made between the Board of Regents of the \_\_\_\_\_ System of Higher Education, on behalf of \_\_\_\_\_ Community College located at \_\_\_\_\_, hereinafter referred to as “Institution,” and the \_\_\_\_\_ Health Clinic, hereinafter referred to as “Facility.”

#### **Recitals**

- A. Facility is the operator of healthcare facilities, including an IHS-supported healthcare facility
- B. Facility has the capability to provide a site for Dental Hygiene training experience
- C. Facility has agreed to assist in the educational experience of Dental Hygiene students by providing a Dental Hygiene Clinical facility
- D. Institution is currently conducting a Dental Hygiene program for which it desires to obtain the assistance of Facility to further the training and experience Institution’s students can receive toward their educational objectives
- E. Institution employs faculty interested in supervising at Facility while retaining their status as employees of Institution.

#### **Terms**

In consideration of the mutual promises and conditions contained in this Agreement, Institution and Facility agree as follows:

#### **1.0 Purpose, Term, and General Policy of the Affiliation.**

1.1 Institution and Facility agree to affiliate and cooperate for their mutual benefit in order to provide a high standard of health and dental hygiene services to the public.

1.2 This Agreement is for a term of four years beginning on 1 September, 2005, and reserves the right to periodically review to determine if the continuation or the cancellation of the agreement is in order. Either party may notify the other of its intentions not to renew the agreement in writing at least thirty (30) days prior to the effective day.

1.3 Facility seeks to achieve the following goals with this Agreement:

1.3.1 To improve the quality of care while providing an environment conducive to education;

1.3.2 To improve its recruitment ability;

1.3.3 To establish an affiliate clinical program consistent with the values and needs of Facility.

1.4 Institution seeks to achieve the following goals with this Agreement:

1.4.1 To provide its students with the necessary clinical experience to prepare them for Dental Hygiene careers that include public health service;

1.4.2 To enhance and maintain strong ties to local Facility.

1.5 Neither party intends for this Agreement to alter in any way their respective legal rights or their legal obligations to one another, the students and Faculty assigned to Facility, or to any third party.

1.6 Facility retains final responsibility for all aspects of patient care and assumes the responsibility to perform procedures that a student has not performed if the faculty cannot assume the responsibility.

1.6.1 Facility may permit Institution faculty members to provide such patient services at Facility as deemed necessary by Facility for teaching purposes.

1.7 Both parties and their employees shall conduct themselves in compliance with all applicable federal, state, and local laws, rules, and regulations and in compliance with the standards, rulings, and regulations of the Joint Commission on Accreditation of Healthcare Organizations, the Department of Health and Human Services, and the ADA Commission on Dental Accreditation, as well as their own respective institutional rules and regulations.

## **2.0 Annual Operating Plan.**

2.1 The parties agree that each year they shall set forth a written operating plan which shall include:

2.1.1 The clinical education programs to be provided and the starting and ending dates for each program;

2.1.2 The number, names, clinical assignment opportunities, and clinical assignment schedule for the students;

2.1.3 The name of the individual for each party who shall have authority to act for and on behalf of each party in all matters relevant to this Affiliation Agreement.

## **3.0 Curriculum**

3.1 It shall be Institution's responsibility to:

3.1.1 Establish and maintain for this clinical placement, curriculum standards and educational policies that meet Institution standards and American Dental Association (ADA) Commission on Dental Accreditation requirements;

3.1.2 Administer, organize, and operate the overall clinical placement educational program;

3.1.3 Inform students that they will be responsible for private health insurance during clinical experience. It is agreed that any student injury or exposure occurring during the clinical experience remains the full responsibility of the student, including related treatment, testing or immunization.

3.2 It shall be facility's responsibility to:

3.2.1 Cooperate with faculty and students to select and arrange facility learning experiences that meet clinical objectives;

3.2.2 Orient facility staff to the curriculum and encourage an atmosphere conducive to learning;

#### **4.0 Program Coordination**

4.1 Institution and facility agree to work together to establish and maintain a quality clinical training program.

4.2 Institution shall provide a faculty member who will serve as liaison with facility personnel.

4.3 Institution and facility agree to provide representatives to serve as liaison to meet each semester to fashion, discuss, evaluate, and make recommendations to revise the Clinical Program experience at facility.

4.3.1 Institution representatives serving as liaison shall be: Director of Dental Hygiene, or his/her designee.

4.3.2 Facility's representatives serving as liaison shall be: Dental Services Director or his/her designee.

4.4 Institution and facility agree to cooperate in planning hours of practice and selecting areas of clinical services so that all programs can benefit.

4.5 Neither party, nor any joint committee, shall have the power to obligate Institution or facility resources, or commit either to any particular action.

#### **5.0 Clinical Faculty and Staff**

5.1 It shall be the responsibility of Institution to:



5.1.1 Employ and assign to this clinical training program only those employees who are state-licensed;

5.1.2 Employ for this clinical training program only administrative and instructional staff who meets the applicable qualifications;

5.1.3 Discipline, terminate, reassign, and reinstate such institution personnel in its reasonable discretion;

5.1.4 Assign to the clinical training program only faculty who agree to follow facility rules and regulations even though they are not facility employees;

5.1.5 Provide evidence, as requested, of appropriate credentials for each of its provided faculty members.

5.2 It shall be the responsibility of facility to:

Employ medical, administrative, and direct patient care staff who are qualified either through experience and/or academically to uphold and demonstrate standards of medical care as established by facility

## **6.0 Student Records and Student Participation in the Facility Clinical Program**

6.1 Institution shall provide and maintain the following records and reports required by the facility for conducting the clinical training program:

6.1.1 All faculty and student records for compliance with confidentiality, privacy of patients and other documents required by federal, state, JCAHO, OSHA, or any other regulatory agencies. These documents shall be current and available to facility upon request;

6.1.2 All infection control, immunization, and OSHA requirements upon request.

6.2 Subject to the understanding below, facility agrees to complete the following evaluations and student records developed by Institution concerning student participation and performance in the clinical training program:

6.2.1 Facility shall only have the obligation to make reports to the institution regarding the students participating in the program.

6.2.2 It is understood that institution alone has the responsibility and authority to make a final evaluation of student performance and to determine the appropriate recognition (grades, credits, etc.) for such performance.

6.3 The parties acknowledge that many student educational records are protected by the Family Educational Rights and Privacy Act (“FERPA”), and that student permission must be obtained before releasing specific student data to anyone other than institution. Institution agrees to provide guidance to Facility with respect to complying with FERPA.

6.4 It shall be Institution's responsibility to:

6.4.1 Send to facility for clinical experience only those students who have met all Institution requirements and qualifications and who agree to follow facility rules and regulations;

6.4.2 Notify students of their assignments with facility;

6.4.3 Upon request, provide facility with documentation that the students have successfully completed the following prerequisites, tests, and training deemed necessary for placement in the Clinical Program: including

6.4.3.1 Rubella titer or proof of measles, mumps, and rubella (MMR) vaccination if born after 1957;

6.4.3.2 Current tuberculosis (TB) skin test;

6.4.3.3 Made disclosure of pregnancy or potential pregnancy;

6.4.3.4 Consent or declination to the Hepatitis B vaccine;

6.4.3.5 Healthcare Provider CPR Certification

6.4.3.6 Training in the use and disclosure of patient's confidential medical information which they may access during their training, including specifically the requirements of the HIPAA Privacy Rule.

6.5 It shall be facility's responsibility to:

6.5.1 Advise Institution of the number of students who can be accommodated at facility;

6.5.2 Maintain administrative and professional supervision of students insofar as their presence and program assignments affect the operations of the facility and its care, direct and indirect, of patients.

6.6 Institution and facility agree:

6.6.1 That any student who becomes injured or ill shall receive emergency treatment and attention;

6.6.2 That any student who does not meet the health criteria established by facility cannot be assigned to facility. Facility has the right, at any time, to request health status reports on students;

6.6.3 That institution will not be responsible for the ultimate performance of students at facility.

## **7.0 Clinical Facilities**

7.1 The facility agrees to provide adequate facilities for the clinical training program.

## **8.0 Relationship between the Parties**

8.1 Institution and its employees shall not be employees of facility, and shall not hold themselves out as employees of facility. Nothing in this agreement is intended or shall it be construed to create a joint venture relationship, a lease, or a landlord/tenant relationship. It is expressly agreed and understood by institution and facility that the students are in attendance at facility for educational purposes, and they are not to be considered employees of facility for any purpose, including, but not limited to compensation for services, employee welfare and pension benefits, or workers compensation insurance.

8.2 Employees of facility shall not be considered and shall not hold themselves out to be employees of Institution.

8.3 Each party shall be solely liable for its own debts, obligations, acts and omissions, including the payment of all required withholding, social security, and other taxes or benefits on behalf of its employees.

8.4 Neither party shall engage in direct purchasing or otherwise contract any liability on behalf of, or charge the credit of, the other.

8.5 Should the Internal Revenue Service (IRS) or any other governmental agency question or challenge the independent contractor status of institution, facility, or its employees, both facility and institution, upon receipt by either of them of notice, shall promptly notify the other party and afford the other party the opportunity to participate in any government agency discussion or negotiations irrespective of whom or by whom such discussions or negotiations are initiated.

8.6 Facility shall retain and exercise the final authority in the appointments, reappointments, revocations, amendments to, and suspensions of practicing privileges and of membership on facility staff.

8.7 Institution shall retain and exercise the final authority in the appointments, reappointments, revocations, amendments to, and suspensions of its faculty/employees, in accordance with Institution policies and procedures.

8.8 The parties acknowledge that each participates in various third-party payment programs and agree to fully cooperate with the other by providing assistance to meet all requirements for participation and payment.

## **9.0 Insurance**

9.1 Facility shall, at facility's sole expense, procure, maintain, and keep in force for the duration of this agreement the following insurance conforming to the minimum

requirements specified below. Unless specifically noted herein or otherwise agreed to by institution, the required insurance shall be in effect prior to the commencement of work by facility and shall continue in force as appropriate until the latter of:

9.1.1 Final acceptance by Institution of the completion of this agreement; or

9.1.2 Such time as the insurance is no longer required by institution under the terms of this agreement.

9.2 Any insurance or self-insurance available to Institution shall be excess of and non-contributing with any insurance required by facility. Facility's insurance policies shall apply on a primary basis. Until such time as the insurance is no longer required by institution, facility shall provide institution with renewal or replacement evidence of insurance no less than 30 days before the expiration or replacement of the required insurance. If at anytime during the period when insurance is required by this agreement, an insurer or surety shall fail to comply with the requirements of this agreement, as soon as facility has knowledge of any such failure, facility shall immediately notify institution and immediately replace such insurance or bond with insurance or bond meeting the agreement's requirements.

9.2.1 Workers' Compensation and Employer's Liability Insurance: Facility shall provide proof of workers' compensation insurance as required by NRS 616B.627 or proof that compliance with the provisions of Nevada Revised Statutes, Chapters 616A-D, and all other related chapters, is not required.

9.2.2 Commercial General Liability Insurance

- a. Minimum limits required:
  - \$1,000,000 General Aggregate
  - \$1,000,000 Products & Completed Operations Aggregate
  - \$1,000,000 Personal and Advertising Injury
  - \$1,000,000 Each Occurrence
- b. Coverage shall be on an occurrence basis and shall be at least as broad as ISO 1996 form CG 00 01 and shall cover liability arising from premises, operations, independent contractors, completed operations, personal injury, products, and liability assumed under contract.

9.2.3 Business Automobile Liability Insurance

- a. Minimum limit required: \$5,000,000 combined single limit per Occurrence for bodily injury and property damage.
- b. Coverage shall include owned, non-owned, and hired vehicles.
- c. Coverage shall be written on International Standards Organization (ISO) form CA 00 01 or a substitute providing equal or broader liability coverage.

9.2.4 Professional Liability/Errors & Omissions Insurance

- a. Minimum limit required: \$1,000,000 per claim.
- b. Minimum limit required: \$3,000,000 Annual Aggregate.
- c. Retroactive date: Prior to commencement of the performance of this agreement.
- d. Discovery period: Three years after termination of agreement.
- e. A certified copy of this policy will be made available upon request.

#### 9.2.5 Umbrella or Excess Liability Insurance

- a. May be used to achieve the above minimum liability limits.
- b. Shall be endorsed to state it is “As Broad as Primary Policies.”

#### 9.2.6 General Requirements

- a. Deductibles and Self-insured Retentions: Insurance maintained by facility shall apply on a first dollar basis without application of a deductible or self-insured retention unless otherwise specifically agreed to by institution. Such approval shall not relieve facility from the obligation to pay any deductible or self-insured retention. Any deductible or self-insured retention shall not exceed \$5,000.00 per occurrence, unless otherwise approved by the UCCSN Risk Manager.
- b. Approved Insurer: Each insurance policy shall be:
  - i) Insured by insurance companies authorized to do business in the State of Nevada or eligible surplus lines insurers acceptable to the State and having agents in Nevada upon whom service of process may be made; and
  - ii) Currently rated by A.M. Best as “A- IX” or better.

9.3 Institution shall maintain, at its own cost and expense, professional liability insurance covering institution as an entity and each of its provided physicians/employees and students against professional liability (malpractice) claims, in the minimum amount of one million dollars per occurrence and three million dollars aggregate. Evidence of such insurance shall be provided to facility upon request. This provision shall in no way be considered a waiver of Institution’s right to raise the defense of sovereign immunity under NRS 41.0305 to NRS 41.039, which right Institution specifically reserves. Torts claims against physicians/employees are limited to \$50,000.00 per cause of action by the provisions of said professional liability insurance and by NRS 41.035.

9.4 Institution shall carry Workers’ Compensation and Employer’s Liability Insurance as required by NRS 616B.627 or provide proof that compliance with the provisions of \_\_\_\_\_ Revised Statutes, Chapters 616A-D and all other related chapters, is not required.

9.5 Institution shall maintain self insurance sufficient to cover the institution liability under NRS 41. Coverage shall include liability arising out of bodily injury, wrongful death, and property damage.

## **10.0 Access**

Contractor agrees to provide Institution and its insurer access and authority to investigate on site and to obtain such information from Contractor as may be required to defend the Institution and its officers or employees from claims or litigation arising from activities under this agreement.

## **11.0 Indemnification**

11.1 Facility shall indemnify, defend, and hold harmless institution, its governing board, officers, faculty, agents, employees and from and against any and all liabilities, claims, losses, lawsuits, judgments, and/or expenses, including attorney fees, arising either directly or indirectly from any act or failure to act by facility or any of its medical staff, employees, or the residents which may occur during or which arise out of the performance of this agreement, and limited to the extent of the professional liability insurance limits set forth above.

11.2 To the extent limited in accordance with NRS 41.0305 to NRS 41.039, institution shall indemnify, defend, and hold harmless facility, its governing board, officers, faculty, agents, and employees from and against any and all liabilities, claims, losses, lawsuits, judgments, and/or expenses, including attorney fees, arising either directly or indirectly from any act or failure to act by institution, its officers or employees, which may occur during or which may arise out of the performance of this agreement, and limited to the extent of the professional liability insurance limits set forth in paragraph 9.3 hereinabove. In accordance with NRS Chapter 41, Institution will assert the defense of sovereign immunity as appropriate in all cases, including malpractice and indemnity actions. Claims against institution, its officers, and employees are limited to \$50,000.00 per cause of action.

11.3 In the event each of the parties is found to be at fault, then each shall bear its own costs and attorneys' fees and its proportionate share of the judgment or settlement based on its percentage of fault, as determined by a procedure established by the parties.

11.4 This article shall continue beyond termination or expiration of this agreement.

## **12.0 Termination of the Agreement**

12.1 This agreement may be terminated without cause upon providing at least 30 days' written notice to the other party prior to the beginning of the next academic term. Such termination must not affect students affiliated with facility for the academic term in which notice is given.

12.2 This agreement may be terminated for cause by the nonoffending party, as follows:

12.2.1 In the event Institution or facility fails by omission or commission in any substantial manner to provide the services in accordance with this agreement; or

12.2.2 In the event either party becomes insolvent or has a bankruptcy petition filed against it; or,

12.2.3 In the event either institution or facility or their staff fail to perform their duties hereunder causing imminent danger to patients or materially and adversely affecting the licensure or accreditation status of facility or institution.

12.2.4 Such termination shall be effective upon written notice to the other.

12.3 This agreement may be terminated by either party if the other party has substantially defaulted in the performance of any other obligation under this agreement.

12.4 Upon termination of this agreement, neither party shall have any further obligations hereunder except for obligations accruing prior to the date of termination, obligations that are expressly extended beyond the term of this agreement, including indemnification, and obligations made by facility with respect to any student.

### **13.0 Nondiscrimination and Compliance with Laws**

13.1 The parties agree in this clinical program to comply with all the federal, state, local, and institutional laws, ordinances and rules applicable to institution, and specifically agree not to unlawfully discriminate against any individual on the basis of race, creed, color, sex, religion, age, disability, or national origin, and to comply with all anti-discriminatory laws and policies which institution promulgates and to which institution is subject.

### **14.0 Withholding**

With respect to employee compensation for services provided in connection with this agreement, each party shall indemnify the other for their own employees' withholding taxes, workers' compensation, and other employment-related taxes.

### **15.0 Entire Agreement Modification**

This agreement contains all the terms between the parties and may be amended only in writing signed by both parties.

### **16.0 Severability**

Each paragraph of this agreement is severable from all other paragraphs. In the event any court of competent jurisdiction determines that any paragraph or subparagraph of the agreement is invalid or unenforceable for any reason, all remaining paragraphs and subparagraphs will remain in full force and effect.

## **17.0 Governing Law**

The parties agree that the laws of the State of Nevada shall govern the validity, construction, interpretation, and effect of this agreement. Any and all disputes arising out of or in connection with the agreement shall be litigated only in the Second Judicial District Court in and for the County of Washoe, State of Nevada, and facility hereby expressly consents to the jurisdiction of said court.

## **18.0 Assignment**

Nothing in this agreement shall be construed to permit the assignment by facility or institution of any rights or obligations hereunder, and such assignment is expressly prohibited without the prior written consent of either institution or facility.

## **19.0 Notice**

Any notice to either party hereunder must be in writing signed by the party giving it and shall be deemed given when mailed postage prepaid by U.S. Postal Service first class, certified or express mail, or other overnight mail service, or hand delivered, when addressed as follows:

To Institution:

Copy to:

To Hospital/Facility:

or to such other addressee as may be hereafter designated by written notice. All such notices shall be effective only when received by the addressee.

## **20.0 Paragraph Headings**

The paragraph headings in this agreement are used only for ease of reference and do not limit, modify, construe, or interpret any provision of this agreement.

### **20.1 No Third Party Beneficiaries.**

The parties have entered into this agreement solely for their own benefit, and expressly agree that there are no third party beneficiaries to this agreement; including, particularly, students or faculty.

IN WITNESS WHEREOF, the authorized representative(s) of facility and of institution execute this agreement on this 20<sup>th</sup> day of September, 2005.

Board of Regents of the \_\_\_\_\_ HOSPITAL/FACILITY  
System of Higher Education, on behalf of  
\_\_\_\_\_ Community College



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Governing Board President

## **Chapter 2, Human Resources**

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- H. Distance Learning
- I. Personnel Systems
- J. Career Development
- K. Equal Employment Opportunity
- L. Labor Relations

### **Human Resources Development Philosophy**

The goal of the human resources component of the IHS Dental Program is to maintain a motivated workforce of sufficient size and quality to carry out the mission of the program. The Dental Program believes that its most valued resource is its people and is firmly committed to human resource development. Program excellence and success are dependent upon individuals who are collectively committed to organizational goals, show personal integrity, maintain high ethical standards, and demonstrate professional expertise. Human resource development must be a continuous process which is diverse and flexible to meet the needs of the IHS and Tribal groups, as well as the individual. Following are the core components of the human resources program:

1. A recruitment process that informs potential employees of the expectations and realities of the Dental Program, thereby matching the needs and skills of the individual to those of the I/T/U programs.
2. An ongoing orientation process that provides personnel with essential and timely information.

3. A continuing educational process that promotes professional and personal growth to enhance the individual's capacity to serve AI/AN communities.
4. A process that outlines career pathways based upon clearly-defined qualifications, provides counseling and monitoring of individual growth and development, and retains sufficient numbers of career employees to provide for program continuity and leadership.

To support the core components, the following principles should be followed:

1. Human resource development is an integral component of the decision-making process at all levels of the organization. It fosters at all times a climate of openness, honesty, mutual respect, teamwork, and receptivity to learning.
2. The program will stay abreast of state-of-the-art methods for transferring knowledge and promoting human resource development and organizational development.
3. The program is empowered at all levels to meet its identified human resource needs.
4. The individual has primary control of the course of his/her career; however, there is a shared responsibility between the individual and the organization to identify the career direction which is most appropriate.
5. The primary responsibility of a supervisor is successful development of staff, including creation of opportunities for training.
6. Educational activities are developed consistent with adult learning principles. These include the recognition that individuals come into the program with life experiences, knowledge, and skills. Both the learner and instructor are active participants in the process.
7. Educational activities are cost-effective and based upon the needs of the individual and the organization.
8. One-time educational efforts are less likely to have lasting effects. To successfully improve performance, participants will be provided the opportunity to immediately apply newly-learned concepts and ideas. Educational activities are continually reinforced.
9. The program makes use of available staff to train, reinforce, and transfer knowledge and skills at the local level.
10. The program fosters the development of community-oriented dental programs which focus on the oral health of the community as well as the individual patient.

11. Community support and participation are essential for Dental Program operations in the future. We need to bridge cultural barriers and balance legitimate consumer preferences with the practice of public health dentistry.
12. Management accountability for resources and the need to operate along consistent philosophical lines is essential for organizational survival.

### **Human Resources Homepage**

The IHS has developed a Human Resources home page that contains a wealth of information about employment in the IHS. This home page can be found at: <http://www.ihs.gov/NonMedicalPrograms/DHR/>.

### **Recruitment**

The greatest determinant of an agency's ability to achieve its goals is the strength of its human resources. Without a dedicated, motivated, and well-trained staff, quality healthcare services cannot be ensured. These are fundamental principles of the IHS Dental Program, its staff development component, and its recruitment effort. Thus, whether managed by the I/T/U programs, healthcare facilities serving AI/ANs require the recruitment of capable, conscientious, and caring healthcare providers.

The IHS Dental Program has initiated multiple recruitment strategies to increase the exposure of dental students and dentists to the IHS. Fundamental to this recruitment effort is the recognition that potential candidates must have a knowledgeable source of information concerning policies, personnel requirements, pay/benefit structures, and assignment opportunities. The recruitment project's ultimate goal is the creation of a clearinghouse of quality dental candidates from whom to draw potential recruits.

These strategies are coordinated by the IHS dental recruiter, who is stationed at IHS Headquarters. The recruiter's primary duties involve providing information for prospective candidates and referring candidates to appropriate programs and sites for possible placement. In response to the growing challenges resulting from demographic, financial, and retention factors, IHS recruitment services have evolved into a personalized, "user-friendly" program. Consultation regarding candidates' educational needs, social interests, spousal employment opportunities, housing costs, and other quality-of-life concerns have taken the forefront in employment counseling sessions.

The addition of a toll-free telephone line (800-447-3368) (800-IHS-DENT) has greatly enhanced communications. Candidates are now able to contact the IHS conveniently and at no cost. Dental recruitment outreach also is enhanced through several other avenues, including the following:

- Use of the Internet web pages and E-mail services (<http://www.ihs.gov/MedicalPrograms/Dental/index.cfm>)
- Formal and informal student externship programs

- Frequent interactions with key dental school administrators, including formal affiliations
- Recruitment of senior dental students into the IHS General Practice Residency Program
- Promotion at annual dental conferences
- Marketing among the various professional sectors, such as the American Student Dental Association, the ADA, the Young Dentists of America, and the American Women Dentists Association
- Publication of classified and display advertisements
- Coordinated site visits of I/T/U Indian program dentists to dental schools, including their alma maters
- Preparation and distribution of professional-quality recruitment materials to schools, students, and practicing dentists

Further information is available from:

IHS Dental Recruiter  
IHS Division of Oral Health  
801 Thompson Avenue, Suite 335  
Rockville, MD 20852-1627

Toll-free recruitment number: (800) 447-3368 (800-IHS-DENT).

## **Orientation**

The IHS Dental Orientation Manual, last revised in 2001, contains a wealth of information about the IHS in general and the IHS Oral Health Program in particular. Every dentist and hygienist should be encouraged to download and review this manual to increase their knowledge of the system for which they work. The Table of Contents of the Orientation Manual is reprinted below to illustrate the scope of information available in the manual.

### **Chapter I: IHS Dental Program**

- Facts About The IHS
- Types of Dental Programs
- Personnel Systems
- Comparison Between Commissioned Corps and Civil Service
- Additional Information about IHS Employment
- Loan Repayment Program
- Summary

**Chapter II: Initial Orientation Packet**

- Mission Statement
- Mentoring Program
- Formal Orientation
- The Way to Use This Manual
- Important Documents
- Supplemental Documents 8
- Did You Remember To...?
- Additional For Commissioned Officers
- Selected Topics
- Structure/Organization
- Administrative Policies
- Roles of Dental Staff Members
- Appointments
- Clinical Protocol
- Commissioned Corps Matters
- Equipment
- Familiarization
- Items of Business
- Record Keeping
- Acronyms

**Chapter III: Three-Month Packet**

- Cultural Orientation
- Dental Data
- Goals and Objectives
- Professional Support
- Safety
- Becoming Involved
- Certifications
- Contract Health Services

- Familiarization
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- Prevention
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#### **Chapter IV: One Year**

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- Important Legislation
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- Commissioned Corps Promotions
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#### **Chapter V: Government Forms**

- Notice of Arrival
- Direct Deposit Sign Up
- Employees Withholding Allowance Certificate
- Basic Allowance for Housing
- Uniform Services ID Card/Deers Enrollment
- Commissioned Officers' Leave Request Form
- Civil Service Leave Request Form
- Travel Order
- Travel Voucher
- Training Nomination and Authorization
- Purchase/Service/Stock Requisition
- Performance Appraisal System
- Request for Personnel Action, Commissioned Officer
- Request for Personnel Action

## Appendices

- Websites of Interest
- Uniform Allowance Sample Memo
- PATIENT RECORD FORMS
  - Examination Record
  - Medical History
  - Consent Form
  - Outpatient Sedation Record
  - Periodontal Examination Record
  - Progress Notes
- ADMINISTRATIVE FORMS
  - Notice of Arrival (PHS 287)
  - Direct Deposit Sign Up (SF1199A)
  - Employee's Withholding Allowance Certificate (W-4)
  - Request for Basic Allowance for Housing
  - Application for Uniformed Services I.D./DEERS Enrollment
  - Leave Slip (CO) (PHS 1345)
  - Leave Slip (CS) (SF 71)
  - Travel Order (HHS 1)
  - Travel Voucher (SF 1012)
  - Training Nomination and Authorization (HHS 350)
  - Purchase/Service/Stock Requisition (HHS 393)
  - Purchase Order (OF 347)
  - Request for Personnel Action (PHS 1662 A & B)
  - Request for Personnel Action (SF 52)
  - COER (PHS 838)

Links to the manual can be found on the IHS Web site by clicking on the following link and scrolling to the bottom of the Web page:

<http://www.ihs.gov/MedicalPrograms/Dental/download.cfm>.

## Credentialing and Privileging

Prior to providing clinical services at any healthcare facility, licensed providers (physicians, dentists, physician assistants, nurse midwives, dental hygienists, optometrists, psychologists, etc.) are required to be credentialed and privileged. This process assures that providers are qualified to perform the services they offer and that the facility is equipped to deliver and support those services.



## Credentialing

Credentialing consists of verifying the provider's graduation from an accredited program, post-graduate specialty training, past history of practice (through letters of recommendation and inquiry to the NPDB), and current licensure. Credentialing may be done by a central organization that includes multiple facilities, or it may be done at each individual facility, depending on the organization's policy. A specific individual at the facility should be trained to do all of the credentialing for the facility, if it is to be done locally, to ensure that it is done consistently and thoroughly.

In 1965, the landmark legal decision *Darling v. Charleston Community Hospital* helped to establish the principle of corporate liability in the healthcare industry. Simply stated, this means that the clinic can be held legally liable for the actions of those it employs (including contractors and volunteers). Proper credentialing helps to ensure that only fully qualified practitioners work in the clinic and that they do not practice outside the limits of their training and expertise, or beyond the capabilities of the clinic to support the services being provided (e.g., sedation and general anesthesia).

Most, if not all, accrediting organizations require that the credentialing process include primary source verification of the professional diploma, specialty certificate(s) and state license(s). Primary source verification means that direct contact is made with the professional school, residency program, and state licensing board, preferably in writing, to verify the credentials. If the primary source verification is done by phone, then detailed notes of the phone call must be kept, including the date of the contact, the names and titles of the person making the call and the person providing the information, etc. Direct contact by phone or letter should also be made with all professional references as a means to determine current levels of competence.

## Privileging

Privileging is accomplished at each individual facility. It is the process by which the provider's scope of services at that facility is defined. The granting of privileges is based on the provider's training and experience, practice history, and the ability of the facility to provide and support the services for which he/she is privileged.

Privileging in the IHS is usually done by developing a list of all of the dental services that the Governing Board and/or Chief Executive Officer (CEO) feel are appropriate to be provided at the clinic. The provider then completes an application for medical staff membership and privileges and requests which of the privileges on the list he/she wishes to have by selecting either full privileges (i.e., with no restrictions), limited privileges (i.e., with some restrictions, such as under the observation of a more senior staff member), or no privileges to provide each service. The chief dentist then compares the requested privileges with the provider's credentials to make sure that there is evidence of adequate training and experience for each of the requested privileges before recommending granting or denying them.

A committee of healthcare providers and peers (usually, but not always, the medical staff committee) then reviews the recommendations of the chief dentist, makes any changes they feel are appropriate, and passes the application for privileges on to the Governing Board for final approval.

A provider should not attempt to provide services without being both credentialed and privileged at the facility where services are to be provided. Likewise, an organization (facility) should not allow providers to deliver services unless they are credentialed and privileged. Being credentialed by an organization and privileged at one of its facilities does not imply privileging at any other of the organization's facilities, unless such privileges are specified.

Credentialing and privileging are individual processes unique to each provider. While training, degrees, and licensure (credentialing) may imply the ability to provide certain services, these services should not be provided without specific privileging. Providers should not assume that their training and experience create a right to provide services for which they are not privileged. A few states allow independent practice by dental hygienists (i.e., without the direct supervision of a dentist). If your clinic employs a hygienist licensed in one of these states, then the dental hygienist can also be assigned independent privileges, if the medical staff committee and Governing Board so approve.

Credentialing generally is a condition of employment and/or membership on the medical staff of the facility. Privileges must be formally requested and granted in writing from the privileging body.

Credentialing should be reviewed at a frequency defined by the organization's policies and by-laws, usually every two years. Privileging should be reviewed at least at the same frequency as credentialing. Privileging may change at any time, based on the provider's additional training, a change in the facility's ability to provide or support services, or by actions of the privileging body.

Renewal of privileges should be based on peer review and ongoing quality assurance programs. If a provider wishes to add services to his/her list of privileges (e.g., as a result of receiving new training or changes in facility staff or resources supporting those services), formal application for a change in privileges must be made to the privileging body and new privileges granted. Privileges for specific services may also be withdrawn at either the request of the provider or the privileging body. Withdrawal of privileges by the privileging body may be based on either changes in the scope of services the facility provides and supports or as an adverse action from the quality assurance process and peer review. Reduction of privileges based on the latter must be reported to the NPDB. Such reductions should not be taken lightly and must be well-documented. The privileging body must have appeals procedures defined in its by-laws.

Samples of credentialing/privileging packages may be obtained from most IHS hospitals, training centers, or Area Offices.

Whoever is given the responsibility to perform the credentialing and privileging activities should keep either a written or computerized “tickler file” that lists all of the credentialed employees and the dates of their significant credentials:

- Date of appointment to the staff, and date for renewal of appointment and staff privileges
- Date for renewal of license(s)
- Date for renewal of malpractice insurance(for contractors)
- Date for renewal of specialty certification
- Date for renewal of CPR, Advance Cardiac Life Support (ACLS), and other such certifications

The credentials coordinator should check this file monthly and ensure that all credentials and staff appointments and privileges are kept up to date. Notices for renewal of privileges should be sent out to employees two to three months in advance of the expiration of the privileges to allow time to gather and submit necessary documentation.

### **Continuing Dental Education**

The IHS Division of Oral Health (DOH) recognizes that a strong commitment to CDE is essential to improving the oral health of AI/AN people and is fundamental to professional growth. Many other benefits of CDE accrue in terms of improved staff morale, retention of employees, higher quality of care, upward mobility, and the introduction of new ideas and technologies.

An essential component of CDE is to assess the educational needs of dental staff in relation to the many competencies required in I/T/U dental programs, and to create opportunities to meet those needs. One available assessment tool is the Individual Development Plan (IDP) which can be found on the IHS CDE Web site. The IDP helps to recognize training needs that would be most appropriate for an employee. Using the IDP is an excellent way to open communication between a supervisor and an employee. Completing the IDP offers an opportunity to discuss and identify short and long-term training goals that are in alignment with dental program objectives

The IHS DOH has developed an array of CDE training courses (three–five days each) designed to meet I/T/U dental staff needs. Many of these courses are hands-on clinical courses that are rarely available from other sources, and, if available from other sources, are very expensive. IHS CDE courses may be added, modified, or dropped each year, based upon assessed needs and suggestions from field personnel and others.

Recently, the DOH developed a Web site where I/T/U staff can locate and register for IHS CDE training courses. Go to [www.ihs.gov/medicalprograms/dentalcde](http://www.ihs.gov/medicalprograms/dentalcde) to read descriptions of IHS CDE courses available during a fiscal year. It is possible to download and print the current IHS CDE catalog by clicking on the *Print Catalog* button. Online IHS CDE courses are also available through the IHS CDE Web site.

IHS CDE courses are open to all I/T/U and Contract dental personnel. Instructions about how to register for courses can be found on the IHS CDE Web site. During the month of October, supervisors are able to select and prioritize three IHS CDE courses for each of their employees. On November 1, a lottery is run and staff are notified by email and through the IHS CDE Web site which courses they are registered or waitlisted for. Staff are then required to indicate if they plan to attend a course or not. If someone decides not to attend a course, staff on the waitlist are then contacted to assure all IHS CDE courses are filled.

Tuition is not charged for dental personnel who work at IHS federal facilities. However, tuition is charged for dental personnel working for Tribal dental programs that have taken Headquarters Dental Shares.

IHS-sponsored courses should not be viewed as the only source of CDE available. Individuals are encouraged to seek CDE that may be planned by their Area Office, Service Unit, Tribal, or Urban program. In addition, CDE is available through the military, the state, and local dental professional groups. Routine educational involvement with other health professionals, including private dentists, physicians, and others, can be stimulating and educationally rewarding. Organizing a study club may be particularly productive at locations where regular contact with other dental professionals is limited. Providing training during regularly scheduled staff meetings helps staff to learn together, to understand policies and procedures, and to implement changes in a dental program. By using a combination of methods, it should be possible to engage in a variety of excellent CDE experiences.

### **General Practice Residency and Advanced General Practice Residency Programs**

The IHS offers postgraduate educational programs for general dentists. A two-year advanced general practice residency (AGPR) is offered at the Hastings Indian Medical Center (HIMC) in Tahlequah, Oklahoma and the Alaska Native Medical Center (ANMC) in Anchorage, Alaska. The type of residency offered at each training center may change from time to time, depending on the availability of resources. The AGPR is designed primarily for early- to mid-career officers.

The residencies are accredited by the ADA's Commission on Dental Accreditation, a specialized accrediting body recognized by the Council on Postsecondary Accreditation and by the United States Department of Education. On successful completion of the residency, the graduate is awarded a certificate. The graduate of the AGPR is eligible to challenge the American Board of General Dentistry (ABGD). Although the AGPR does not teach to the board, several IHS AGPR graduates have successfully completed the board, and, as a result, are eligible to receive specialty pay.

The AGPR program prepares the general dentist for hospital dental practice, with special emphasis on care for the medically compromised patient. Training includes medical risk assessment and rotations in anesthesia, emergency medicine, and medical services. Clinical training in the dental specialties is provided by staff specialists and specialty consultants. The program helps the graduate to better diagnose oral and maxillofacial

diseases, provide dental care in the context of each patient's total healthcare, communicate and function effectively with other healthcare professionals in the IHS, and understand the role of these professionals within the organization. The graduate is expected to plan and provide both routine and complex dental care for a wide variety of patients by applying advanced knowledge, clinical and public health skills. The AGPR programs use the second year to provide training in management, public health, research, and educational techniques, and to provide additional clinical experience.

AGPR graduates should seek an assignment at the O-5 or higher level. At some point after completion of the AGPR, the graduate is expected to effectively manage a multidental officer Service Unit Dental Program and to provide consultation services. Billets at the O-5 level are Chief, General Service Unit and Deputy Chief, Complex Service Unit. A minimum two-year tour of duty is expected of the dentist in the post-residency assignment.

Residents are selected in a competitive process that begins with the solicitation of applicants in the fall preceding the year the residency begins. Applicants submit their curriculum vitae, letters of reference, transcripts from dental school, and other items directly to the residency programs in which they are interested. Each residency site has its own selection process through which applicants are evaluated. Applicants are notified of the results of the selection process, and personnel actions are initiated at the residency sites.

Dentists who are interested in post-graduate education in general dentistry in the IHS and would like further information about the residency programs may contact the directors of the individual programs or the dental staff development officer. Applications for July of the following year are available in the late fall on the IHS list server.

Chief, Dental Staff Development Officer  
IHS  
Division of Oral Health  
801 Thompson Avenue, Suite 300  
Rockville, Maryland 20852  
(301) 443-0029

Dental AGPR Director  
Hastings Indian Medical Center  
100 South Bliss Avenue  
Tahlequah, OK 74464  
(918) 458-3150

Dental AGPR Director  
Alaska Native Medical Center  
255 Gambell St.  
Anchorage, AK 99501  
(907) 257-1317 or 1215

## Personnel Systems

Individuals who are employed by IHS-funded dental programs generally fall into one of the following four employment systems:

- Civil Service System
- Commissioned Corps of the United States Public Health Service
- Tribal employment systems (Tribal-hire)
- Urban Indian program employment systems (Urban-hire)

Many dentists and dental hygienists also have been hired by the I/T/U Indian programs to provide health services as private contractors. Technically, they are not employees, because they are usually self-employed.

The Civil Service System and USPHS Commissioned Corps are federal employment systems, i.e., the employee is employed directly by the U.S. Government. Tribally-managed programs have the option of hiring their own staff or hiring Commissioned Corps employees through a MOA with the IHS. Tribal programs also can hire Civil Service employees for a maximum of four years, through an IPA. Finally, Urban Indian programs can also hire federal employees through a similar arrangement.

Both the USPHS Commissioned Corps and the Civil Service System are subject to Indian Preference, a federal mandate which states that qualified Indian candidates for vacant positions must be selected before non-Indian candidates. This is consistent with the IHS philosophy that encourages Indian self-determination.

Following is a comparison which shows some of the differences between the two federal systems.

### Civil Service System

- Is the basic mode of employment used by the U.S. Government.
- Employs a wide range of professional, technical, administrative, clerical, and labor personnel.
- Uses competitive procedures to fill virtually all positions, with employment and advancement based strictly on merit.
- Requires establishment of eligibility through U.S. Office of Personnel Management competitive application procedures, which usually includes filing an Application for federal Employment (SF-171) and may require passing an exam.
- Provides pay/grade based on the position, i.e., the employee holds the grade of the position occupied.
- Normally does not require the employee to relocate involuntarily.

- Provides pay that is set by Executive Order and based on comparability with the private sector. All pay is taxable.
- Provides annual leave that is determined by the years of service: 13 days per year for first 3 years, 20 days per year during years 4 through 14, and 26 days per year for 15 years or more of service.
- Provides 13 days of sick leave each year, with unlimited carryover.
- Has two contributory retirement systems: the CSRS and the FERS. Any new employee since 1984 falls under the FERS.
- Provides retirement age which ranges from 55 to 62, depending on number of years of service and whether the employee is on CSRS or FERS.

### **USPHS Commissioned Corps**

- Is a personnel system composed entirely of officers who are health professionals (no enlisted personnel).
- Is one of the seven uniformed services of the United States, along with the Army, Navy, Air Force, Marine Corps, Coast Guard, and the Commissioned Corps of the National Oceanic and Atmospheric Administration.
- Provides for appointment of candidates under the age of 44 who meet the required educational and degree standards for their category and who pass a physical exam.
- Provides pay/grade/rank based on the officer and his/her professional training and experience, rather than on the position held; rank is retained throughout a variety of assignments.
- Requires officers to serve in whatever assignment or location needed.
- Provides pay and benefits that are generally equivalent to those of the other uniformed services. A portion of the pay is non-taxable.
- Provides 30 days of annual leave per year for all officers, regardless of number of years of service.
- Provides sick leave as needed, with no accumulation of sick leave.
- Has a noncontributory retirement system based on the military retirement system.
- Does not require a minimum retirement age, as long as officer has received credit for a minimum of 20 years and a maximum of 30 years of active service. Officers also can retire at age 64, regardless of number of years of service.

Following is a list and brief description of commonly-used federal personnel forms that employees are likely to encounter.

- *Form SF-52: Request for Personnel Action*: The form used to initiate action to recruit for a vacant Civil Service position.
- *Form SF-171: Application for federal Employment (Civil Service)*: The form used to apply for civilian federal employment.
- *Form SF-71: Application for Leave*: The form used to request and report leave for a Civil Service employee.
- *Form PHS-50: Application for Appointment as a Commissioned Officer in the United States Public Health Service*: The form used by dentists or dental hygienists to apply for initial appointment to the Commissioned Corps.
- *Form PHS-1662: Request for Personnel Action — Commissioned Officers*: The form that initiates a personnel action for the initial hiring or transfer of a commissioned officer.
- *Form PHS-1373: Separation of Commissioned Officer*: The form submitted by a commissioned officer to initiate retirement or separation from the Commissioned Corps.
- *Form PHS-1345: Request for and Authority for Leave of Absence*: The form used to request and report leave for a commissioned officer.
- *Form PHS-31: Officers Leave Record*: The form used by the leave clerk to track commissioned officer leave. (It is recommended that commissioned officers keep a copy of this record, since officers are responsible for the accuracy of their own leave records.)
- *BIA Form 5-4432: Verification of Indian Preference for Employment in Bureau of Indian Affairs and IHS Only*: The form with which documented AI/ANs request Indian Preference when applying for a position.

Following are some of the sources available for additional information on the federal employment systems:

- Commissioned Corps Handbook
- IHS Dental Orientation Manual
- Any federal government Personnel Office
- Supervisor
- Area Dental Consultant
- Division of Commissioned Personnel, USPHS

### **Tribal and Urban Employment Systems**

Tribal-hire and Urban Indian program-hire employees are those who are hired directly by Tribes or Urban Indian programs through their own personnel systems. Because each Tribe's and each Urban Indian program's personnel system is different from the others,



any attempt to provide a detailed description in this document would not be very meaningful. Many Tribal and Urban Indian personnel systems are similar to the federal Civil Service System, but pay scales and benefits may vary considerably. For example, some Tribes offer comprehensive retirement programs, but other Tribes offer minimal retirement programs or none at all.

Regarding licensure, CS and Commissioned Corps dentists and dental hygienists must be licensed in at least one state, but not necessarily the state in which they are providing services. Commissioned officer dentists have a one-year grace period following graduation from dental school, or following completion of a dental residency, during which to obtain a license. Civil servants and commissioned officer dental hygienists must be licensed before they start working as federal employees. Although the issue of Tribal sovereignty has not been fully resolved with regard to dental licensure, Tribal-hire and Urban-hire dentists and dental hygienists generally must be licensed by the state in which they are providing services.

Each personnel system has its own advantages and disadvantages. The Commissioned Corps offers good retirement benefits, but the initial pay level may be lower than that offered by the other systems. Also, commissioned officers are expected to make periodic geographic moves to advance their careers and to fulfill the needs of the USPHS. Tribal and Urban programs may offer more pay initially, but late-career pay levels and retirement benefits may not be able to match those of the Commissioned Corps. However, each Tribe's personnel system is different, and prospective Tribal employees should request specific information on employment benefits on a Tribe-by-Tribe basis. It is important for prospective employees to find a personnel system that will best meet their own and their families' short-term and long-term needs.

### **Career Development**

I/T/U programs all can benefit from staff whose careers have provided a broad background with a variety of assignments and experiences. Staff who have had experience in applying public health principles to the day-to-day operation of dental programs serving AI/ANs are especially valuable. The development of professionals into employees who have these and other desirable attributes is a shared responsibility between each individual professional and the organization that employs the professional. The employee, however, should have primary control over the course of his/her career, and it is important for an individual to identify career goals early. This will facilitate the seeking of positions that will enhance the attainment of these goals.

The process of and support for career development will vary, depending on the personnel system under which the professional is working. USPHS Commissioned Corps dentists and dental hygienists have standard career tracks with substantial guidance in career development. federal CS employees also have many resources available to them to further their careers. The amount and type of guidance provided for Tribal-hire and Urban-hire employees varies considerably, depending on the individual program.

## **Tribal-Hire and Urban-Hire Employees**

Because of the variability among Tribal and Urban Indian programs in the career development support provided for employees, it is important for employees of these programs to monitor their own careers carefully and to seek positions that will help them to meet their personal and professional goals. In the past, IHS staff, including Area Dental Consultants and staff development specialists from Headquarters, have been available to assist Tribal and Urban employees in making career decisions. In the future, the availability of assistance from these sources for Tribal employees will be affected by whether individual Tribes choose to take their Tribal shares of Headquarters and Area Office support funds. The number of Area Office and Headquarters dental staff who are available will depend on the number of Tribes which choose to request support services from the IHS.

It may be helpful for Tribal-hire and Urban-hire dentists to review the Commissioned Corps career development paths described in this section. Even though they are not commissioned officers, they may wish to seek career paths that are similar in direction and sequence.

## **PHS Commissioned Corps Dentists and Dental Hygienists**

The philosophy of the USPHS Commissioned Corps maintains that individuals should be incrementally challenged to become capable of accepting greater responsibility through advanced training and experience. Commissioned Corps personnel in the IHS Dental Program are initially challenged to become proficient in all phases of clinical dentistry. They are next challenged to accept community health (nonclinical) and management responsibilities and then to assume this combination of responsibilities for programs of increasing size. Moreover, the experience and training obtained during the early years of a career enable mid-career and senior officers not only to pursue Service Unit objectives but to provide guidance to enhance the careers of less experienced officers. The system, therefore, provides for continuing professional growth, building toward the more complex positions, which are rated at higher grade levels by the Commissioned Corps. By the time officers reach a senior level, they should have progressed in a career track which provides them with significant personal and professional responsibilities and rewards.

It is *essential* that IHS commissioned officers realize that they are part of two systems. Although employed by a federal agency, the IHS, officers are members of the Commissioned Corps of the USPHS. Through this personnel system, they have opportunities to serve in other programs of the USPHS. Because the IHS is the largest clinical program in the USPHS, it is possible that an officer may spend an entire USPHS career with the IHS program. However, the officer is still expected to gain broad experience that increases his/her value to the PHS and warrants promotion within the rank-in-officer system.

In selecting a career track an officer should avail him/herself of career counseling by the Service Unit Dental Chief, the Area Dental Consultant, the Director of Dental Staff

Development at Headquarters West, and/or the Dental Staffing Officer from the Division of Commissioned Personnel.

### **IHS Dental Program Career Tracks (Commissioned Corps)**

In the IHS, dentists can pursue three basic career tracks (General Practice, Public Health Administration, and Clinical Specialty), with each requiring somewhat different training and experience. All include management functions appropriate to the track and billet. A discussion of each track follows.

#### **General Practice Track**

The General Practice career track in the IHS is an exciting and challenging one, which combines essential elements of public health, education, social/behavioral, management, and clinical practice knowledge and skill areas. These billets form the “heart and soul” of the IHS Dental Program and comprise a large number of senior leadership billets. Both clinical and management skills are required to perform well in the higher billets within this track. Most IHS Dental Officers pursue this career path.

These billets start with entry level responsibilities and progress through comprehensive program management, as reflected by the grade rating assigned to each. The standard billets which comprise this track are:

<b>Billet #</b>	<b>Title</b>	<b>Grade</b>
02HGO60	Staff Dental Officer/Basic	O-3
02HGO61	Staff Dental Officer/Advanced	O-4
02HGO62	Chief, Basic Dental Unit–Satellite	O-4
02HGO63	Chief, Basic Dental Unit–Solo	O-4
02HGO64	Chief, General Dental Unit	O-5
02HGO65	Deputy Chief, Complex Dental Unit	O-5
02HGO66	Chief, Complex Dental Unit	O-6
02HGO33-36	General Practice Residency (GPR) and Advanced GPR	O-3 to O-6
02HGO74	Dep. Chief/Clinical Program Director, Complex Dental Unit	O-6

#### **Experience and Education Required**

Dentists who have limited experience in clinical dentistry (recent graduates) generally begin service with the IHS in the Staff Dental Officer/Basic (SDO/B) billet. This position allows the officer to gain clinical experience rapidly under the direction of more experienced clinicians, without having responsibility for the day-to-day management of the clinic.

Some recent graduates or dentists with limited practice experience or GPR training may be assigned initially to Staff Dental Officer/Advanced (SDO/A); Chief, Basic Dental

Unit-Satellite (C,BDU-Sat) or Chief, Basic Dental Unit-Solo (C,BDU-Solo) billets. Although still in entry level billets, these individuals assume responsibility for community-wide activities, supervision of employees, prevention programs, and other related responsibilities. These comprehensive duties are a real challenge for new professionals. This situation is seen as a compromise by the Dental Program; ideally, the program manager (dentist) would have experience in a SDO/B billet before assuming these more advanced duties. Stellar performance in these 0–4 billets early in a career may, however, enable an officer to accelerate the process of career progression.

Dentists who are selected for advanced billets (O-5 and O-6) should have a broad base of program experience. Both the community and clinical components of these positions are substantial. Additional educational qualification in the form of a GPR, or 10 years of professional experience, is required for the following billets:

- Deputy Chief, Complex Dental Unit
- Chief, Complex Dental Unit
- Deputy Chief/Clinical Program Director, Complex Dental Unit

### **Public Health Administration Track**

The practice of public health dentistry is the responsibility of *every* dentist in the IHS. The allocation of resources and application of programs among populations is based on public health principles. Therefore, the ability to progress through the Public Health Administration track hinges on one's ability to understand and practice public health dentistry at the Service Unit level. Consideration for administrative billets within the IHS Dental Program is contingent upon demonstrated Service Unit-level management ability.

The billets, which comprise the Public Health Administration track, consist of positions in the General Practice Track, *plus* the following:

<b>Billet #</b>	<b>Title</b>	<b>Grade</b>
02HGO4530	Area Dental Prevention Officer	O-53
02HGO3793	Assistant Chief, Area Dental Services	O-5
02HGO5382	Prevention Officer Supervisor	O-6
02HGO3794	Deputy Chief, Area Dental Services	O-6
02HGO69	Area/Regional Dental Consultant	O-6
02HGO65	Assistant Chief, Dental Services Branch	O-6
02HGO71	Deputy Chief, Dental Program	O-6
02HGO72	Chief, Dental Program	O-6
02HGO04-006	Out-of-Service Student-Masters in Public Health (MPH) (training)	O-4 to O-6
02HGO33-36	Dental Public Health Resident (training)	O-4 to O-6

## Experience and Education Required

These positions require a sound base of IHS general practice experience, plus additional experience and/or formal training in Dental Public Health. In some cases an MPH is required, and in others Dental Public Health specialty training (MPH plus a Dental Public Health Residency) is necessary. This career track leads to management positions in Area and Headquarters Offices. The incumbents coordinate the development of overall program goals and objectives, provide technical assistance, and evaluate outcomes. Broad responsibility for program structure, process, and outcome is shouldered by individuals in these billets.

## Clinical Specialty Track

The successful practice of a dental clinical specialty in the IHS is another track which is dependent upon achieving a sound base in the general practice setting. Clinical specialists serve Service Units, Areas, and the IHS in staff development, consultation, policy development, and the provision of clinical specialty care.

The standard billets in this track consist of positions in the General Practice Track *plus* the following:

Billet #	Title	Grade
02HGO67	Staff Dental Clinical Specialist	O-5
02HGO68	Area/Regional Clinical Specialist	O-6
02HGO70	National Dental Clinical Specialty Consultant	O-6
02HGO23-26	Out-of-Service Student (training)	O-4 to O-6

## Experience and Education Required

A certificate or masters degree in the clinical specialty is the necessary additional training required. Some dentists enter the IHS having accomplished clinical specialty training prior to employment. The IHS also sponsors limited numbers of career IHS dentists in specialty training. In order to practice a clinical specialty most effectively in the IHS, the specialist must clearly understand Service Unit care delivery, including the use of general public health principles. This understanding can be gained by practicing as a general dentist in the IHS either prior to or after training as a specialist.

IHS-sponsored trainees obviously have general practice experience prior to training. Clinical specialists, with or without previous IHS experience, are expected to be able to provide general dental services as the need may arise. The amount of general practice required of a specialist will vary with the size of the Service Unit, the number of staff, and the demand for specialty services. Clinical specialists with many years of USPHS service and a firm understanding of IHS goals and objectives will be considered periodically for appointment as IHS-wide specialty consultants. These billets incorporate

an IHS-wide leadership role in the particular specialty with all the responsibilities inherent in the Clinical Specialty Track.

### **Equal Employment Opportunity (EEO)**

The IHS is fully committed to Equal Employment Opportunity (EEO) without regard to race, color, religion, gender, national origin, age disability, or sexual orientation. This involves providing all employees with a work environment free of discrimination and with the opportunities, tools, training, and support systems they need to develop to their fullest potential. This may be facilitated by assisting employees in balancing their work and family needs, and evidenced by providing appropriate accommodations and support systems for individuals with disabilities.

All IHS employees need to be knowledgeable about EEO, its laws, policies, processes, local and Area counselors. The IHS requires that all employees attend a yearly EEO training session. The training for supervisors is more intense and rigorous, since supervisors must enforce the EEO regulations, within their departments.

There are differences in the mechanism of action between CS and Commissioned Corps employees. It is important that you become familiar with the mechanism under which you as an employee fall.

If you have not had the opportunity to participate in the EEO training, you can access all the needed information through the IHS EEO Web site at:

<http://www.ihs.gov/AdminMngrResources/eeo/index.asp>. This Web site also contains information on all aspects of the IHS EEO program.

### **Labor Relations**

Dealing with Union matters is part of daily operations in most IHS facilities. This section of the OHPG will discuss a few of the more-important concepts of Labor Relations (LR) in general terms. It is not intended to be a substitute for formal training in LR at the local level, but rather to provide a foundation of knowledge for the dental program supervisor. Dental Supervisors should be familiar with the terms of the Collective Bargaining Agreement at their local facility, and should always consult with local or Area Office human resources personnel when dealing with union matters.

Official IHS documents and regulations concerning Employee Relations/LR can be found at the following Web site:

<http://www.ihs.gov/NonMedicalPrograms/DHR/index.cfm?module=ERLR>

### **Important Key Items That Need to Be Understood**

**Bargaining Unit.** A bargaining unit is a group of employees found appropriate for representation by federal Labor Relations Authority (FLRA) and voted upon by employees who are represented by a labor union in their dealings with agency management. Bargaining unit status pertains solely to the positions employees hold

within the agency. Employees are either in a bargaining unit (bargaining unit members) or are excluded based on the unit definition or statutory exclusion.

**Collective Bargaining.** The process of negotiating a union contract or settling grievances under the grievance procedure provided in an existing contract.

**Collective Bargaining Agreement.** The agreement reached between an employer and the union representing the employees that embodies the terms and conditions of employment agreed upon in collective bargaining. Ordinarily, the agreement is written and is effective for a defined period.

**Exclusive Representative.** An employee organization that has the right to solely represent the bargaining unit for purposes of collective bargaining. Many, if not all Collective Bargaining Agreements in the IHS grant this right.

**Free Riders.** A term used by unions to designate non-members within the bargaining unit who obtain, without cost, the benefits of a contract/MOU gained through the efforts of the dues-paying members.

**Grievance:** A formal complaint usually lodged by an employee or the union alleging a misinterpretation or improper application of one or more terms in a collective bargaining agreement. The method for dealing with grievances is through a grievance procedure negotiated in the union contract. If a grievance cannot be settled at the supervisory level, it can be appealed to higher levels of management.

**Investigatory interview:** An investigatory interview occurs whenever a supervisor questions an employee to obtain information which could be used as a basis for discipline. The employee must have a "*reasonable belief*" that disciplinary action may result from what he or she says at the interview. Any employee who is involved in an investigatory interview and is a member of the bargaining unit has a right to union representation. Supervisors should always refer to their collective bargaining agreement to determine their rights and responsibilities when conducting an investigatory interview.

Investigatory interviews relate to such subjects as: Absenteeism

- Accidents
- Compliance with work rules
- Damage to company property
- Drinking
- Drugs
- Falsification of records
- Lateness, poor attitude
- Poor work performance
- Sabotage

- Slowdowns
- Theft
- Violations of safety rules

Please visit the following Web site for more information on investigations:

<http://www.ihs.gov/NonMedicalPrograms/DHR/Documents/superman/investigation.pdf>

**Negotiation Requirements.** The Agency/IHS facility is required to provide the union “Notification” when the employer intends to change the conditions of employment or working conditions of employees in the bargaining unit (e.g., work schedules, leave policies, etc.).

### **Formal Discussions**

Management has an obligation to invite the union to attend any formal discussion between one or more representatives of the agency and one or more employees in the unit or their representatives concerning any grievance or any personnel policy or practices or other general condition of employment.

There are two key characteristics in determining whether a discussion is a "formal discussion" thus requiring the union to be invited or some other type of discussion supervisors may have with their employees:

- Who will be at the meeting
- The subject of the discussions

*Attendance:* For a meeting to be considered a formal discussion, it must include:

- One or more representatives of the agency (e.g., supervisor(s))
- Management official(s)
- Personnelist(s)
- Attorney(s))
- One or more employees in the [bargaining unit](#) or their representative(s)

*Subject of the meeting:* A meeting does not become a formal discussion unless the subject concerns [an individual's grievance](#) or general conditions of employment. Normal shop talk is not a formal discussion. Nor are employees are entitled to union representation if the employer is simply informing the employee of some discipline which has already been decided. Performance Reviews and Performance Improvement Plans, which relate to performance rather than conduct, also do not fall under the guidelines for formal discussions.

The FLRA has indicated certain factors that determine whether a meeting was a formal discussion:



- Whether the individual who held the discussion is a first-level supervisor or is higher in the management hierarchy (the higher the level, the more a formal discussion is indicated)
- Whether any other management representatives attended
- Where the individual meeting took place (i.e., in the supervisor's office, at each employee's desk, or elsewhere)
- How long the meeting lasted
- How the meeting was called (i.e. with formal advance written notice or more spontaneously and informally)
- Whether a formal agenda was established for the meeting
- Whether each employee's attendance was mandatory
- The manner in which the meeting was conducted (i.e., whether the employee's identity and comments were noted or transcribed.)

The above list provides indicators of a formal discussion; they need not all be present for the authority to find a meeting was a formal discussion. The authority looks to the totality of the meeting and not just any single factor.

If the meeting meets the definition of a formal discussion, the supervisor *must* invite the union to attend. Having a shop steward, who works in the clinic, at the meeting in his or her role as an employee does not meet this obligation. Rather, the supervisor must invite the union to the meeting with the union being free to designate whom it wants to act as its representative.

Finally, the union is allowed to participate in these formal discussions by raising questions/comments/concerns, but it cannot disrupt the meetings.

**Union Representative.** Represents the Union and members of the bargaining unit and those who do not pay dues.

### **Weingarten Rights**

A situation where the union is entitled to represent bargaining unit employees involves meetings with employees in connection with an investigatory interview. This provision is often referred to as employees' "Weingarten" rights, based on a Supreme Court decision. The Federal Service Labor-Management Relations Statute establishes three conditions that must be met for a meeting to be considered a Weingarten meeting:

- One or more agency representatives are examining (questioning) a [bargaining unit](#) employee in connection with an investigation
- The employee reasonably believes that the examination may result in [disciplinary action](#) against the employee
- The employee requests union representation

Weingarten rights are not applicable when management issues a disciplinary action since management is not asking any questions. Additionally, the Weingarten right does not come into play when engaging in performance counseling as this does not concern disciplinary matters but, rather, performance issues.

It is imperative that each supervisor obtain a copy of the Local Union/Bargaining Agreement and the Federal Labor Relation manual, ([www.FLRA.gov](http://www.FLRA.gov)). Also available is the “Supervisors Guide to federal Labor Relation, 6<sup>th</sup> Edition”; contact your Area Labor Relation Office for a copy or contact:

FPMI Solutions Inc.  
4901 University Square Suite 3  
Huntsville, AL 35816  
256-539-1850  
256-539-0911 fax  
[www.fpmisolutions.com](http://www.fpmisolutions.com)

## Chapter 3, Program Resources

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### Introduction

The achievement of Dental Program goals depends in large part upon cooperation among I/T/U Dental Program staff, Tribal officials and organizations, and Indian communities. Information exchange among these entities is mutually beneficial and is essential if we are to raise the oral health status of AI/ANs to the level of our healthiest Americans. Information can be obtained from the IHS Dental Program through personal contact with program personnel; through IHS publications such as this guide, from the IHS Web site ([www.ihs.gov](http://www.ihs.gov)), from the IHS listserv, from the IHS dental newsletter (available at <http://www.ihs.gov/MedicalPrograms/Dental/download.cfm>), and other sources.

In addition to these internal resources, external resources also are available that can help dental programs, Tribes, and individuals to achieve program goals. These include local, state, national, and international organizations, as well as the Congress itself, which is the ultimate funding source for most of the monies that support dental programs for Native Americans.

Governmental agencies outside of the IHS are one external source of information. The IHS has always worked closely with the PHS Chief Dental Officer and with other USPHS agencies, such as the CDC (<http://www.cdc.gov/oralhealth/>), the Food and Drug Administration (FDA, [www.fda.gov](http://www.fda.gov)), and the National Institute of Dental and Craniofacial Research (NIDCR, <http://www.nidcr.nih.gov/>). Valuable information is available with a simple phone call to these agencies or a quick scan of their Web sites. The IHS Dental Program also has worked closely with non-USPHS agencies, such as the Administration for Children, Youth, and Families (ACYF) and the BIA on projects and issues of mutual concern.

The ADA, American Dental Hygienists' Association, American Dental Assistants' Association, and their state and local components are other examples of external sources of information that are widely used by dental staff. These affiliations not only provide dental staff with information, materials, and continuing education courses, but the needs of Indian dental programs can be relayed to the organizations, which in turn can support Indian programs at the state and national level.

### **The Budget Process**

Federal responsibility for healthcare for Indian people had its genesis in treaties between the United States and Indian nations. This responsibility has since been reconfirmed and defined by many actions of the federal Legislative, Judicial, and Executive branches. The Snyder Act provides the earliest legislative basis for healthcare for Native Americans in stating that the Government will "...direct, supervise, and expend such moneys and assistance as Congress may from time to time appropriate, for the benefit, care, and assistance of the Indians throughout the United States...for relief of distress and conservation of health..."

The language used in the Snyder Act authorizes the provision of health services within the limits of Congressionally-appropriated funds. Therefore, the federal budgeting arena provides opportunities for the many stakeholders in Indian health to inform and influence the Legislative and Executive branches as the budget is negotiated each year. Some understanding of the budgeting process is often useful for those who wish to promote Indian health issues in the budget arena.

The federal budget process is a three-year cycle which begins two years before the year in which funds will be expended.

The annual budget request of the IHS, an agency in the HHS, is the result of a budget formulation and consultation process that involves IHS and Tribal Indian health program representatives and providers from the local to the national level. This process ensures that the budget is relevant to the health priorities of Indian country.

The IHS budget request is improved and strengthened with the participation of health providers and Tribal and Indian health representatives in its development. The process begins at the local level, where budget priorities are established based on the health priorities of the local community. The IHS and Tribal Indian leadership and health program and budget staff of the 12 IHS regions develop and submit budget recommendations for an agency budget request to HHS. In addition, the IHS budget formulation process contributes to the tribally developed national budget priorities. These priorities are presented to HHS by representatives of the Tribal budget workgroup. The Tribal priorities are instrumental in informing senior officials of other HHS agencies of the health needs of Indian country so that they have the opportunity to include those priorities in their individual budget requests to HHS. The IHS presents the formal IHS budget request to HHS.

The IHS and Tribes evaluate the budget formulation process to ensure it remains relevant and effective. As a result, the process is steadily improving and is responsive to changes in Tribal leadership and IHS and Tribal emerging and shifting health priorities. The IHS and Tribes have identified two items for focused attention:

1. The Tribal partners in the development of the budget request are not directly involved in the budget process once the request is submitted to HHS and the Office of Management and Budget. Because of the government-to-government relationship with Tribes and the established consultation policies of the IHS and HHS, it would be a reasonable business practice to have Tribal leadership involved throughout the budget formulation decision-making process.
2. The Tribal leadership is requesting an exemption from rescissions. Between FY 2003 and FY 2006 the IHS appropriation has been subject to rescissions amounting to \$143 million. Given the unique mission of the IHS as a direct service provider in comparison to other HHS agencies, a funding rescission to IHS translates into a reduction of healthcare services for AI/ANs. Medicare and Medicaid were not subject to such rescissions.

Details about IHS budget formulation can be found on the IHS Budget Formulation Web site at: <http://www.ihs.gov/NonMedicalPrograms/BudgetFormulation/>.

### **IHS Dental Listserv**

The IHS Dental Listserv is a forum for sharing information with and asking questions of the IHS dental program as a whole. Any email sent to the listserv is routed to everyone who has subscribed to the listserv. Obviously, the value of the listserv increases as the number of dental personnel subscribed to it increases. The manner by which you can subscribe depends on the computer from which the subscription is sent. If the computer is behind the government firewall, the first set of instructions is used, and all communication to and from the listserv will be from the government email address. It is also possible to subscribe to the listserv using a nongovernment computer with a private or commercial email address. To do so, follow the second set of instructions, below.

Please share this information with your dental colleagues. There is much useful information shared on the listserv and it is in everyone's best interest to subscribe to the IHS Dental Listserv.

### **Subscribing From a Government Computer/IHS Email Account**

Access the following URL: <http://listserv.ihs.gov/archives/ihsdental.html>

1. Click on "Join or leave the list (or change settings)".
2. Fill in the information (email address and your name). You can select the other settings you want to use, but it is recommended to stay with the default settings.

3. Click on the applicable box of either “Join IHSDENTAL,” or “Leave IHSDENTAL.”
4. You should shortly receive an email message titled “Command confirmation request.” Follow the directions on that email message to confirm your intent to subscribe (or unsubscribe).
5. A message will then be sent to the listserv owners, who will then have the ability to request that your subscription is made active.
6. Once the listserv owners request that your subscription is made active, you should then receive a message confirming your subscription. This message will include information on how you may post messages to the IHS Dental Listserv.

### **Subscribing From a Non-Government Computer with a Computer-Based Email Client such as Outlook Express**

1. From your nongovernment computer with your default email account, open your browser and go to [www.ihs.gov](http://www.ihs.gov)
2. Click on IHS Listserv under “Key IHS Links” in the left column
3. Click on “Available Lists” in the left column
4. From the list of available lists, click on “IHS Dental”
5. Near the bottom of the page, find “subscribe” under “List Functions” and click on it
6. Enter your name between the < > symbols and send the email
7. You will receive confirmation of your subscription

If you are using a Web-based email account (such as Hotmail, Gmail, Yahoo mail, etc.) rather than a computer-based email client, you will need to modify the above instructions.

1. Open and sign in to your personal email account
2. Compose a new email message as follows:
  - a. In the “To:” line, place the following email address  
[listserv@listserv.ihs.gov](mailto:listserv@listserv.ihs.gov)
  - b. In the body of the email message (*not the subject line*), place the following message: “subscribe ihsdental <your name here>”, without the quotation marks and substituting your name for “your name here” between the < > symbols.
  - c. Send the email message.

You will receive an email confirmation that your subscription has been accepted.

**Sending a Message to the IHS Dental Listserv**

Once you are subscribed to the dental listserv, communicating with all other subscribers is as easy as sending a single email. Address all such communications to: [ihsdental@listserv.ihs.gov](mailto:ihsdental@listserv.ihs.gov). Only use the [listserv@listserv.ihs.gov](mailto:listserv@listserv.ihs.gov) address to subscribe to or unsubscribe from the dental listserv.

## **Area Dental Support Centers**

### **Albuquerque Area Dental Support Center**

The Albuquerque Area Dental Support Center was established in 2000 to provide clinical and preventive support to I/T/U dental programs in New Mexico, Southern Colorado, and Texas. Its primary goals are directed towards supporting and enhancing the I/T/U dental infrastructure in order to effectively address both Government Performance Results Act (GPRA) and Healthy People 2010 objectives relating to oral health. Three goals have been established for this program:

1. Provide assistance and support in oral health promotion and disease prevention, particularly in the area of primary prevention
2. Continue the established efforts of the Albuquerque Area Dental Support Center as a centralized resource for training and technical assistance
3. Provide technical assistance and resources to national IHS preventive and clinical initiatives

The Support Center provides essential services to the Area Dental Programs by acting as a centralized resource and communication center for Area dental leadership and staff; acting as liaison in area-wide partnerships (Women, Infants, and Children [WIC] Head Start, Environmental Health; Area Prevention Council, etc.); providing support and resources in area and local health promotion and disease prevention initiatives.

The Support Center engages in many strategies to enhance the efforts of local oral health programs including: acting as a resource for designing, implementing, and evaluating effective oral health programs; providing continuing education opportunities for Dentists, Hygienists and Dental Assistants; serving as liaison to other agencies, organizations and coalitions; developing both community specific and area-wide oral health promotion programs; coordinating and assisting with clinical site reviews; and seeking out funding opportunities on behalf of IHS and Tribal Dental programs.

One of the main strengths of the Support Center is its expertise in health promotion and health communications. Evidence based best practices from the broader health promotion arena have been used to develop not only dental health educational materials, but also prevention interventions that target health behaviors.

By building on the strengths of the IHS Dental clinics and promoting public awareness of the benefits of good oral health, the Support Center is having a positive impact on not only quality of dental care and access to that high quality care, but on attitudes regarding oral health as well. This multifaceted approach ultimately results in positive health outcomes for children and families.

P.O. Box 67830  
Albuquerque, NM 87193



(505) 922-4264

Fax: (505) 346-2311

### **Northwest Tribal Dental Support Center**

The Northwest Tribal Dental Support Center (NTDSC), originally funded in Fall 2000 and currently in its second grant cycle, provides services to all 33 IHS and Tribal dental programs in Idaho, Oregon, and Washington. The overall goal of the NTDSC is to improve the oral health of AI/AN people in the Pacific Northwest. Services provided include preventive and clinical on-site dental program reviews, planning and evaluating Health Promotion and Disease Prevention (HP/DP) initiatives, and Area Office-wide training.

The objectives of the NTDSC include the provision of technical assistance through site visits and other modes of communication, increased access (overall and for targeted groups such as infants and patients with diabetes), increased use of sealants, increased application of topical fluoride treatments, and technical assistance in the evaluation of HP/DP programs and grant writing. Furthermore, the objectives include the identification and provision of Area Office-wide trainings and collaboration with IHS Headquarters and other Dental Support Centers towards meeting national HP/DP objectives. All of the activities of the dental support center are supported through ongoing communication with local dental programs via site visits, email groups, telephone consultation, and an annual Prevention Coordinators' meeting.

The NTDSC has produced a Prevention Manual outlining the policies and procedures for both clinical and community-based HP/DP activities. The consultants have also developed various clinical and prevention assessment tools used during program reviews. Many HP/DP pamphlets and other educational tools have been designed by the NTDSC, some in conjunction with other dental support centers. Most of the products of the NTDSC can be viewed through the online version of the IHS Oral Health Education Resource Guide.

The accomplishments of the NTDSC in meeting the HP/DP objectives can be attributed to the fierce commitment of those dental providers in the Northwest who have worked both independently and collaboratively to achieve these objectives, adopting them as their own, and putting in the time and effort required to improve the oral health of the people they serve.

Contact: Joe Finkbonner, Director  
Tacey Casey: Administrative Assistant  
Northwest Portland Area Indian Health Board  
527 SW Hall, Suite 300  
Portland, Oregon 97201  
(503) 228-4185

Consultants: Bonnie Bruerd, DrPH; Jeff Hagen, DDS, MPA; Kathy Phipps, DrPH

### **Oklahoma City Area Dental Clinical And Preventive Support Center**

The Oklahoma City Area (OCA) Dental Support Center (DSC) provides services through a contract between the OCA IHS dental program and the OCA Inter-Tribal Health Board (OCAITHB). It began operations in 2001 after receiving a 5-year competitive award.

The OCA encompasses a three-state area (Oklahoma, Texas and Kansas) and provides services to 39 federally recognized tribes making the OCA the largest IHS service population in the United States extending healthcare to over 306,000 AI/ANS. Within the OCA, there are 34 I/T/U dental clinics as well as 81 tribally run Head Start and Early Start centers to which the DSC provides services and products. The areas included in the OCA/DSC scope of work include:

- Oral Health Promotion (OHP)/DP and Head Start
- Recruiting (Hygienist and Dental Assistants)
- Continuing Dental Education
- Data Collection and Information Management
- Oral Health Survey Analysis
- Staff Orientation

Services and products currently provided by the OCA/DSC include the following.

#### **OHP/DP and Head Start**

- Grant writing assistance provided to clinics
- Award annual mini-grants for OHP/DP community-based initiatives
- Award clinics with head start specific mini-grants
- Secure partnership funding for head start educational program
- Provide ongoing educational program in-service to head start children, staff, and parents
- Create oral health educational brochures and distribute throughout OCA biannually
- Supply over 12,000 toothbrushes annually to Head Start programs
- Offer and award Annual Outstanding OHP/DP Individual
- Produced standardized form used in all area-wide school sealant programs
- Facilitate Annual Head Start Staff Conference
- Facilitate Annual OHP/DP coordinators meeting
- Provide T/Technical Assistance (TA) to clinics developing or refining their OHP/DP programs

- Maintain OCA OHP/DP video and audio library
- Coordinate area wide prevention project (changes annually)
- Provide on-going TA to Head Start programs
- Serve as OCA OHP/DP representative for the national level

**Recruiting**

- Participate in various career fairs with professionally lighted display board
- Informational recruiting flyers designed for dental assistants and dental hygienist
- Recruiting presentations given yearly at four universities
- Contact maintained with 14 dental assistant training programs
- Assist in the placement process of dental assistant interns
- Database created and maintained tracking interested job candidates
- Prepare, update, and disseminate biannually area dental roster
- Ongoing TA provided to interested applicants for I/T/U and USPHS
- Work with local and national IHS dental recruiters for placement of applicants

**Continuing Dental Education**

- Coordinate the OCA Annual Dental meeting for over 175 attendees and vendors
- Offer Basic Life Support (BLS) training to dental staff providers
- Coordinate 3 CDE courses each year
- Coordinate hands-on CDE course annually
- Established and maintain 2 MOUs with University of Oklahoma CDE dept.
- Serve as OCA National Training Coordinator
- Offer web-site training/technical assistant for IHS CDE Web site
- Survey and track training needs for OCA dental staff

**Data Collection and Information Management**

- Collect annual dental data through RPMS systems
- Convert data from tribal dental programs that do not use the DDS system
- Assist IHS dental program with annual dental clinical efficiency and effectiveness report

- Collect data for school-based sealant programs

**Staff Orientation and Development**

- Develop and provide new staff orientation kits
- Provide on-site staff orientation to new dental staff members
- Provide orientation to newly commissioned officers
- Provide OHP/DP Training and Technical Assistance (T/TA) to new prevention clinic coordinators
- Offer staff development trainings; team building, customer relations, etc.

**Other**

- Assisted in the coordination of the State of Oklahoma Children's Oral Health Forum
- Member of the State of Oklahoma Children's Oral Health Coalition
- Member of the State of Oklahoma Mobile Unit Taskforce
- Produce quarterly informational newsletter and distribute

**Contact Information****OCAITHB**

Dental Support Center

Amy Holder, RDH, Director

P.O. Box 57377

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Website: <http://www.ocaithb.org>

**Inter Tribal Council of Arizona, Inc.****Dental Clinical and Prevention Support Center**

Mission: To assist Tribal, urban American Indian, and IHS dental programs in the Phoenix and Tucson Service Areas in supporting clinical services, effective program management, and prevention activities.

**Services That Can Be Provided**

- Community presentations on all aspects of oral health for children, adults, and elders
- Community oral health surveys
- Conduct unmet dental needs assessments
- Chlorhexidine mouth rinse programs for elders
- School brushing programs
- Denture cleaning supplies
- Dental prevention supplies
- Develop and distribute oral health brochures and fact sheets (10 currently available, including a Diabetes and Oral Health booklet)
- Water testing for fluoride levels
- Fluoride supplement programs
- Xylitol chewing gum programs
- Saliva testing to determine bacterial levels
- Fluoride varnish programs for infants, children and elders
- Train Tribal members to deliver dental prevention services in their community
- Dental consulting
- Oral Care Training Program for caretakers of Elders and Special Needs Patients
- School sealant programs
- Train Tribal dental health educators

**Current Major Emphasis**

- Fluoride varnish programs for preschool and school children
- School sealant program for grades K-6
- Training tribal dental health educators

For additional information please call 602-307-1576

## Chapter 4, Oral Health Promotion and Disease Prevention

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## How to Use the OHP/DP Section

As oral diseases continue to be a significant health problem in the AI/AN population, health promotion/disease prevention must play a key role in improving the oral health of this population. This section of the *IHS Oral Health Program Guide* is intended for use by all oral healthcare providers, not just dentists and hygienists. New information about the prevention of dental diseases becomes available almost daily. In order to keep this chapter as up-to-date as possible, hyperlinks to additional sources of HP/DP information are provided throughout the chapter.

This chapter is divided into several topics. The first topic discusses community development. The IHS Dental Program has adopted a philosophy of Community-Oriented Primary Care (COPC) to assess the health status and needs of a defined population in a community in order to better manage resources based upon the situation in each community. Also included is information on how to develop a community prevention plan and examples based upon the Problem, Objective, Activities, Resources, and Evaluation (POARE) format.

The second topic describes the prevention methods for lowering disease rates for dental caries, periodontal disease, and oral cancer and for decreasing the use of tobacco. A section on caries diagnosis, risk assessment, and management of dental caries is included. Treating the caries process as an infectious disease and applying a medical model to eliminate or reduce the bacteria are program strategies described in this section. Proven effective preventive strategies for caries control include use of dental sealants and systemic and topical fluorides. Information on some practical suggestions related to nutrition and dental caries that dental staff can share with patients, caregivers of young patients, and with other health professionals is also included. The strategies include encouraging patients to follow the Food Guide Pyramid. Baby Bottle Tooth Decay/Early Childhood Caries is a common problem at IHS facilities. Strategies for preventing this condition are presented for both clinical and community settings.

Recent oral health surveys conducted by the IHS have indicated a high prevalence of periodontal diseases throughout AI/AN populations. Much of this disease can be contributed to the high rates of non-insulin dependent diabetes mellitus (NIDDM) in the population. The latest techniques in controlling and treating periodontal disease with chemotherapeutic measures are included in the section. By identifying and providing treatment to those patients at high risk, resources can be used most effectively. Specific treatment protocols for patients with NIDDM are also presented in this section.

Although oral cancer rates are generally low in Indian populations, with the exception of Alaska Natives, the use of commercial tobacco products is extraordinarily high—particularly in Northern Plains Indians and Alaska Natives. Use of tobacco (and alcohol) places these populations at high risk for oral and oropharyngeal cancers. Strategies on early detection and education are presented.

The third topic is oral health education programs. Examples of oral health education programs in Head Start and school-based settings are included.



The fourth topic is program evaluation. Evaluation is a critical aspect of the HP/DP program and ensures that resources are used wisely. Examples of quality assessment methods for clinic- and community-based programs and activities are provided. Documentation techniques individual preventive services and community-based programs are included, as is a brief description of the POARE planning model.

Overall, the goal of improving the oral health of AI/AN people depends on changing behaviors, increasing access to care, and embracing the latest technologies for HP/DP in both clinic and community settings.

### **The Community-Oriented Primary Care Model**

The World Health Organization defines Primary Healthcare this way: “Primary healthcare is essential healthcare based on *practical, scientifically sound, and socially acceptable* methods and technology, made *universally accessible* to individuals and families in the community through their *full participation* and at the *cost that the community and country can afford* to maintain at every stage of their development in the *spirit of self-reliance and self-determination*.” The IHS utilizes the World Health Organization’s definition of Primary Healthcare in their COPC Programs. In addition, COPC is a health delivery concept which *integrates all health disciplines and community resources* in order to address the health problems identified within the community. This concept thus extends primary care outside the clinic and acknowledges that to achieve improved health in a community, both technical expertise of the health practitioners and cultural and social experts from the community must be involved.

There are three essential elements of COPC. First, there must be a definable community. If the people of a town, region, or locale cannot be identified and have no characteristics that join them together as a community, a COPC program cannot be accomplished. Second, an integrated healthcare delivery program within the community must be present. Third, a management process by which the healthcare program identifies and addresses the major health problems of the community must be available. In addition, the management process must function with the participation of the community.

In I/T/U programs, defined communities and integrated healthcare delivery programs generally exist and have been present for many years. In so much as that is true, the focus here is on the third essential element of COPC: the management process. The management process of COPC consists for four functional steps, the first two of which are covered in this section, and the last two of which are covered in the following section on the POARE model:

- Define the community
- Identify the health problems of the community
- Develop a healthcare program to address the identified health problems
- Monitor the efficiency and effectiveness of healthcare program modifications

## 1. Define the Community

In I/T/U programs, the definition of community is usually a Tribe or collection of Tribes within the confines of a reservation or service delivery area. The community can also be extended to a geographic region, such as an IHS area, and can include Urban settings. Further, definition of the community also includes its characterization by demography, socioeconomic status (SES), and the way the community makes decisions based on these factors. Definition of the community includes identification of community opinion leaders, accepted community programs such as Head Start, and an understanding of how the community makes decisions that affect its members.

## 2. Identify the Health Problems of the Community

Identification of the health problems of the community requires input from the healthcare provider, epidemiological surveys of the community, and the perception of the community. There are a number of community groups and individuals that can and should be involved in this process. Some of them are listed here:

- Tribal Council
- Tribal or Urban Indian Health Board
- Local Opinion Leaders (usually elders)
- Head Start
- Local Schools
- WIC program
- Community Health Representatives
- Public Health Educators
- Maternal and Child Health
- Social Workers
- Other Outreach Workers

Only when the entities agree on the health problems to be addressed and support is developed at the local level can a program of intervention be successful. This approach requires flexibility on the part of I/T/U programs and willingness of the dental team to respond to the priorities set by the community.

## Needs Assessment

The identification and description of a community's health problems requires a needs assessment. The first step is to accurately determine the problem to be addressed, the segment of the population who has the problem, and the extent of the problem. Needs

assessments can be done on different levels, using a variety of techniques, including: dental records review, health risk appraisals, focus groups, key informant interviews, and community surveys of oral health status and perceived health needs.

Assisting the community to examine and quantify its own oral health status is an essential first step for appropriate planning, targeting, monitoring, and evaluation of the COPC program. Once the health problems of the community have been identified and prioritized, a healthcare program can be tailored for that community and specific program objectives can be developed. The Association of State and Territorial Dental Directors (ASTDD) has developed a comprehensive manual entitled, *Assessing Oral Health Needs: ASTDD Seven-Step Model*. It is available online at: [http://www.astdd.org/index.php?template=seven\\_steps.html](http://www.astdd.org/index.php?template=seven_steps.html).

### **HP/DP Program Planning – POARE**

The IHS advocates the use of the POARE model in planning, implementing and evaluating health promotion/disease prevention activities. By following this model, the dental staff will be able to clearly identify a problem of importance to the community they serve, make plans for the best use of resources, and plan a thorough evaluation of the program. Below are the components of the POARE model.

**Problem:** Decide which health problems are of the greatest concern in your community. You will also want to take into account the major health problems among adults in your community. For instance, if diabetes is a major health problem in your community, then you might want to focus on limiting pop and other sweetened beverages. Also take into consideration the health problems that parents are most concerned with.

**Objectives:** Write one or more objectives that address what you can realistically achieve. Try to make each objective measurable. Ask yourself how you will know if you have achieved this objective?

**Activities:** What actions or activities will you implement to reach your objectives. This could include educating parents, making an appointment to talk to the dentist, purchasing educational materials, etc.

**Resources:** How much money and other resources will you need to achieve your plan? Items might include personnel, outside services, materials, funding and approvals. Start out by thinking big. You can make reductions later if you have to. The people who get their budget increased have positive attitudes about money. You have to think big and play to win. Don't be afraid of money and don't be afraid to use it.

**Evaluation:** Put simply, how will you know if you have met your objectives? Keep your evaluation plan simple and measurable.

### **P - Problem Identification**

**Find the root of the problem (the real problem).** Often, the problem isn't as simple as it seems. For example:

*“Our clinic doesn’t have a school sealant program, so we want to start one. We have the support of the school and the Tribal administration. If we start the school sealant program, we’ll see more school-age children and meet IHS GPRA indicators for sealants.”*

In the above case, what is the problem?

- Is the problem access to care?
- Is the problem dental caries?
- Is it both?

Another way to identify a problem from the example above is:

*“Our clinic has a dental caries rate of 65% in school-age children. Access to care is limited because of the unavailability of many after-school appointments.”*

Below is another example of a sample write-up for an HP/DP program that fails to clearly identify a problem:

*“Our clinic wants to start a free denture program for our elders, since many of our elders cannot afford dentures. We have approached the Tribe and asked for the funds, and they have agreed. We are really looking forward to starting a denture program.”*

But again, what is the true problem? The above problem could be written another way that explains the problem better:

*“Over half of our elders (60 and over) are completely or partially edentulous. Because of this, many of them are unable to have a nutritious diet. In fact, the medical department at our clinic has conducted a survey and found that elders without dentures weigh an average of 10 pounds less than those with teeth (either natural or dentures).”*

### ***Keys To Problem Identification–Questions to Ask***

- “Is it a problem worth solving?”
- “How big of a problem is it?”
- “Can it be solved?”
- “Do we have the manpower to address it?”
- “Do we have the funds to support it?”
- “Do we have the ability to sustain it?”
- “Do we have proof of the problem?”

### ***Keys to Problem Identification–“The Don’ts”***

- Don’t assume that because you have the funds or support, it is a worthwhile project

- Don't rush into the project without clearly identifying the problem and solution
- Don't use only anecdotal evidence to determine a problem
- Don't assume that because it was once a problem, or it was once a program, it is still is a problem

### ***Keys to Problem Identification—"The Do's"***

- Do get the facts first
  - RPMS (Quality Assurance [QA], SCOM, annual reports)
  - Chart reviews
- Do identify how it is a problem
  - How does it match up with national data?
  - How does it compare to other clinics or your own clinic years ago?
- Do keep the focus on the problem
  - Keep everything else—objective, activities, resources, and evaluation—centered on the problem

### ***One Suggested Format for Problem Identification***

- The problem statement should be the most important part of any grant or plan
- Suggested format:
  - Identify clinic, location, unique qualities
  - Identify the problem – backed up by numbers
  - Identify how the problem compares with other data from other sources (national, Area Office, etc.)
  - Identify how the problem has been addressed in the past (successes and failures)

## **O – Setting Objectives**

The key way to understanding if you have planned and implemented a successful program is through the setting of clear objectives at the onset of the program and then evaluating those objectives at the end of the program.

Most dental programs have very limited time to implement a HP/DP program, so if you do begin one, you'll want to make the best of your available resources and time to conduct a successful program, a program that is not only successful by dental standards but one that is meaningful to both the Tribe and the community. In addition, sometimes dentists delegate HP/DP programs to dental hygienists or dental assistants or nondental

staff. In order to clearly delineate responsibilities and expected outcomes, it is important for the dental team to clearly plan the program to include measurable objectives.

The IHS DOH advocates the Specific, Measurable, Attainable, Relevant, Timely (SMART) system when setting up HP/DP objectives.

- **S – Specific.** The objective must be specific to the problem identified. For example, an objective for a caries problem might be to “reduce the caries prevalence”, but an objective of “we’ll go to the school” isn’t quite specific enough to address the problem. Remember, the objectives are not only for your use, but they help explain your program and expected outcomes to all of those support staff, including non-dental staff.
- **M – Measurable.** The objective must be measurable by available data sources such as RPMS. For example, you wouldn’t want to state that the objective is to make patients “happy” or “satisfied” unless you are prepared to survey the patients before and after the program.
- **A – Attainable.** The objective must be attainable. One of the biggest disappointments in a dental HP/DP plan is to conduct the program and then not have the results that the dental staff was expecting. Keep it simple and easily attainable. Remember that things may happen over the course of the program beyond your control, such as losing key funding or key staff.
- **R – Relevant.** The objective must be relevant to the community and based on evidence. For example, as caries prevalence usually does not dramatically decrease in a short period of time, an objective to reduce caries prevalence by 10% in a one-year period would not be realistic. Instead, reducing prevalence by 2% in a two-year span might be more appropriate, or reducing incidence (new cases) by 10% in a two-year period might be possible. However, remember that RPMS is best at tracking prevalence proportions, if IHS data is entered by the dental staff.
- **T – Timely.** The objective should have a definitive timetable, such as reducing caries prevalence by x% in a specific period of time.

### Checklist to Evaluate Objectives

#### S=Specific

The statement is clear and concise. Vague terms or words should be avoided.

Vague Action Words	Specific Action Words
Know the material	List four reasons
Help the community	Decrease dental caries
Talk to the doctors	Give a presentation
Set up a program	Establish a school-based program at Grant Elementary School
Do more sealants	Increase sealant application by 25%

**M=Measurable**

Objectives need to be worded so the desired result can be clearly measured or observed.

**A-Attainable**

The objective should be challenging but realistic.

**R=Relevant**

The objective should be science-based and relevant to your community.

**T=Time-Based**

The objective needs to have a time frame in which the desired result is expected to be achieved.

**A – Planning Activities**

Many dental staff make the mistake of first planning activities. The problem with this approach is that it may not be based on a sound problem statement or clearly defined objectives. An example might be planning a school sealant program without understanding what the caries prevalence is in the program group and without having clear objectives to carry out such a program. Plan activities only *after*:

- You have clearly defined the problem
- You have clearly defined objectives using the SMART principle (the objective(s) should be significant (S), measurable (M), attainable (A), realistic (R), and timely (T)-i.e., they must have a set start and end date.

***Considerations***

Before planning your program, you must ask yourself some key questions:

- What is the best evidenced-based approach at tackling the problem?
- What are the alternative approaches?
- How much manpower, out-of-clinic time is going to be needed?
- How much will it cost?

***Example***

Suppose you have identified a problem on your reservation as a dental caries prevalence in 6-8 year old children. You have established an objective of reducing this caries prevalence by 5% in the next two years. Answer the following questions.

- Activities:

- Who will be the target group?
- What are some evidence-based approaches?
- How much will it cost in terms of money and manpower?

***Sound HP/DP Programs That Might Work for You***

- To address access to care:
  - School screenings
  - Head Start screenings
  - Health fairs
  - Open access policies for target groups
  - Training others to perform screenings
  - Promoting the clinic through newsletters, parent/patient letters, etc.
  - What else can you think of?
- Dental Sealants
  - School sealant program
    - Expensive, though, so are there alternatives?
    - But can you reach more this way?
  - Universal sealants in the clinic by assistants or dentists or hygienists
    - Just a change in practice can make a difference
  - Other
- Fluoride
  - Start a fluoridation program
  - School fluoride varnish program
  - Head Start fluoride varnish program
  - Train others (medical providers, Head Start) to apply fluoride varnish
  - Health fair
  - Other
- Xylitol gum program
  - Expensive, so make sure it's worth it
- Parent education classes



- A lot of recruiting and follow-up is required
- Prenatal education
  - Need the support of the OB-GYN
- “Stop the Pop” or similar program
- Athletic mouthguard program
- Periodontal program
  - Tertiary prevention for diabetics
- Other

### ***Keys to Planning***

- Be as detailed as possible
- Set up contingency plans
- Make sure the activities make common sense to you
- Be prepared to hold the activity/program together yourself
- Line up support for the program!
- Don’t get discouraged from failures

### **R and E –Resources and Evaluation**

Resource identification and evaluation are components of plans that are often ignored or given too little consideration, but they are both important components of successful programs. It is essential that the cost of programs be estimated as accurately as possible over the time specified in the objective, so that the program can be maintained throughout its duration. The resources needed include staff time, supplies, community volunteers’ time, and funds available. *It is important for the healthcare providers and the community to have a full understanding of the commitment in time and money that is being made in order to meet the objective.*

The evaluation component should be delineated during the planning of the program and should include assessment of the specific activities involved in the program, as well as assessment of the desired health outcome (the health outcome is usually the objective that was identified earlier in the POARE process).

### **Activity Evaluation**

The activities that have been identified and completed in the activities component of the POARE format should be evaluated separately from the evaluation of the objective that was identified in the POARE format. Only then can it be determined if the health outcome was achieved because the activity was successful. For example, you may have a very successful sealant program that was done well in every way, but the 6- to 8 year-old children targeted in the objective still have a high rate of decay because smooth-surface

caries made up the majority of lesions. Or pit and fissure lesions may be the most prevalent, but your sealant program was not effective because the response was poor (e.g., only half of the children returned their permission slips for sealants), the timing was bad (e.g., the children in the second grade that were targeted already had decay), or the technique was poor (e.g., half of the sealants fell off shortly after placement). Only after ensuring that the activities have met prespecified quality parameters can the determination be made that the activities had a positive impact on the objective. The documentation and assessment of specific activities should also include careful recording of the time and resources invested in all phases of performing the activity, such as planning, materials, travel, set up, and implementation.

### **Health Outcome Evaluation**

Measurement of the health objective should be consistent with the method used to determine the baseline. For example, if calibrated examiners used tongue blades and fiberoptic lights in the classroom setting to determine how many 6 to 8 year-olds were caries-free five years ago, the same calibration standards, equipment, and location should be used to measure whether the objective was met five years later. The evaluation method should be easily understood and accepted by healthcare providers and the community.

Measuring the impact of a specific activity on a health outcome can be quite complex and may involve techniques beyond the scope of the program. Most health outcomes are influenced by multiple factors, many of which are out of the Dental Program's control. In addition, when several activities are targeted toward the same outcome, it is difficult to determine which activity or activities were effective. Most programs will need to settle for an *assumption* that the activities implemented had an impact on the health outcome listed in their objective. The extent of the impact often must be assessed through comparisons to the literature and other programs which are similar and do not implement the same activities. The simplest strategy is to implement one activity at a time for a specific health objective. When the impact of that activity is clear, another activity can be implemented. Determining the impact of one activity is much easier than determining which of 10 activities (if any) is making the difference.

### **Monitor the Efficiency and Effectiveness of Healthcare Program Modifications**

Monitoring the efficiency and effectiveness of the healthcare program is done through the resource and evaluation components of the POARE format. The community and healthcare professionals should be informed of the results of the evaluation phase of the program and the amount of resources expended. During discussions about these two components decisions can be made about changes in the program that will increase efficiency and effectiveness and continue to improve health status of the community.

If the quality of a program cannot be assured, the program should be discontinued. In addition, programs that are cost- and time-intensive and that demonstrate little effect on health outcome should be dropped, redesigned, or scaled back. For example, health fairs build good public relations in the community; however, it may be difficult to evaluate changes in health behavior or health status based on attending a health fair. Programs that

demonstrate a strong positive effect should be retained, as long as resources are available to implement them. Discussions with the community about these issues should be undertaken before the project is implemented, so that there is a clear understanding as to why some activities may need to be dropped or enhanced later in the program.

### **Community Oral Health Education and Promotion**

An inherent responsibility of all IHS dental staff is to help prevent and control dental diseases.

Health education and health promotion are necessary to achieve both individual and community oral health. The ultimate responsibility for oral health must be shared by individuals, families, health professionals, and the program as a whole. Health education can help increase knowledge and reinforce desired behavior patterns, but to be successful, it must be integrated with other influences on health—economic, social, and environmental—all of which affect access and acceptance of preventive programs.

### **Definitions (From 1990 Joint Committee on Health Education Technology)**

- Health Promotion and Disease Prevention (HP/DP): Aggregate of all purposeful activities designed to improve personal and public health through a combination of strategies, including the competent implementation of behavioral change strategies, health education, health protection measures, risk factor detection, health enhancement and health maintenance.
- Health Literacy: The capacity to obtain, interpret and understand basic health information and services and the competence to use such information and services in ways which are health enhancing.
- Health Education Program: A planned combination of activities developed with the involvement of specific populations and based on a needs assessment, sound principles of education and periodic evaluation using a clear set of goals and objectives.

Frazier defines health education in dental public health programs as:

*A process of organizing and involving groups of decision-makers and opinion leaders in active decision-making with regard to the selection and implementation of organized community dental programs which: a) are designed to prevent or control oral diseases; b) have been shown to be effective and practical at the community level; and c) operate independently of individual performance or habit (1).*

Frazier states that community education efforts should be focused on adult decision-makers and opinion leaders in the community, versus individual motivational efforts, since these broader methods are more cost-effective (2).

Others have suggested that the number of people who are susceptible to prevention messages is a small fraction of those who need them and that oral health depends on a

style of living which is not easily influenced by the dentist. People may not be susceptible to the prevention message because of physical and psychological conditions which do not provide a receptive and supportive environment. Community education prepares or enhances the conditions to provide a more receptive and supportive environment.

The underlying principle in applying the skills and methods of health promotion and health education at any public level is the attempt to modify or change behavior. Education alone is usually insufficient to achieve optimum oral health. Knowledge is seldom sufficient to produce behavioral changes. Patients' perceptions, attitudes, and values must also be considered. Appropriately-directed behavior will then result in the prevention or reduction of disease and an elevation of health status of an individual or community.

Integral components of these prevention efforts are patient and community education. It is not enough to tell people what to do; we need to work toward establishing positive health values. Health professionals should always be assessing whether a patient's/community's noncompliance is due to a lack of technical skills or knowledge, failure to recognize the importance of self-care, or a lack of motivation. Education must permeate every aspect of the prevention program and focus on changing specific health behaviors.

Health behavior can be divided crudely into two general types:

- Compliance behavior
- Innovations

Compliance behaviors are behaviors which are generally known and recognized by both the learner and the community to be important to health. Indeed, one of our biggest challenges in reducing the burden of chronic disease is to improve compliance by our clients with prescribed behaviors. In contrast, innovations are novel behaviors, ideas, or attitudes. What we as health professionals may perceive as a compliance behavior issue, may be viewed by the client (or community) as something novel — an innovation. Our concern is how to decrease the length of time it takes for adoption of the innovation and to increase the number of people who adopt it.

The stages of adoption which the client and the community must pass through are awareness, interest, trial, decision, and adoption (3). These stages are part of a process and not an end point. Different parts of the community will be at different stages of adoption. People or communities must go from one stage to the next. The challenge is to target the education to the stage that the person or community is at, i.e., match the stage and educational effort.

In acting as change agents, we are more likely to be credible if our programs:

1. Fit the clients' cultural beliefs and values.
2. Involve clients in planning the change.

3. Increase the client's ability to evaluate innovations.
4. Use opinion leaders to spread the program (4).

Four methods for approaching change are as follows:

- Persuasive communication
- Empirical-rational education
- Normative re-education
- Community organization (5)

These all overlap to some extent and are often used in combination to tailor an approach toward a specific community problem. Persuasive communication is trying to convince and motivate people to take a specific action, often using mass media. Empirical-rational education conveys a body of knowledge and skills that people rationally want to do because it serves their self-interest. This is the standard "classroom" approach to education used in schools. Knowledge, however, does not necessarily lead to behavior change.

Normative re-education involves the learner as an active participant who must unlearn old behaviors in order to learn new ones. It recognizes that learning is influenced by social norms and values and by institutional biases. The way the client sees himself and his problem must be brought into a dialogue with the way in which he and his problem are seen by the change agent. The problem may not be one of knowledge, but of attitudes, values, norms, or social relationships. *The client should be collaboratively involved in defining and solving the problem.* Acceptance or modification is not a random process but depends on how the new item or idea is perceived by the potential recipients, how it accords with their values and assumptions, and whether it is consistent with their system of social relationships. It also depends on the social status of the innovator and the implications of that status for the various segments of the community (6). An outcome of this approach is that social norms are redefined.

It is clear that public funds should not be expended in activities that have not been demonstrated to be effective. Certainly the most cost-effective methods for preventing disease should be used first. Activities directed only toward the dissemination of information, but that do not focus efforts on changing behavior, fall short of inclusion as health education activities.

All community efforts should be evaluated on adequacy, efficiency, effectiveness, appropriateness, and side effects. Evaluation of community education efforts can be accomplished through surveys on knowledge, skills, and attitudes. Baseline information can be gathered before and after intervention strategies are implemented.

Oral health education and health promotion are components of each prevention strategy recommended in this manual. Although the effects of oral health education are subtle and have not always proven to be effective in reducing disease rates, educational

presentations are often useful for raising the public's interest or getting people to support/adopt a program. These presentations might include the following:

1. Health fairs
2. Oral health in the clinics or community
3. Media messages through radio, TV, newspapers, and posters
4. Presentations to specific targeted groups
5. Tribal presentations
6. Speeches at special events
7. Parades

Providing a consistent oral health message over time may increase behavior compliance when integrated with other community-based strategies.

Here are some tips for making more effective group presentations:

1. Use attention getters/visual aids.
2. Tell stories or use examples to teach the facts. (Present good local data when available.)
3. Use appropriate and effective audiovisual aids.
4. Call for action. Let your audience know what they can do to prevent dental disease. What do you want them to do differently tomorrow as a result of your presentation?
5. Above all, don't forget to KISS — Keep It Short and Simple! No one likes a boring technical discussion. Education is the most effective when it is given in small steps and in language the audience can understand.

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## **Caries Diagnosis, Risk Assessment, and Management**

### **Introduction**

For many years the scientific literature has suggested that a risk-based assessment of an individual patient's dental caries history and oral health status is an important prerequisite for appropriate preventive and/or treatment actions (1-7, 55). In the IHS, program managers and clinicians also support this risk-based approach. A practical guide entitled "Caries Diagnosis, Risk Assessment and Management" was developed by a work group of senior clinicians, general practice and pediatric specialists, epidemiologists, and public health consultants. A risk classification table with preventive regimens and suggested recall interval appropriate to risk category was also developed (54). The information provided in this section is a summary of this IHS practical guide.

This risk-based model provides a framework for decision-making to determine a patient's risk of dental decay and appropriate preventive and treatment strategies. It considers the clinician's judgment as well as available resources. In a public health program, clinicians should also assess resources and activities such as community water fluoridation and school-based programs, including sealant screening and placement, and fluoride mouthrinse programs. The overall objective is to work with patients and communities to improve the oral health of AI/AN people in the most effective and efficient manner possible.

The underlying principle of a caries risk protocol is to approach dental caries as an infectious disease (8-12, 56). Most resources in our dental clinics are invested in the diagnosis, treatment, and prevention of this infection. These resources are maximized by appropriately addressing the diagnosis, prevention, and treatment of dental caries. Studies have shown that flexible recall systems and targeted care are cost-effective and time-effective, providing the greatest health benefits to defined populations (4, 13-15). Each patient's individual risk for caries impacts on that patient's treatment plan. Since most restorative treatments result in irreversible changes in those teeth involved, establishing a treatment plan involves weighing the risk of dental disease progression against the risk of receiving irreversible dental intervention. The guidelines in this subsection can assist you in exercising your clinical judgment by organizing caries diagnosis, risk assessment, prevention, and treatment strategies. Information provided in this program guide is derived from the IHS "Caries Diagnosis, Risk Assessment and Management: A Practical Guide" and can be referred to for more in depth discussion of this topic.

## Diagnosis

Dental caries must first be correctly diagnosed before appropriate interventions can be considered. Dental diagnosis is best accomplished longitudinally, comparing available examination and radiographic data over time. Single “snapshots” often do not supply information about disease progression/regression, especially when lesions are in the early stages of development. Exams are best completed in a dry field with bright illumination. The explorer is *not* the instrument of choice for diagnosing caries. A sharp explorer has been shown to cause cavitation of otherwise reversible active lesions, gives false information when diagnosing by “stick” and does not improve the validity of diagnosis (16-18). On rare occasions when the use of an explorer is indicated, the explorer should be dull and light pressure should be used. Radiographs are ordered to confirm, not establish, the diagnosis of caries. They should be used in longitudinal sequence to assess lesion activity whenever they are available from previous exams. Stained grooves and rough restoration margins are not of themselves indications of active caries or of caries potential (17-22). Only carious lesions which are active, frank, and cavitated require the irreversible surgical intervention of operative dentistry. Carious lesions that are not active, frank, and cavitated, such as “white spot lesions” and/or incipient lesions, are best addressed using a medical model, or non-surgical approach (12, 21). The clinician may rely on pharmacotherapeutic interventions such as professionally-applied (foam, varnish, and gels) and home-use topical fluoride products (toothpaste, rinses) as well as chlorhexidine to control the infection.

## Caries Risk Assessment

There is evidence in the scientific literature that dental caries history or experience (usually expressed as DMFT/DMFS, deft/defs scores) is not evenly distributed in the general population (23-26). In the IHS, it has also been documented that dental caries experience is not evenly distributed (27-29). In contrast to the U.S. population, most of our IHS subpopulations have a small proportion of people who have either low or high dental caries experience and a relatively large proportion who have moderate dental caries experience. One goal of the Dental Program is to increase the proportion of low-risk patients and decrease the proportion of high-risk patients in a given community. Targeting resources for high-risk patients and “moving” patients from high-risk to moderate-risk and from moderate-risk to low-risk categories can maximize the impact of limited program dollars. The more patients in the low-risk category, the more opportunity to increase access to those in the moderate- and high-risk categories and increase their opportunity for achieving better oral health. Since there is generally less disease if patients have better access to routine and preventive services, an effective public health approach to OHP/DP includes improving access as a preventive strategy.

The ADA published a 1995 Journal Supplement outlining caries risk classifications and appropriate preventive regimens to complement them (12). The IHS used the ADA document as a framework to tailor a product (54) for our populations, which have, in general, higher levels of decay. The IHS Table relies heavily on the clinician’s judgment to use modifying factors (see below) in assigning risk categories. The IHS Table also redefines age groups from the ADA’s child/adolescent and adult groupings to ages 0-4



and 5+. In addition, the IHS Table adds a “very high risk” category to address that proportion of AI/AN populations with significantly high levels of dental caries and bolsters treatment regimens for those individuals.

Sound clinical judgment is necessary to establish dental caries risk and prescribe appropriate interventions. Gathering information from and about patients is critical in determining this risk. In this model, the key decision, which drives caries risk assessment, is the presence of active cavitated lesions at the time of the examination. Many studies indicate that previous caries experience is one of the best predictors of future caries experience (1,2,4-7,30-34).

Other factors, or modifiers, that may predispose an individual to dental decay include the following (57, 58):

- Age
- Family’s dental experience
- Diet
- White spot lesions
- Tooth morphology
- Fluoride exposure (both too much and not enough)
- Rate of caries progression
- Oral hygiene
- Socioeconomic status
- Frequency of dental visits
- Medical conditions and medications being taken
- Salivary flow
- Root exposure
- Mutans streptococci (MS) levels
- Special assistance requirements
- Orthodontics
- Removable appliances

The type and nature of modifiers applicable to an individual may indicate that he/she should be moved into a different risk category. No attempt was made to regulate the number of modifiers, which would move a person into a different risk category; this decision has been left up to the *clinician’s judgment*. However, patients should be reassessed and reclassified at subsequent recall visits for the appropriate risk category. A patient initially classified as “high-risk” or “moderate-risk” may fall into a “low-risk” category at recall if no new lesions are found and modifying factors such as fluoride

exposure and oral hygiene have changed. “Low-risk” patients may also move into other categories if oral conditions change. Risk categories and classification are fluid.

The IHS “Caries Diagnosis, Risk Assessment and Management” manual defines the following risk categories and provides guidelines for preventive regimens as well as recall intervals for assessing caries risk status (54):

- Patients 0–4 years:
  - Low Risk: No active carious lesions of any type (cavitated or white spot) at exam.
  - High Risk: Any cavitated or white spot lesions at exam. Continued bottle feeding after 12 months or a family history of caries.
- Patients 5 years and older:
  - Low Risk: No active cavitated or non-cavitated lesions at exam.
  - Moderate Risk: One active cavitated smooth surface lesion or any pit and fissure lesions at exam.
  - High-Risk: 2–5 active cavitated smooth surface lesions at exam or two new lesions of any type with a history of smooth surface lesions in permanent teeth. Former “very high risk” patients may also be placed in this group.
  - Very High Risk: 6 or more active cavitated smooth surface lesions at exam.

\*\*To reiterate, modifying factors could place a patient in a higher or lower risk category.\*\*

## Management

Treatment planning and management of active carious lesions involves three steps:

1. Arresting the infectious disease process and preventing disease using a medical model (Preventive Regimen)
2. Completing restorations and/or extractions (Surgical Treatment)
3. Evaluating the outcome of the chosen preventive regimen and surgical treatment (Recall)

It is imperative that the *prevention strategies* based on risk assessment are initiated prior to completing restorations or extractions. The prevention regimen should be based on the patient’s risk category. If there is a high demand for services and few resources, preventive regimens should be focused on strategies proven to be effective like fluoride and sealants (35-39). Proven strategies that are cost effective for most IHS populations are identified with an asterisk on the IHS Risk Classification table. All preventive services should be specifically described as part of the overall treatment plan. The

patient's risk status can be indicated on the line for target group on the exam form, e.g., "high risk caries".

Restorative treatment and extractions are *surgical processes* that are destructive. They are justified only if the risk of destruction caused by an irreversible, frank, active carious lesion is greater than that of the surgical procedure itself. In low and moderate risk patients, more concern should arise from a false positive diagnosis of dental caries leading to unnecessary surgical tooth destruction than from a false negative caries diagnosis (53). Carious lesions in permanent teeth usually progress slowly, and may be arrested or reversed. Therefore, conservative treatment options such as sealants, preventive resin restorations, avoiding "extension for prevention," and appropriate recall based on risk are preferred. The goals of this conservative approach are twofold: first, to avoid unnecessarily placing the first restoration, which likely commits the patient and the dental program to a series of future replacement restorations of increasing size at the expense of natural tooth structure; and second, to minimize the unnecessary replacement of restorations. High and very high risk patients, however, require more aggressive preventive and restorative treatment. Their lesions, even in permanent teeth, are often rapidly progressive. Treating too conservatively may result in adverse outcomes such as pulpal involvement and tooth loss. Although it is easy for most dentist for focus solely on restorative needs of high and very high risk patients, necessary preventive regimens should not be ignored. The need for restorative treatment should not overshadow the provision of preventive services, and in these patients they should be provided concurrently. Remember, the decision to do one thing is often a decision to not do something else, even if this decision is not consciously made. In our programs, decisions to provide extensive treatment frequently translate to the provision of services to one patient at the expense of access to care for another.

Individual treatment plans will be impacted by the patient's oral and systemic conditions, dental program resources and priorities, and the dental staff's capabilities and interests. The ability of a dental program to provide access is influenced by the choices each dentist makes about when to treat each individual patient and when to have each patient return to the clinic for follow-up and recall care. Of course, the patient's responsibility and commitment to oral health are critical to any intervention. Patients should be informed that their commitment to their oral health is critical to any intervention. Recall is an important component for evaluating a patient's specific needs. Appropriate recall allows for longitudinal assessment of carious lesions, patient modifiers and the efficacy of interventions to date. A patient's willingness or ability to comply with recall appointments is a modifier in judging their risk classification. A clinical program without an active recall system is typically limited to "snapshots" of patient status and has fewer opportunities for consistent intervention to successfully control their patient's caries infections.

The success of a caries risk management program can be observed both programmatically and individually. Programmatically, a properly functioning program will increase clinic utilization by patients who are in the greatest need of care. Treatment choices using this philosophy will result in preservation of tooth structure by increased use of sealants and preservative dentistry. With this early intervention, you can expect to see fewer

destructive restorations even though the disease is not totally eliminated from the patient population. Individually, patients in higher risk categories will move into lower risk categories and/or require longer recall intervals upon return. Success can be defined when moderate and high risk patients return with no new lesions or exhibit healing of incipient lesions upon recall exam.

## Summary

This subsection is not a cookbook; clinical judgment is required. The information presented here is to serve your caries diagnosis, risk assessment, and treatment planning process regarding your patient's actual risk, relative to the infectious disease of dental caries. With limited resources and high dental disease rates, it is critically important that clinicians manage the infectious disease process rather than focus only on surgical restorative treatment. Assessing the patient's risk, applying appropriate preventive regimens, and evaluating compliance with these regimens before providing invasive restorative procedures are essential. Following these guidelines should assure wise expenditure of limited resources and increased access to the healthcare delivery system.

## Additional Resources/Articles of Interest

IHS "Caries Diagnosis, Risk Assessment and Management: A Practical Guide" (24 hours of continuing dental education offered) (54)

University of Michigan's caries risk Web site:

<http://oralhealth.dent.umich.edu/CDRAM/CariesHome.htm>

NIH Consensus Development Program Web site:

<http://consensus.nih.gov/2001/2001DentalCaries115html.htm>

March 2003 Journal of the California Dental Association:

<http://www.cdafoundation.org/journal/jour0303/consensus.htm>

University of Iowa Caries Risk Factors and Activity Assessment:

<http://www.uiowa.edu/~op2l/caries98.html>

2000 Australian Dental Journal:

[http://www.ada.org.au/media/documents/Products\\_Publications/Journal%20Archives/2000%20Archive/March/0003Brea.pdf#search='caries%20risk%20assessment](http://www.ada.org.au/media/documents/Products_Publications/Journal%20Archives/2000%20Archive/March/0003Brea.pdf#search='caries%20risk%20assessment)

1999 International Dental Journal:

[http://www.fdiworldental.org/assets/pdf/commission/95\\_4.pdf#search='caries%20risk%20assessment'](http://www.fdiworldental.org/assets/pdf/commission/95_4.pdf#search='caries%20risk%20assessment')

American Academy of Pediatric Dentistry (AAPD) Oral Health Policy:

[http://www.aapd.org/media/Policies\\_Guidelines/P\\_CariesRiskAssess.pdf](http://www.aapd.org/media/Policies_Guidelines/P_CariesRiskAssess.pdf)

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### **Use of Fluorides in Dental Public Health**

Since 1945, when Grand Rapids, Michigan, first fluoridated its city water supply, fluoridation has been considered the most cost-effective public health measure to reduce dental caries. Other sources of fluoride use have also increased tremendously. School fluoridation is considered an alternative in some communities where fluoridation of the public water supply is not feasible. Dietary fluoride supplements, with or without vitamins, are available by prescriptions as alternative sources of systemic (and topical) fluoride for areas without fluoridated drinking water, as are several agents designed for professional application by dental personnel. Fluoride-containing toothpastes have been marketed in the U.S. since the 1950s and comprise about 95 percent of the toothpaste market. Fluoride mouthrinses are used in school-based programs and several brands of mouthrinses with dilute concentrations of fluorides are sold as nonprescription items. Each of these topics is covered in greater detail in the following pages.

This widespread availability of fluoride has resulted in a decline in the prevalence of dental caries among U.S. schoolchildren in general, as well as AI/AN schoolchildren specifically.

Caries prevention programs for individual children or groups should be implemented based upon a risk assessment. The ADA has recently published a special supplement on caries diagnosis and risk assessment. (1) The IHS Dental Disease Prevention Program endorses these guidelines and recommends that dental clinics develop preventive plans based on these strategies. It is important to evaluate these preventive regimens based on local resources and develop a method to monitor caries attack patterns and rates of disease.

Once the oral health status has been determined, administrators must decide the goal of their programs—how much disease can be reduced with fluoride, given the resources available? One must also consider the various sources of fluoride already available for the patient/community. Water fluoridation and fluoridated toothpaste must be the cornerstone upon which dental disease prevention programs are built.

Use of fluoride mouthrinses, gels, and varnishes for individual patients should be predicated upon the caries activity or risk. Use of these methods in public health programs is a matter of cost-effectiveness, which must be weighed against the caries prevalence of the target population. (2)

Documentation in the literature has shown an increased prevalence of fluorosis, most probably related to ingestion of fluoridated toothpaste. Adult supervision of brushing is recommended, with only a pea-sized portion of toothpaste to be used. Inappropriate prescriptions for dietary fluoride supplements may also be a factor in the increased

prevalence of fluorosis. According to the IHS oral health survey of dental patients conducted in 1991, mild fluorosis was found in about 16% of the children ages 12–13 years. (3)

The use of fluoride in its various modalities has been a sometimes controversial but well researched area of science. The latest controversy arose during 1990 over release of the results of a study by the National Toxicology Program (NTP). The NTP study reported equivocal or “uncertain” results concerning the possibility of a carcinogenic effect of fluoride in male rats, while no effect was seen in mice or female rats. These results prompted a thorough review by the USPHS of existing scientific research into the risks and benefits of fluoride. The resulting report, *Review of Fluoride Benefits and Risks*, reaffirms the safety and effectiveness of the use of fluoride in preventing dental caries. No evidence establishing an association between fluoride and cancer was found. Concerning water fluoridation, the report acknowledged that although the degree of measurable benefits has been reduced recently as other fluoride sources have become available in non-fluoridated areas, the benefits of water fluoridation are still clearly evident. (4)

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## Additional Reading

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## Community Water Fluoridation

Community water fluoridation is the deliberate adjustment of the natural trace element fluoride to promote the public's health through the prevention of dental caries. Fluoride is

found naturally in all soils and existing water supplies. It is also present in animal and plant food consumed by people.

Hailed as one of the 10 greatest achievements in public health in the 20<sup>th</sup> century by former Surgeon General David Satcher, water fluoridation continues to be one of the safest, most cost effective prevention programs. It has the potential to benefit all age groups and all socioeconomic strata, including the lowest, which has the highest caries prevalence and is least able to afford preventive and restorative services. (1) Community water fluoridation is also the most cost-effective of all community-based caries preventive methods. An effective community water fluoridation program should be the cornerstone of all public oral health programs. The efficiency of drinking water fluoridation in reducing dental caries has been demonstrated in surveys conducted in the United States as well as several other countries for the past 50 years. Early water fluoridation studies reported caries reductions of approximately 40 to 60 percent for the permanent dentition and slightly lower reductions for deciduous teeth. Recent studies have found a smaller difference in the caries prevalence between optimally fluoridated and fluoride-deficient communities. (1) In AI/AN populations the expected reductions in disease may be even greater, given the high caries rates.

### ***History of Community Water Fluoridation***

- 1908 – Dr. Frederick McKay, Colorado Springs, CO discovered “brown stain”
- 1931 – Alcoa Company chemist identifies fluoride in samples
- 1931 – Trendley Dean starts at NIH as lone dentist, to investigate mottled enamel cases
- Mid-1930s – Dean reported inverse relationship between fluorosis and caries
- 21 Cities Study – IL, CO, OH, IN - established 1.0 ppm F threshold
- 1945 – Grand Rapids – fluoridation first began

### ***How Does Fluoride Work?***

- It reduces the solubility of enamel in acid – fluorapatite
- It reduces ability of plaque organisms to produce acid
- It promotes remineralization or repair of enamel

### ***Fluoridation Facts***

- ALL water sources contain some fluoride
- Optimal water fluoridation is 0.7 to 1.2 ppm (CDC WFRS 0.9-1.2)
- No difference in effectiveness between naturally occurring and “artificially added” fluoride

- Fluoridation studies have shown a 44-60% reduction in caries prevalence in fluoridated communities
- Fluoride not only protects children from caries, but also adults (including root caries)
- Cost effective
  - Costs about 50 cents per person per year to fluoridate
  - Cost savings – for every \$1 spent, \$38 saved
- “Nearly all tooth decay can be prevented when fluoridation is combined with dental sealants and other fluoride products, such as toothpaste” (from CDC).

### ***Fluoridation Controversies***

- “The overwhelming weight of scientific evidence indicates that fluoridation...is both safe and effective (ADA).
  - No association between fluoride and bone cancer
  - Fluoride does not affect human enzyme activity
  - No confirmed reports of fluoride allergies
  - No relationship between cancer rates and fluoride
  - No evidence linking fluoride exposure to AIDS
  - Fluoridated drinking water is not a genetic hazard
  - No relationship between fluoride and Down’s Syndrome
  - No association between fluoride and neurological problems
  - No link between fluoride and Alzheimer’s disease
  - Fluoridated water does not cause or worsen kidney disease
  - Drinking fluoridated water is not a risk factor for heart disease
  - Optimal fluoridation does not affect drinking water quality

### ***Things You Can Do...***

- Educate your community about the benefits of water fluoridation
- Learn more about fluoridation – get the facts, so you can dispel the myths about fluoridation

### ***Additional Resources***

[http://www.ada.org/prof/resources/topics/topics\\_fluoridation\\_resources.pdf](http://www.ada.org/prof/resources/topics/topics_fluoridation_resources.pdf)

[http://www.ada.org/public/topics/fluoride/facts/fluoridation\\_facts.pdf](http://www.ada.org/public/topics/fluoride/facts/fluoridation_facts.pdf)

<http://www.ada.org/prof/resources/topics/fluoride.asp#statements>

## **History of Water Fluoridation in the IHS**

In 1959, Public Law 86-121, the Indian Sanitation Facilities Act was passed. This piece of legislation was probably one of the most important documents for Indian people. The law provided for the installation of water systems for Native American communities upon Tribal request. Sanitary water facilities became a reality through this legislation.

In 1981, the IHS established a surveillance system to monitor 325 systems which had fluoridation equipment. There was a two percent compliance rate at that time.

In 1985, Area and Service Unit Fluoridation Teams were established. These teams consisted of representatives from a variety of disciplines including: dental, environmental health and engineering, health education, pediatrics, public health nursing, pharmacy, and, of course, the water operator or water utility. A policy for the implementation and operation of the water fluoridation program was also developed at this time.

In May 1992, a fluoride overfeed occurred at the predominantly Native Alaskan village of Hooper Bay. An estimated 296 people became ill and one person died. (4) This incident had a profound effect on fluoridation throughout Indian Country. Many tribally-owned and operated water systems discontinued fluoridation.

In 1995, the CDC, with input from IHS, developed a manual entitled, “Engineering and Administrative Recommendations for Water Fluoridation (EARWF)” (6). The EARWF is an excellent resource that emphasizes fluoridation safety and the recommendations can easily be adapted for use by tribal water utilities.

The current IHS fluoridation policy is IHS Circular No. 99-01, Water Fluoridation Policy Issuance and is available through the Area Office or Headquarters Dental or Office of Environmental Health and Engineering (OEH&E) programs. It should be read by all dental care providers. (5)

## **Recommendations for Fluoridated Community Water Systems**

### ***Administration***

The community or water system owner, with professional training and technical assistance, is primarily responsible for assuring the ongoing operation of fluoridation equipment and maintaining surveillance and records of operation. A reliable, frequent monitoring and surveillance process must be in place to maximize the benefit of water fluoridation. Training of water operators is also a critical element in assuring AI/AN communities the dental benefits of community water fluoridation.

Fluoridation teams should be established at each Service Unit or Tribal program and at the Area Office and Headquarters levels. Each team should include water plant operators, Tribal representatives, dental professionals, engineers, sanitarians and other community health workers involved in water fluoridation. Regular meetings of the fluoridation teams provide a good means of identifying problems in the fluoridation program and developing strategies to solve these problems.

Following is a list of activities in which the fluoridation team should be involved:

1. Review current water fluoridation system practices and identify any problem areas.
2. Work to improve fluoridation at problematic systems and delegate responsibilities to each team member.
3. Encourage and support training to increase both technical and public relations skills.
4. Educate the community and market the benefits of water fluoridation through:
  - a. Group presentations (Tribal health groups, Parent Teach Association [PTA], Head Start, WIC).
  - b. Media (TV, radio, newspapers).
  - c. Posting the water fluoridation levels in public places (assuming the water utility approves).
  - d. Educating the medical staff.
5. Maintain communication with the state dental and state drinking water programs regarding aspects of water fluoridation.

### **Fluoride Testing Requirements/Recommendations:**

Most tribally-owned and operated public water systems (PWS) are regulated by the EPA. The EPA does not require routine (i.e. daily) monitoring for fluoride. State-regulated PWSs have specific requirements for fluoride monitoring and many AI/AN people are served by state-regulated PWSs. IHS has no regulatory function but strongly recommends fluoridation practices that closely follow the EARWF guidelines. Those recommendations include:

1. Daily monitoring of the fluoride level from a representative sampling location in the distribution system.
2. Monthly split samples with a certified laboratory.
3. Performance of dosage calculations.
4. Annual raw water (i.e., water that has not been treated) sampling and testing for fluoride content. The analysis should be done by a certified laboratory.

IHS generally considers a water system optimally fluoridated if the following criteria are met:

- a. The fluoride concentration is monitored daily.

- b. The monthly average fluoride concentration falls within the control range.
- c. At least 75% of daily water samples fall within the control range.
- d. Split samples are submitted to a certified laboratory at least monthly.
- e. At least 75% of monthly split samples taken by the PWS during the calendar year shall agree with the laboratory results within the split sample tolerance of  $\pm 0.2$  ppm.

The criteria for optimal fluoridation may differ across the IHS Areas, and even within some Areas. Optimal fluoridation criteria should be developed in consultation with tribes and their tribal water utilities.

IHS personnel should encourage tribal water utilities to participate in the CDC Water Fluoridation Reporting System (WFRS). State-by-State statistics from WFRS can be found at <http://apps.nccd.cdc.gov/MWF/Index.asp>.

### **Colorimeter (SPADNS Method)**

1. The colorimetric method (SPADNS) of fluoride analysis is based on a reaction in which a deep color (from zirconium in dye) turns lighter in the presence of fluoride (fluoride removes zirconium). The colorimetric method can be used where no interference occurs or where the interferences are consistent (e.g., from iron, chloride, phosphate, sulfate or color). Consistent interferences can be accounted for by collecting a split sample and comparing the colorimetric results with results provided for by Lab personnel. State laboratory personnel, and the water plant operator can then make the appropriate adjustment.
2. The colorimetric method (SPADNS) of fluoride analysis is applicable for daily testing of fluoride levels in the range 0.1 to 2.0 ppm. Beyond this range, dilutions must be made using deionized water to obtain accurate measures of the fluoride concentration.
3. Colorimeters are easily transported and ideal for use in the field.

### **Specific Ion Meter (Electrode Method)**

The electrode method is capable of measuring fluoride concentrations from 0.1 to 10 ppm and is not subject to the interferences associated with the colorimetric method. Specific ion meters are more difficult to use in a field setting than a colorimeter.

The fluoride level in water systems should be maintained as close to the recommended concentrations as possible. These values are based on annual average temperatures. (Table 1.)

**Table 2: Recommended Optimal Fluoride Levels for Community Public Water Supply Systems (5)**

<b>Annual Average of Maximum Daily Temperatures F</b>	<b>Recommended Fluoride Conc. (ppm)</b>	<b>Recommended Control Range of Fluoride Conc. (ppm)</b>
40.0 – 53.7	1.2	1.1 – 1.7
53.8 – 58.3	1.1	1.0 – 1.6
58.4 – 63.8	1.0	0.9 – 1.5
63.9 – 70.6	0.9	0.8 – 1.4
70.7 – 79.2	0.8	0.7 – 1.3
79.3 – 90.5	0.7	0.6 – 1.2

***Technical Assistance and Training***

The IHS OEH&E Program provides technical assistance where surveillance reveals a problem and/or when it is requested by a tribe or the community. Ongoing training for the operators is also provided. The CDC also provides training for water system operators and others involved in the fluoridation programs. The CDC has developed manuals for operators as well as engineers and technicians. (7)

***Safety of Community Water Fluoridation***

Community water fluoridation is a safe and cost-effective method to ensure the oral health of all people. Technical requirements are outlined in the EARWF and they should be followed by all tribally-managed fluoridated water systems. These guidelines also establish recommended emergency procedures for fluoride overfeeds. Specific actions should be taken when equipment malfunctions or an adverse event occurs in a community public water supply system that causes a fluoride chemical overfeed. (See Table 2.)

**Table 3: Recommended Fluoride Overfeed Actions for Community Water Systems (4)**

<b>Fluoride Level</b>	<b>Actions Recommended</b>
0.1 mg/L above control range to 2.0 mg/L	Leave the fluoridation system on. Determine malfunction and repair.
2.1 mg/L to 4.0 mg/L	Leave the fluoridation system on. Determine malfunction and repair. Notify the water plant operator supervisor and report the incident to the appropriate regulatory agency.



Fluoride Level	Actions Recommended
4.1 mg/L to 10.0 mg/L	<p>Determine malfunction and immediately attempt repair.</p> <p>If the problem is not found and corrected quickly, turn off the fluoridated system.</p> <p>Notify the water plant operator supervisor and report the incident to the appropriate regulatory agency.</p> <p>Take water samples at several points in the distribution system and test the fluoride content. Retest if results are still high.</p> <p>Determine malfunction and repair. Then, with supervisor's permission, restart the fluoridation system.</p>
10.1 mg/L or greater	<p>Turn off the fluoridation system immediately.</p> <p>Notify the water plant operator supervisor and report the incident immediately to the appropriate regulatory agency and follow their instructions.</p> <p>Take water samples at several points in the distribution system and test the fluoride content. Retest if results are still high. Save part of each sample for the state laboratory to test.</p> <p>Determine malfunction and repair. Then, with supervisor's and the state's permission, restart the fluoridation system.</p>

Most overfeeds do not pose an immediate health risk; however, some fluoride levels can be high enough to cause immediate health problems. All overfeeds should be corrected immediately because some have the potential to cause serious long-term health effects. (4)

When a fluoride test result is at or near the top end of the analyzer scale, the water sample must be diluted and retested to ensure that high fluoride levels are accurately measured.

CDC has also published recommendations for treatment if a person ingests dry fluoride chemicals (NaF and Na<sub>2</sub>SiF<sub>6</sub>). (See Table 3.)

**Table 4: Recommended Emergency Treatment for Persons Who Ingest Dry Fluoride Chemicals NaF and Na<sub>2</sub>SiF<sub>6</sub> (4)**

Milligrams Fluoride Ion (mg) Ingested Per Body Weight (kg)*	Treatment
<5.0 mg of fluoride ion/kg	<p>Give calcium (milk) orally to relieve gastrointestinal symptoms. Observe for 2–4 hours. (A can of evaporated milk should be available at all times to use for emergency treatment.)</p> <p>Induced vomiting is not necessary.</p>

Milligrams Fluoride Ion (mg) Ingested Per Body Weight (kg)*	Treatment
>5.0 mg of fluoride ion/kg	<p>Move the person away from any contact with fluoride and keep him or her warm.</p> <p>Call the Poison Control Center.</p> <p>If the person is conscious, induce vomiting by rubbing the back of the person's throat with either a spoon or your finger or giving the person syrup of ipecac. To prevent aspiration of vomitus, the person should be placed face down with the head lower than the body.</p> <p>Give the person a glass of milk or any source of soluble calcium (i.e., 5% calcium gluconate or calcium lactate solution).</p> <p>Take the person to the hospital as quickly as possible.</p>

\*Average age/weight: 0–2 years/0–15 kg; 3–5 years/15–20 kg;  
6–8 years/20–23 kg; 9–15 years/23–45 kg; 15–21 years and higher/45–70 kg.

**Table 5: Recommended emergency treatment for persons who ingest fluorosilicic acid (H<sub>2</sub>SiF<sub>6</sub>) (60)**

Milligrams fluoride ion (mg) ingested per body weight (kg) *	Treatment
<5.0 mg fluoride/kg +	<p>Give calcium (milk) orally to relieve gastrointestinal symptoms. Observe for 2-4 hours. (A can of evaporated milk should be available at all times to use for emergency treatment.)</p> <p>Induced vomiting is not necessary</p>
>=5.0 mg fluoride/kg	<p>Move the person away from any contact with fluoride and keep him or her warm.</p> <p>Call the Poison Control Center.</p> <p>If advised by the Poison Control Center and if the person is conscious, induce vomiting by rubbing the back of the person's throat with a spoon or your finger or use syrup of ipecac. To prevent aspiration of vomitus, the person should be placed face down with the head lower than the body.</p> <p>Give the person a glass of milk or any source of soluble calcium (i.e., 5% calcium gluconate or calcium lactate solution).</p> <p>Take the person to the hospital as quickly as possible. It is important that whoever takes the person to the hospital notify physicians that the person is at risk for pulmonary edema as late as 48 hours afterward.</p>

\* Average weight/age: 0-15 kg/0-2 years; 15-20 kg/3-5 years; 20-23 kg/6-8 years; 23-45 kg/9-15 years; 45-70 kg and higher/15-21 years and older.

+ 5 mg of fluoride (F) equals 27 mg of 23% fluorosilicic acid. Ingesting 5 mg F/kg is equivalent to a 154-lb (70 kg) person consuming 2 grams of fluorosilicic acid.

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<http://www.cdc.gov/OralHealth/topics/fluoridation.htm>

## **FLUORIDATION SYSTEM DESIGN:**

**(from the CDCs EARWF)**

### **Engineering Guidelines**

4. The fluoride feed system must be installed so that it cannot operate unless raw water pumps are operating (interlocked). To assure this, the metering pump must be wired electrically in series with the main well pump or the service pump. If a gravity flow situation exists, a flow switch or pressure device should be installed.
5. When the fluoridation system is connected electrically to the well pump, the fluoride-metering pump cannot be plugged into any continuously active (“hot”) electrical outlet. The fluoride metering pump must only be plugged into the circuit that contains the interlock protection (the interlock may not be necessary when water systems have an on-site water operator 24 hours a day.) One method of ensuring interlock protection is to install a special clearly labeled plug on the metering pump that is compatible with a special outlet on the appropriate electrical circuit. Another method of providing interlock protection is to wire the metering pump directly into the electrical circuit that is tied electrically to the well pump or service pump.
6. A secondary flow-based control device (e.g., a flow switch or a pressure switch) should be installed for back-up protection in water systems that serve populations of <500 persons.
7. The fluoride injection point should be located where all the water to be treated passes; however, fluoride should not be injected at sites where substantial losses of fluoride can occur (e.g., the rapid-mix chemical basin).
8. The fluoride injection point in a water line should be located in the lower one-third of the pipe, and the end of the injection line should extend into the pipe approximately one third of the pipe’s diameter.
9. A corporation stop valve should be used in the line at the fluoride injection point when injecting fluoride under pressure. A safety chain must always be installed in the assembly at the fluoride injection point to protect the water plant operator if a corporation stop valve assembly is used.

10. Operation of a fluoridation system without a functional anti-siphon device can lead to overfeed that exceeds 4 mg/L. Two diaphragm-type, anti-siphon devices must be installed in the fluoride feed line when a metering pump is used. The antisiphon device should have a diaphragm that is spring-loaded in the closed position. These devices should be located at the fluoride injection point and at the metering pump head on the discharge side. The anti-siphon device on the head of the metering pump should be selected so that it will provide the necessary back pressure required by the manufacturer of the metering pump. Oversized metering pumps should not be used because serious overfeeds (i.e., overfeed that exceeds 4 mg/L) can occur if they are set too high. Conversely, undersized metering pumps can cause erratic fluoride levels.<sup>4</sup>
11. The fluoride metering pump should be located on a shelf not more than 4 feet (1.2 m) higher than the lowest normal level of liquid in the carboy, day tank, or solution container. A flooded suction line is not recommended in water fluoridation.
12. For greatest accuracy, metering pumps should be sized to feed fluoride near the midpoint of their range. Pumps should always operate between 30%–70% of capacity. Metering pumps that do not meet design specifications should not be installed.
13. The priming switch on the metering pump should be spring-loaded to prevent the pump from being started erroneously with the switch in the priming position.
14. In a surface-water treatment plant, the ideal location for injecting fluoride is the rapid sand filter effluent line going into the clear well.
15. Vacuum testing for all anti-siphon devices should be done semiannually. All anti-siphon devices must be dismantled and visually inspected at least once a year. Schedules of repairs or replacements should be based on the manufacturer's recommendations.
16. An in-line mixer or a small mixing tank should be installed in the finished water line exiting from the water plant if the first customer is less than or equal to 100 feet (30.5 m) from the fluoride injection point and if there is no storage tank located in the line before the water reaches the customer. The minimum distance is 100 feet, assuming there are typical valves and bends in the water line that allow for adequate mixing.
17. Flow meter-paced systems should not be installed unless the rate of water flow past the point of fluoride injection varies by more than 20%.
18. A master meter on the main water service line must be provided so that calculations can be made to confirm that the proper amounts of fluoride solution are being fed.

19. The fluoride feed line(s) should be either color coded, when practical, or clearly identified by some other means. Color coding helps prevent possible errors when taking samples or performing maintenance. The pipes for all fluoride feed lines should be painted light blue with red bands. The word “fluoride” and the direction of the flow should be printed on the pipe.
20. Fluoride feed equipment, controls, safety equipment, accessory equipment, and other appurtenances must be inspected annually.
21. All hose connections within reach of the fluoride feed equipment should be provided with a hose bibb vacuum breaker.
22. All fluoride chemicals must conform to the appropriate American Water Works Association (AWWA) standards (B-701, B-702, and B-703) to ensure that the drinking water will be safe and potable.
23. Storage should be provided for at least a three-month supply of fluoride chemical to minimize the effect of a possible fluoride chemical shortage. Shortages have occurred sporadically in the past (CDC, unpublished report, 1986).
24. Cross-connection controls that conform to state regulations must be provided.

### **Sodium Fluoride Saturator System Requirements**

1. The minimum depth of sodium fluoride in a saturator should be 12 inches (30.5 cm). This depth should be marked on the outside of the saturator tank. The saturator should never be filled so high that the undissolved chemical is drawn into the pump suction line.
2. Only granular sodium fluoride should be used in saturators, because both powdered and very fine sodium fluorides tend to cause plugging in the saturator.
3. The water used for sodium fluoride saturators should be softened whenever the hardness exceeds 50 parts per million (ppm). Only the water used for solution preparation (i.e., the make-up water) needs to be softened.
4. A flow restrictor with a maximum flow of two gallons (7.6 L) per minute should be installed on all up-flow saturators.
5. In the event of a plant shutdown, the make-up water solenoid valve should be physically disconnected from the electrical service.
6. For systems that use < 10 gallons (< 38 L) of saturator solution per day, operators should consider using an up-flow saturator that is manually filled with water.

7. In an up-flow saturator, either an atmospheric vacuum breaker must be installed or a backflow prevention device must be provided in accordance with state or local requirements. The vacuum breaker must be installed according to the manufacturer's recommendations.
8. A sediment filter (20 mesh) should be installed in the water make-up line going to the sodium fluoride saturators. The filter should be placed between the softener and the water meter.
9. A water meter must be provided on the make-up water line for the saturator so that calculations can be made to confirm that the proper amounts of fluoride solution are being fed. This meter and the master meter should be read daily and the results recorded.
10. Unsaturated (batch-mixed) sodium fluoride solution should not be used in water fluoridation.

### **Fluorosilicic Acid System Requirements**

1. To reduce the hazard to the water plant operator, fluorosilicic acid (hydrofluosilicic acid) must not be diluted. Small metering pumps are available that will permit the use of fluorosilicic acid for water plants of any size.
2. No more than a seven-day supply of fluorosilicic acid should be connected at any time to the suction side of the chemical feed pump. All bulk storage tanks with more than a seven-day supply must have a day tank. A day tank should only contain a small amount of acid, usually a one- or two-day supply.
3. Day tanks or direct acid-feed carboys/drums should be located on scales; daily weights should be measured and recorded. Volumetric measurements, such as marking the side of the day tank, are not adequate for monitoring acid feed systems.
4. Carboys, day tanks, or inside bulk storage tanks containing fluorosilicic acid must be completely sealed and vented to the outside.
5. Fluorosilicic acid should be stored in bulk, if economically feasible.
6. Bulk storage tanks must be provided with secondary containment (i.e., berms) in accordance with state/local codes or ordinances.

### **Fluoride Dry Feed System Requirements**

1. A solution tank that has a dry feeder (both volumetric and gravimetric) must be provided.
2. Solution tanks should be sized according to CDC guidelines.

3. A mechanical mixer should be used in every solution tank of a dry feeder when sodium fluorosilicate (i.e., silicofluoride) is used.
4. Scales must be provided for weighing the amount of chemicals used in the dry feeder.

## **Safety And Reporting**

### ***Water Operator Safety***

1. The water supply industry has a high incidence of unintentional injuries as compared with other industries in the United States; with proper safety procedures injuries can be avoided.
2. Water operator should follow proper safety procedures to avoid injuries and overexposure to chemicals. Water plant personnel should regularly receive safety training on all chemicals, including fluoride. Exposure hazards and first aid should be reviewed and emergency spill procedures should be established and explained to workers.

### ***Protective Equipment***

1. The use of personal protective equipment (PPE) is required when handling fluoride chemicals or when maintenance on fluoridation equipment is performed.
2. Required PPE for handling sodium fluoride or sodium fluorosilicate includes:
  - a. National Institute for Occupational Safety and Health (NIOSH) approved, high-efficiency dust respirator (chemical mask) with soft rubber face-to-mask seal and replaceable cartridges.
  - b. Gauntlet neoprene gloves (12" glove minimum length)
  - c. Heavy duty neoprene aprons.
3. Required PPE for handling fluorosilicic acid includes:
  - a. Gauntlet neoprene gloves (12" glove minimum length)
  - b. Heavy duty neoprene aprons.
  - c. Full 8" face shield or acid type safety goggles
  - d. Safety shower/eye washer in easily accessible location (or pint-size bottle of eyewash solution).

### ***Chemical Storage***

1. Do not allow unauthorized personnel, especially small children, in areas where fluoride chemicals are fed or stored. Do not eat or keep food in areas where fluoride is stored.



2. Store dry fluoride on pallets, in stacks preferably not more than six bags high. If fiber drums are used, keep the tops closed to prevent moisture contamination.
3. Vapors from fluorosilicic acid are corrosive; containers should be kept tightly closed, vented to the outdoors, and stored away from hot temperature areas. Bulk storage tanks can be made of fiberglass polyethylene or rubber-lined steel.

### *Glossary of Technical Terms*

**Adjusted fluoridated water system:** A community public water system that adjusts the fluoride concentration in the drinking water to the optimal level for consumption (or within the recommended control range).

**Calculated dosage:** The calculated amount of fluoride (mg/L) that has been added to an adjusted fluoridated water system. The calculation is based on the total amount of fluoride (weight) that was added to the water system and the total amount of water (volume) that was produced.

**Centers for Disease Control and Prevention (CDC):** An agency of the U.S. HHS charged with promoting health and quality of life by preventing and controlling disease, injury, and disability.

**Census designated place:** A populated place, not within the limits of an incorporated place, that has been delimited for census purposes by the U.S. Bureau of the Census.

**Certified Waterworks Operator:** A water operator who meets the minimal criteria set by the State Department of Health Division of Water Supply for certification as evident by passing a written examination.

**Check sample:** A distribution water sample forwarded to either the state laboratory or to a state-approved laboratory for analysis.

**Community:** A geographical entity that includes all incorporated places as well as all census-designated places as defined by the U.S. Bureau of the Census.

**Community water system (CWS):** Any water system serving piped water for human consumption to 15 or more individual service connections used year-round by consumers or regularly serving 25 or more individual consumers year-round, including, but not limited to, any collection, pretreatment, treatment, storage and/or distribution facilities or equipment used primarily as part of, or in connection with such system, regardless of whether or not such components are under the ownership or control of the operator of such system.

**Connection:** Generally speaking, water service into an individual housing unit or dwelling.

**Consecutive water system:** A public water system that buys water from another public water system. For purposes of water fluoridation record keeping, the consecutive water system should purchase at least 80% of its water from a fluoridated water system.

**Distribution sample:** A water sample taken from the distribution lines of the public water system that is representative of the water quality in the water system.

**Dry Fluoride Feed System:** A fluoridation system that uses a dry chemical compound (usually sodium fluorosilicate) as the means to fluoridate a PWS.

**Fluorosilicic Acid System:** A fluoridation system that uses fluorosilicic acid as the means to fluoridate a PWS.

**Fluorosis:** A clinical condition of the teeth where whitish to brownish staining occurs due to excessively high levels of fluoride exposure during tooth development.

**Incorporated place:** A populated place possessing legally defined boundaries and legally constituted government functions.

**MG/L:** Milligrams per liter; also, ppm.

**Monitoring, fluoride:** The regular analysis and recording by water system personnel of the fluoride ion content in the drinking water.

**Must:** See Shall.

**Natural fluoride level:** The concentration of fluoride (mg/L) that is present in the water source from naturally occurring fluoride sources.

**Naturally fluoridated water system:** A public water system that supplies water which contains naturally occurring fluoride at levels that is beneficial to dental health.

**Operator:** The certified waterworks operator who directly supervises and is personally responsible for the daily operation and maintenance of a community or non-transient non-community public water system.

**Optimal Control Range:** A range within which adjusted fluoridated water systems shall operate to maintain optimal fluoride levels. the range is 0.7-1.3 parts per million.

**Optimal Fluoride Level:** The fluoride concentration (mg/L, which is the same as ppm) based on the annual average of the maximum daily air temperature in the geographical area of the fluoridated water system.

**Optimally Fluoridated Water System:** A public water system that has consistent optimal levels of fluoride for oral health from either naturally occurring sources, or by adjusting the fluoride level to optimal concentrations.

**Overfeed, fluoride:** Any fluoride analytical result above the recommended control range of the water system. Different levels of response are expected from the operator depending on the extent of the overfeed.

**PPM:** parts per million. See also, mg/L.

**Public water supply/system (PWS):**

**Required Water Samples:** Required samples include a minimum of three routine fluoride samples which shall be taken on different days each week and submitted monthly, and submission of a monthly split water sample to the laboratory for testing.

**Shall:** Indicates that which is mandatory; a requirement.

**Sodium Fluoride Saturator System:** A fluoridation system that uses a saturated solution of sodium fluoride as the means to fluoridate a PWS.

**Split sample:** A distribution water sample taken by the water plant operator, who analyzes a portion of the sample and records the results on the monthly operating report to the state. The operator then forwards the remainder of the sample to the laboratory for analysis.

**Split sample tolerance:** The amount of variance allowed between the portion of the split sample tested by the water system operator and the laboratory. the split sample tolerance is 0.2 ppm.

**State fluoridation administrator:** The employee who is responsible for the administration of the fluoridation program.

**Surveillance, fluoride:** The regular review of monitored data and split sample or check sample results to ensure that fluoride levels are maintained by the community water systems in a specific geographic area.

**Uniform flow:** When the rate of flow of the water past a point varies by less than 20%.

**Upstream:** In a water line, a point closer to the source of water.

**Water, make-up:** Water that is used to replace the saturated solution from a sodium fluoride saturator; this saturated solution is pumped into the distribution lines.

**Water fluoridation:** The act of adjusting the fluoride concentration in the drinking water of a water system to the optimal level.

### **Dietary Fluoride Supplements**

There have been few well-conducted surveys to demonstrate the effectiveness of fluoride supplements. One study in school-age children showed a 29% reduction in caries. A potential cause for fluorosis can exist if physicians or dentists do not know if the

community where the child resides is fluoridated. Therefore, it is important to include the pediatricians, public health nurses (PHN), pharmacists, and other providers in the discussion on fluoride supplements for AI/AN children.

A few suggestions are listed below:

1. Work with the OEH&E personnel to obtain or generate a list of water supplies and their fluoride content. You might use a map and mark each water supply by its fluoride content. You should include those water supplies with natural fluoride levels too.
2. Establish a quality assurance system for water system testing. The ion electrode method is required. Some questions to answer include a) How will water be collected? b) Who will do the testing? c) How will results get returned to the person prescribing? Be sure to enter water fluoride levels in the patient's chart. You may also want to keep a log of each address and the level of fluoride in the water for future reference.
3. Identify an interested health professional(s) to be responsible to assist with the infant supplement program. Screen the infant's water supply at *one* pre-established encounter: a) prenatal visit, b) at the hospital after childbirth, c) first clinic visit, d) home visit, e) first WIC visit, etc. The program will be more effective if only a few people are responsible and all infants are screened at one pre-determined encounter.
4. Develop a written protocol by Area Office and/or Service Unit/Tribe. Standing orders for the prescription may be used. Dosage should be in accordance with the ADA/CDC Schedule found in Table 1.
5. Establish a mechanism to track compliance and to remind patients of the importance of the fluoride supplementation.
6. Reinforce health professionals outside the dental clinic who are screening patients for appropriateness.

**Table 6: Recommended Daily Fluoride Supplement (1)**

Fluoride Dose			
Age	<0.3 ppm	0.3 to 0.6 ppm	>0.6 ppm
0 to 6 months	0	0	0
6 months to 3 years	0.25 mg	0	0
3 to 6 years	0.5 mg	0.25 mg	0
6 to 16 years	1 mg	0.5 mg	0

### Samples of Systemic Fluoride Prescriptions

Age: 6 mo.    Rx    Sodium Fluoride Drops

- Sig. 0.25 mg fluoride
- Place drops inside cheek once a day.
- Refills 1 time per year.

Age: 5 yrs. Rx Sodium Fluoride Tablets

- 2.2 mg. (1 mg. elemental fluoride) Dis. 120

Sig. One tablet should be chewed and swished (for one minute), then swallowed.

- Use at bedtime after brushing.
- Refills 3 times in 1 year.

**Table 7: Recommended total dietary fluoride intake**

Age	Reference Weight*		Adequate Intake**	Tolerable Upper Intake***
	kg	lb	mg/day	mg/day
0-6 months	7	16	0.01	0.7
6-12 months	9	20	0.5	0.9
1-3 years	13	29	0.7	1.3
4-8 years	22	48	1.1	2.2
≥9 years	40-76	88-166	2.0-3.8	10.0

\* Values based on data collected during 1988-1994 as part of the third National Health and Nutrition Examination Study

\*\* Intake that maximally reduces occurrence of caries without causing unwanted side effects, including moderate enamel fluorosis

\*\*\*Highest level of nutrient intake that is likely to pose no risks for adverse health effects in almost all persons

**Source:** Adapted from the Institute of Medicine. Fluoride. In: Dietary reference intakes for calcium, phosphorus, magnesium, and fluoride. Washington, DC: National academy Press, 1997:288-313

### Procedures for Prescribing Systemic Fluoride Supplements

The following guidelines are for prescribing systemic fluoride supplements for those children who are not receiving optimal systemic fluoride:

1. Test the water supply using the ion electrode method and make a note in the chart for the entire family. Add the fluoride results to the preventive assessment section on the dental exam form. Testing can be avoided if the water supply's fluoride content is already known. This information can often be obtained from the State Health Department, OEH&E professionals, or the CDC water fluoridation Web site (<http://apps.nccd.cdc.gov/MWF/Index.asp>).

2. Write the appropriate prescription and instruct the parent that the tablets should be chewed and swished before swallowing when possible. Drops may be used instead of tablets for infants. Be sure to inquire as to whether there are other young children in the home and use this opportunity to prescribe the appropriate dose for each child.
3. Counsel the parents on the importance of systemic supplementation. The parents are much more likely to comply if they thoroughly understand the significance of the prescription. It will also increase compliance to help the parent arrange the best time to fit this new habit into their daily routine.
4. On return visits, check for compliance and further counsel the parent(s) if there is noncompliance. Document each counseling session in the chart.

When prescribing fluorides, you have an excellent opportunity to educate the patients and parents of the importance of water fluoridation. Example: "Since your water is not fluoridated, you need to supplement your diet with a fluoride tablet."

### **Action**

The action of a fluoride supplement is both topical when chewed and systemic when swallowed. The topical benefits are greatly increased if the child chews the tablet and swishes for one minute before swallowing. There is some evidence that a fluoride tablet consumed one time a day has a different efficiency as compared to low doses throughout the day, e.g., drinking fluoridated water. Fluoride drops are recommended for infants.

*Note: Children who are totally breast-fed, even in a fluoridated community, should receive a fluoride supplement because of the low fluoride content in breast milk.*

Fluoride combined with vitamins may be used. Although combining use of fluorides with vitamins may improve motivation of some parents, the parent or guardian should be educated to the continued need for fluoride if use of the vitamins are discontinued.

Fluoride supplements may be provided on an individual or family basis at home or in schools. The advantage of a home-based program is that there are no interruptions during school vacations, and supplementation may begin from birth. Compliance, however, is a problem. A school-based program may ensure that all children have access to fluoride supplements despite lack of family compliance. School-based programs generally have a higher compliance, although some schools question the legalities of dispensing a prescribed item.

### **Prenatal Fluoride Supplementation**

Prenatal fluoride supplementation is not recommended at this time because of inadequate clinical documentation of effectiveness.

## Safety

The dental professional must be aware of the potential for acute or chronic toxicity problems when using supplements or combinations of fluoride delivery methods. When prescribing dietary fluoride supplements, the dentist must take into consideration the patient's age as well as the fluoride ion concentration available in the primary water source in order to recommend the correct daily dose. Recent evidence indicates that ingestion of fluoride supplements can be a risk factor for fluorosis. The most critical period for fluorosis development in the aesthetically important central and lateral incisors is in the second to third years of life, rather than early infancy.

As a safety precaution, the ADA makes the following recommendations:

1. Do not store large quantities of sodium fluoride in the home.
2. When prescribing fluoride supplements, no more than 264 mg of sodium fluoride (120 mg fluoride) should be dispensed at one time. In order to comply with this recommendation, commercial fluoride preparations available for home use are generally dispensed in bottles of 100 to 120 tablets. Fluoride rinses and gels recommended for home use are also prescribed in these recommended amounts.
3. In addition to the use of the child-proof container, each package dispensed should be also bear the statement: Caution: Store Out of Reach of Children.
4. If it is determined that a young child is swallowing rather than expectorating a topical fluoride agent (such as toothpaste) on a regular basis, the therapy should be modified, closely supervised, or discontinued until age five.
5. For dental clinics or institutions that store systemic or topical fluoride preparations in amounts that may be harmful if consumed at one time, it is essential that these supplies be kept in a locked storage area. A current inventory should be maintained in order to readily determine any missing supplies. (1)

If an individual is known or suspected to have taken a potentially toxic amount of fluoride, first aid consists of inducing vomiting as quickly as possible or ingesting a material to bind fluoride—milk is usually the most readily available. Identify the source of fluoride and amount consumed, if known. Observe the patient and refer to a medical facility, if necessary.

## Recommendations

1. Follow the new dosage schedule to prescribe fluoride supplements when needed.

2. Prescribe fluoride supplements for children who are at moderate or high risk for caries.
3. Compliance is necessary for supplementation to be effective, so the importance of giving the child a tablet every day should be emphasized.
4. The water source must be tested before prescribing fluoride supplements.
5. Follow safety precautions in dispensing and storage of fluoride supplements.

## Reference

1. American Dental Association, Council on Dental Therapeutics. Accepted Dental Therapeutics. Chicago, The Association, 1994.

## Additional Readings

1. Journal of Public Health Dentistry. Volume 49, Number 5, Special Issue 1989. Proceedings for the Workshop: Cost Effectiveness of Caries Prevention in Dental Public Health. Ann Arbor, MI May 17-19, 1989, Ed. B.A. Burt.
2. A Guide to the use of Fluoride for the Prevention of Dental Caries. Journal of the American Dental Association, 1986.

## Additional Resources

CDC Guidelines on fluoride use:

<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm>

ADA Internet Resources on Fluoride & Fluoridation:

[http://www.ada.org/public/topics/fluoride/fluoride\\_links.asp](http://www.ada.org/public/topics/fluoride/fluoride_links.asp)

ADA Interim Guidance on Fluoride Intake for Infants and Young Children:

[http://www.ada.org/prof/resources/positions/statements/fluoride\\_infants.asp](http://www.ada.org/prof/resources/positions/statements/fluoride_infants.asp)

## Topical Fluorides and Fluoride Varnishes

Use of topical fluorides for individual patients should be predicated upon the caries activity or risk. Use of these methods in public health programs is a matter of cost-effectiveness, which must be weighed against the caries prevalence of the target population.

Documentation in the literature has shown an increased prevalence of fluorosis, most probably related to ingestion of fluoridated toothpaste. Adult supervision of brushing is recommended, with only a pea-sized portion of toothpaste to be used. Inappropriate prescriptions for dietary fluoride supplements may also be a factor in the increased prevalence of fluorosis. According to the IHS oral health survey of dental patients



conducted in 1991, mild fluorosis was found in about 16% of the children ages 12–13 years.

### **How Does Fluoride Work?**

- Pre-Eruptive
  - Reduction in enamel solubility by incorporation of fluoride in hydroxyapatite crystal
- Post-Eruptive
  - Promotion of remineralization and inhibition of early lesions
  - Inhibition of glycolysis, the process by which cariogenic bacteria metabolize fermentable carbohydrates

### **Fluoride Dentifrices**

Used regularly, a fluoride dentifrice has the potential of reducing the incidence of dental caries by 15 to 3%. The recent decline in the prevalence of dental caries can be mainly attributed to the use of fluoridated toothpaste. Approximately 95% of all toothpastes on the market contain fluoride. The majority of the fluoride-containing dentifrices marketed in the United States contain approximately 0.1% fluoride (1000 ppm). A one-gram ribbon or pea-sized amount of the dentifrice on a toothbrush contains approximately 1 mg fluoride. *Aim* toothpaste has 1800 ppm. Colgate's PreviDent contains 5000 ppm fluoride and Gel Kam contains 968 ppm fluoride (the latter two are available by prescription only).

Children under the age of five years have a tendency to swallow one-third or more of the dentifrice used. In fluoridated communities, parents should be cautioned to use very small amounts of the fluoridated dentifrices and to teach their children to spit out, not swallow the toothpaste. Frequent or continued swallowing of the fluoridated dentifrice will result in fluorosis on the permanent incisors.

Various toothpastes are promoted as “anti-cavity, anti-gingivitis, and anti-sensitivity.” The product choice depends on the needs of the patient. For adults with high caries rates, recommend one with more fluoride. Stress the importance of brushing 2–3 times per day with the fluoride dentifrice, especially at bedtime.

### **Fluoride Toothpaste Use For Young Children**

The use of a dentifrice should begin as soon as the deciduous teeth begin to erupt into the mouth of the infant. Initially, the parent should be advised to gently swab the teeth with a cotton-tipped applicator or a gauze or washcloth dipped in a very small amount (pea-sized) of the dentifrice. As soon as the infant will tolerate brushing, the parent should begin using a small, soft-bristled toothbrush with a small amount of dentifrice. Parents can serve as role models for the child by brushing themselves.

Studies have shown that the use of fluoride toothpaste from an early age is associated with higher levels of very mild fluorosis. Because toothpaste tastes so good, children tend

to swallow it. Very young children are also not capable of spitting out excess toothpaste. Swallowing toothpaste is the biggest risk for fluorosis. According to the 1991 IHS Oral Health Survey, only a small percentage of children had mild fluorosis.

The cost of toothpaste may be a significant expense and/or a low priority for some families. The dental clinic or community-based program may want to consider providing toothpaste for families whose members are at high risk for caries.

### **School Toothbrushing Programs**

School brush-ins can also be encouraged (especially in boarding schools) in order to help children form the habit of daily brushing. Daily brushing and plaque removal are essential for the control of periodontal disease.

Approximately 28,000 AI/AN children participate in school-based toothbrush programs. School-based toothbrush programs should be implemented for all Indian schools. In those schools in which more than 25% of the students are AI/AN, consider implementing a program. For those schools with less than 25% AI/AN children, try to develop linkages with the local or state dental health department in order to make these programs available to more children.

The Dental Program should identify the schools within the service area and determine where programs could be implemented. Proper planning for these programs includes obtaining necessary approvals from the principals and school board members and parents. Placing consent forms in the school registration packets is an efficient method for obtaining parental permission and can increase participation in these programs.

### **General Dentifrice Recommendations**

1. Use a pea-sized portion for children under age 6 years. Parental supervision for brushing should continue until the child is 6–7 years old. Encourage parents to use a small brush or finger cloth as soon as teeth erupt. For children under age six years, do not recommend a toothpaste with more than 1000 ppm of fluoride.
2. Use Extra-Strength or a prescription fluoride toothpaste (to be used at bedtime) for those children over age 6 years and adults at high risk for caries (rampant caries).
3. Encourage daily use of fluoridated toothpaste as part of oral hygiene instructions. Daily use of fluoride toothpaste is an effective preventive regimen for caries control.
4. Consider providing small tubes of fluoride toothpaste for moderate-risk to high-risk patients in the clinic. This is a marketing tool that is also used in private practice settings.

5. Implement brushing programs in schools. It is a cost-effective regimen to provide fluoride for children. See CDC guidelines on proper handling of brushes at school. (Head Start performance standards require that children brush at school after meals.)

### **Fluoride Mouthrinses**

The idea of preventing caries by mouthrinsing with dilute fluoride solutions has been promoted for many years. Sodium fluoride has been tested extensively and is the most commonly used rinse in public health programs. NaF has been tested as a weekly rinse at 0.2% F, and at 0.05% for daily rinsing. The caries reductions are very similar with both solutions. For school-based programs, the cost and practicality of a weekly program is preferred.

For individual use at home, a daily rinse is recommended for children and adults who are at moderate or high risk for dental caries. Other high-risk patients might include those children with orthodontic appliances and adults undergoing radiation therapy. For AI/AN adults who are sensitive to alcohol, recommend Act (for children), as it contains no alcohol.

There are three examples of over-the-counter fluoride rinses approved by the ADA. They are:

- Act for children            contains no alcohol (0.05% NaF)
- Fluorigard            (0.05% NaF)
- Stancare            (0.1% SnF<sub>2</sub>)

*Note: Mouthrinses are not recommended for children under age 6 years.*

By the age of six years, most children can master the rinsing technique and minimal solution will be swallowed. At this age the permanent incisors should have completed the mineralization process such that the accidental ingestion of some of the rinse solution would have little effect on the appearance of the child's teeth as a result of fluorosis.

### **School Fluoride Mouthrinse Programs**

School fluoride mouthrinse (FMR) programs can be an effective measure to control dental caries. Studies in schools using NaF and APF rinses have shown a reduction in caries from 20–35% over periods of 2–3 years. Benefits can be retained for 2–3 years after completing a school FMR program. In the IHS, there are approximately 74,000 children participating in school FMR programs. The average annual cost is about \$1.00–1.50 per child.

Recent studies of FMR programs have questioned their effectiveness, particularly in communities with fluoridated water. While cognizant of these studies, the IHS Dental Program believes that the high caries rate seen in AI/AN children warrants the use of FMR programs.

However, before implementing a FMR program, the following criteria should be considered:

- Caries rates in the community, especially smooth-surface caries (determine through low-level monitoring or survey results).
- Prevalence of use of fluoride toothpaste (determine through assessment method — ask patients if they use it or consider market consumption through local stores).
- Status of community or school water supply for at least five years (determine through OEH or state records).
- Willingness of school administrators to allow student participation.
- Availability of resources for program.
- Whether schools consist of at least 25–50% AI/AN children. Joint collaboration between state/local health department and IHS/Tribal program should be investigated.

The following steps should be taken when implementing a school-based FMR program:

- Contact school administrators once program is identified as needed. Estimate start-up and annual costs as well as teacher and class time.
- Educate administrators/school officials and community members.
- Train person(s) who will administer FMR program.
- Order supplies: jugs, packets, cups, napkins.
- Obtain consent from parents or guardians.
- Monitor program by keeping track of number of students participating, and the amount of supplies used.
- Provide incentives or rewards to classrooms and children.
- Recognize efforts of teachers, community health aides, community health representatives (CHRs) or parent volunteers who are doing a good job.

### **Safety Issues**

Schools and other institutions that provide a FMR program must be careful to keep the fluoride in a locked storage area that is isolated from children or patients. Adequate administrative controls and record-keeping are also required. The amount of fluoride in a one liter container of 0.2% NaF solution or in a two or three gram NaF premeasured packet is potentially lethal if consumed at one time.

When dispensing fluoride products for a mouthrinse application, one teaspoonful (5 ml) of a 0.05% solution contains approximately 1 mg fluoride, which is equivalent to the amount of fluoride in one 2.2 mg NaF tablet. Thus, ingestion of this amount of fluoride will cause no untoward effects. Two teaspoonsful (10 ml) of a 0.2 percent NaF solution

contain 9 mg fluoride, the equivalent of nine NaF tablets. If all 10 ml are swallowed, the patient may become nauseous.

For patients with handicapped conditions in which it is known that some or all of the mouthrinse will be swallowed, they should be placed on a daily 0.05% NaF regimen.

The FMR program should be evaluated periodically to assess effectiveness. Several process and outcome methods may be used, such as:

- Patient/community/staff satisfaction survey
- Number of students participating and the quantity of supplies used during the year
- Improvement in oral health from baseline to present (after minimum of three years)

### **Conclusions/Recommendations**

- FMRs should not be used for children under 6 years of age. FMRs are *not* recommended for children in Head Start programs.
- For patients at moderate to high risk for caries, daily use of FMRs is recommended.
- For most Indian communities, school-based FMR programs are recommended, even in fluoridated communities. Adoption of FMR programs in Urban communities should be based upon cost and caries status of schoolchildren. Local, county, and state health departments can become partners in providing fluoride benefits to all children. FMR programs, although most easily implemented in elementary schools, are of greater benefit to junior and senior high school students. That is when the permanent teeth have fully erupted and are at greater risk for smooth-surface caries.

### **Professionally-Applied Topical Fluorides**

The professional topical application of fluoride is an accepted caries-preventive procedure that is appropriate for children, adolescents, and adults. Topical fluorides are also useful when applied to exposed root surfaces. This is especially beneficial for older patients, who are vulnerable to root caries and root sensitivity as a result of the loss of periodontal attachment and/or xerostomia (dry mouth).

As a public health measure, targeting those at higher risk for caries is a cost-effective procedure. Criteria for moderate-risk to high-risk children, adolescents, and adults might include the following: those patients who have more than one active smooth-surface carious lesion; white spot lesions; poor oral hygiene; and/or past history of caries.

Three agents are currently available for use in operator-applied topical fluoride programs: sodium fluoride (NaF); stannous fluoride (SnF<sub>2</sub>); and acidulated phosphate fluoride

(APF). When used properly, all seem to be equally effective and are capable of inhibiting dental caries up to 30%.

APF gels are the most popular, due to their ease of use as well as taste preference. APF contains 1.2% fluoride ion, has a pH of between 3.0 and 4.0 and is available in either an aqueous solution or a gel. Thixotropic gel formulations are easier to use and more likely to reach caries-susceptible interproximal areas.

For young children, fluoride foam applications are also available. Neutral sodium fluoride foam is obtainable through multiple vendors. These products do not use a thixotropic gel and contain less fluoride mass, although the concentration is similar. Therefore, the risk for swallowing the product is reduced. These neutral sodium fluoride topical regimens are also safe to use on patients with porcelain or composite restorations. While one minute applications of these products are popular, the vast majority of studies showing their effectiveness were conducted using a four minute application.

### **Guidelines for Topical Fluoride Application**

- Clean teeth with a toothbrush to remove debris. A toothbrush prophylaxis can remove any debris and also provide an instructional time for the patient.  
*Note: It is not necessary to do a rubber cup prophylaxis on patients before providing the topical fluoride treatment. However, any calculus should be removed and the patient allowed to rinse his or her mouth with water before applying the fluoride.*
- Apply gel in disposable tray for both maxillary and mandibular teeth. Limit the amount of gel in the tray to 1/4 to 1/2 full.
- Sit patient upright in chair. Dry teeth with air. Insert trays in mouth.
- Have patient bite down on trays for 4 minutes. A saliva ejector should be used to control moisture. The patient should not be left unattended.  
*Note: It has been clinically demonstrated that up to 90% of fluoride uptake occurs in the first minute. Therefore, if the patient is uncooperative, a shorter time than 4 minutes could be used, depending on the provider's judgment. One-minute gel applications are being considered for ADA's seal of approval.*
- Remove trays and instruct patient to spit out excess gel.
- Instruct patient to refrain from eating or drinking for 30 minutes.  
*Note: Fluoride may also be painted on teeth using cotton rolls and isolation technique for young child, or if the child is uncooperative or gags easily.*

### **Patient Selection for Topical Fluoride Application**

The IHS Dental Program recommends targeting this procedure to moderate-risk and high-risk patients, due to its high cost compared to alternative forms of fluoride delivery. Those patients with one or more smooth-surface carious lesions, white spot lesions, past

history of decay, and/or poor oral hygiene should receive gel applications every six months or more frequently, depending on the severity of the caries rate and local resources. The use of fluoridated toothpaste and other self-applied fluorides should be stressed between recalls.

### **Safety**

Operator-applied topical fluorides are highly concentrated formulations of fluoride and are not meant to be swallowed. No more than five ml of aqueous solution or gel should be used for a professional application of topical fluoride. Depending on the formulation, five ml contains from 45 to 100 mg of fluoride. Although this concentration is not lethal if swallowed, even for a small child, the concentration is high enough to make the patient nauseous.

If accidental swallowing occurs, administer milk or an antacid, which will bind the fluoride, and seek medical assistance.

### **What Is The Best Fluoride?**

- Fluoride varnish
  - 30–44% reduction
  - Cariostatic
- Fluoride rinses
  - 20–30% reduction
  - Most cost-effective?
- Self-applied fluorides
  - Depends on patient
  - Cost-prohibitive for PH
- Toothpastes
  - 15–30% reduction (3 years)
  - Depends on patient
- Community Water Fluoridation
  - 44–60% reduction
  - Depends on political climate
- Multiple exposure
  - “Clearly beneficial to patients who are especially susceptible to caries”

See the ADA’s Evidence-Based Recommendations for the use of Topical Fluorides at: [http://www.ada.org/prof/resources/pubs/jada/reports/report\\_fluoride.pdf](http://www.ada.org/prof/resources/pubs/jada/reports/report_fluoride.pdf) and at [http://www.ada.org/prof/resources/pubs/jada/reports/report\\_fluoride\\_exec.pdf](http://www.ada.org/prof/resources/pubs/jada/reports/report_fluoride_exec.pdf)

The AAPD's guideline on the use of fluorides can be found at: [http://www.aapd.org/media/Policies\\_Guidelines/G\\_FluorideTherapy.pdf](http://www.aapd.org/media/Policies_Guidelines/G_FluorideTherapy.pdf)

**Fluoride Varnishes** (Revised from the US Air Force Dental Evaluation and Consultation Service, used with permission)

Topically applied fluoride varnishes usually consist of sodium fluoride in a resin carrier and are used primarily as a caries prevention therapy for pediatric and high-risk caries patients. Only relatively recently have they become available for use in the United States. However, fluoride varnishes have been widely used in Western Europe, Canada, and the Scandinavian countries since the 1980s as a caries prevention therapy. In fact, by the 1990s, over 90% of the topically applied fluoride in Scandinavia was in the form of varnish. In 1991, Duraflor became the first fluoride varnish available in the United States after it was approved by the FDA as a cavity liner; later in the decade, Duraphat, Fluor Protector C, and Cavity Shield became available. VarnishAmerica 5% sodium fluoride varnish also became available in 2005. A large number of studies, most done outside the United States, have shown that fluoride varnishes are safe and efficacious in preventing or reducing caries. Sodium fluoride-based varnishes can have the side effect, however, of causing a temporary color change in teeth and restorative materials. Interestingly, fluoride varnishes are approved by the FDA for use only as cavity liners and for treating hypersensitive tooth structure. The use of a drug or other agent off-label means that it is being used for a purpose not described in the information provided with the product and for which FDA approval is lacking. This does not mean that using fluoride varnish as a preventive agent is illegal or unethical. The Federal Food, Drug and Cosmetic Act does not limit the manner in which physicians or dentists may use approved drugs.

Instructions for applying cavity varnish for caries reduction vary among the brands of products, but typically the procedure begins by cleaning the involved tooth surfaces. One study has found that toothbrushing appears sufficient and that a prophylaxis is not required. Prior to application of the varnish, the teeth should be dried with gauze or a cotton roll to remove moisture, but they do not need to be thoroughly dried, because the varnish sets in contact with moisture. The varnish is then applied, usually in about a 0.5-mm-thick layer using a suitable applicator. Some manufacturers recommend that the treated teeth remain isolated for a minute or so, while others do not call for a period of isolation following application. The patient is usually advised not to eat or drink anything for a period of time following treatment (typically from 45 minutes to 2 hours) and are told to forgo brushing that evening. Patients should be advised prior to treatment that some varnishes (usually the sodium-based ones which are yellow) can impart a slight discoloration to the teeth. The discoloration is temporary, however, and is removed by brushing. Some perceptible but clinically acceptable color change may also occur in certain restorative materials. Biannual applications of fluoride varnishes are usually recommended, however some clinicians advise treatment every three months. Fluoride varnishes are believed to be efficacious because their stickiness helps to keep them in contact with tooth structure for a longer time than topically-applied fluoride gels and liquids.



### ***The Effects of Fluoride Varnish***

- 44% reduction in caries incidence in 3-yr. olds
  - Holm AK. Effect of fluoride varnish (Duraflor) in preschool children. *Community Dentistry & Oral Epidemiology* 1979 October; 7(5):241-5.
- Other studies have also shown that the use of fluoride varnish greatly reduces caries in children
  - Clark DC. Results of the Sherbrook-Lac Megantic fluoride varnish study after 20 months. *Community Dentistry & Oral Epidemiology* 1985 April; 13(2): 61-4.
  - Koch G et al. Caries preventive effect of a fluoride-containing varnish after 1 year's study. *Community Dentistry & Oral Epidemiology* 1975 November; 3(6):262-6.
  - Helfenstein U. A note concerning the caries preventive effect of Duraphat. *Community Dentistry & Oral Epidemiology* 1994 February; 22(1):6-7.

### ***Advantages of Fluoride Varnish***

- Does not require special dental equipment
- Does not require a professional dental cleaning prior to application
- Is easy to apply
- Dries immediately upon contact with saliva
- Is safe and well tolerated by infants, young children, and individuals with special needs
- Is inexpensive (best “bang for the buck” among topical fluorides)
- Requires minimal training
- Some state Medicaid programs will reimburse physicians, nurses, and nurse practitioners up to \$16 per application

### ***Indications***

- A child at moderate to high risk of developing caries
  - Has had cavities in the past or has white spot lesions
  - Continues to use the bottle past 1 year, or sleeps with a bottle
  - Breastfeeds on demand at night
  - Has a developmental disability
  - Has family members with a history of caries
  - Chronically uses high-sugar oral medicines
  - Engages in prolonged use of a bottle or sippy cup containing liquids other than water throughout the day

***Contraindications***

- Low risk of developing caries
- Children who routinely receive optimally fluoridated water (0.8 – 1.5 ppm) – however, varnish + fluoridated water is OK
- Children who regularly receive other fluoride treatments through a dental office

**Application Technique for Infants and Very Young Children*****Before You Begin....***

- Have the right supplies – gloves, paper towel or bib, 2 × 2 gauze sponges, fluoride varnish, and disposable applicator brush (comes with some unit-dose products)
- Inform the parent/legal guardian of the procedure (use information sheet)
- Remind the parent ahead of time to give the child something to eat and drink before applying the varnish (no eating or drinking for 1 hour after)
- Advise the parent that the teeth may become temporarily discolored (but can be brushed off the next day)

***Applying the Varnish***

- Position the child (knee-to-knee or whatever works best)
- Using gentle finger pressure, open the child's mouth
- Remove excess saliva from the teeth with a gauze sponge
- Apply a thin layer of varnish to all tooth surfaces – the varnish will harden immediately once it comes in contact with saliva
- Apply 2–4 times per year

***Post-Application Instructions***

- The child should eat a soft, nonabrasive diet for the rest of the day
- Do not brush or floss the child's teeth until the next morning
- The dull yellow color is normal
- Give parent information sheet

***Billing for Fluoride Varnish***

- ICD-9 Code (Medical)
  - V07.31 “Prophylactic Fluoride Administration”
- CPT Code (Dental)

– 1203 “Topical Application of Fluoride (Prophylaxis not included)”

Go to the following links for instruction manuals on the use of fluoride varnishes:

<http://health2k.state.nv.us/oral/FVManual.pdf>

[http://www.doh.wa.gov/cfh/OralHealth/manuals/Sealants/2002\\_sealant\\_varnish\\_manual.pdf](http://www.doh.wa.gov/cfh/OralHealth/manuals/Sealants/2002_sealant_varnish_manual.pdf)

The fluoride varnishes currently available in the United States are listed below along with ordering information.

<b>Product</b>	<b>Main Ingredients</b>	<b>Manufacturer</b>	<b>Retail Price</b>	<b>Gov't Price</b>
<u>Duraphat</u> (item no. F0400954)	5% sodium fluoride in an alcoholic solution of natural resins	Colgate-Palmolive Co. 300 Park Avenue New York, NY 10022 (800) 226-5428 <a href="http://www.colgate.com">www.colgate.com</a>	\$25.95 (ie, \$2.60/mL) for one 10-mL tube	\$19.95 (ie, \$2.00/mL) ) for one 10-mL tube
<u>Duraflor</u> (item no. 1011)	5% sodium fluoride in an alcoholic solution of natural resins	A.R. Medicom 9404 Cote de Liesse Montreal, Canada H8T 1A1 (514) 636-6262 (514) 636-6266 FAX <a href="http://www.medicom.ca/#">www.medicom.ca/#</a>	\$125.00 (ie, \$3.13/mL) for 5 boxes; each box has 16 0.5-mL unit-doses	\$75.00 (ie, \$1.88/mL) ) for 5 boxes; each box has 16 0.5-mL unit-doses
<u>Fluor Protector C</u> (item no. 550578)	0.9% difluorosilane in a polyurethane-based varnish	Ivoclar Vivadent, Inc. 175 Pineview Drive Amherst, NY 14228 (800) 533-6825 (716) 691-0010 (716) 691-2285 FAX <a href="http://www.ivoclarvivadent.us.com">www.ivoclarvivadent.us.com</a>	\$88.15 (ie, \$11.02/mL) for 20 0.4-mL single-dose bottles	\$32.00 (ie, \$4.00/mL) ) for 20 0.4-mL single-dose bottles
<u>Cavity Shield</u> (when ordering, ask for Trial Size, 0.40-mL version)	5% sodium fluoride in an alcoholic solution of natural resins	Omnii Oral Pharmaceuticals 1500 T-N. Florida Mango Rd. West Palm Beach, FL 33409 (800) 445-3386 (561) 689-1159 (479) 787-6507 <a href="http://www.omniipharma.com">www.omniipharma.com</a>	\$33.50 (ie, \$2.62/mL) for 32 0.40-mL unit doses	\$27.90 (ie, \$2.18/mL) ) for 32 0.40-mL unit doses
<u>VarnishAmerica</u> item #070030/1 and #070020/1	5% sodium fluoride in an alcoholic solution of natural resins	Medical Products Laboratories, Inc. 9990 Global Rd. Phila., PA 19115-1803	200-count boxes - \$110.00 - in the 0.25 mL and \$130.00 in 0.40mL	200-count boxes - \$110.00 - in the

		(800) 523-0191, (215) 677-2700, (215) 677-7736 FAX, or <a href="http://www.medicalproductslaboratories.com">http://www.medicalproductslaboratories.com</a>		0.25 mL and \$130.00 in 0.40mL
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### **Pit And Fissure Sealants**

The term pit and fissure sealant is used to describe a material that is introduced into the occlusal pits and fissures of caries-susceptible teeth, thus forming a bonded, protective layer denying access of caries-producing bacteria from their source of nutrient (1). New methods of caries prevention focus on pit and fissure caries because tooth surfaces with pits and fissures have always been the earliest and most prevalent of carious areas. The disproportion of caries on fissured surfaces continues to this day, with these surfaces accounting for over 80% of all caries in young permanent teeth (2).

Sealants are an important dental caries prevention technology, ideally used in combination with patient education, effective personal oral hygiene, fluorides and regular dental visits. Key guidelines on sealant use include:

- Caries risk assessment of the individual and the tooth are important as determinants of sealant need.
- Caries risk on surfaces with pits and fissures may continue into adulthood; therefore, post-eruptive age alone should no longer be used as a major criterion for sealant decision.
- Sealants should be used to prevent caries in at-risk teeth (preventive sealants).
- Sealants should be used to treat teeth with questionable caries or caries confined to the enamel pits and fissures.
- Sealed teeth need to be evaluated periodically for sealant integrity and retention.(2)

### **Sealants on Primary Teeth and on Teeth Other Than Molars**

Individual differences among patients and among teeth are the basis for risk analysis and decision making in sealant care that is now recognized as necessary for the best benefit ratio in sealant therapy. Therefore, many primary teeth may be judged to be at risk due to fissure anatomy and/or patient caries risk factors. This is also true for permanent teeth other than molars such as incisors with deep lingual pits or premolars with incipient caries in deep occlusal grooves. Any teeth judged to be at risk can certainly benefit from sealant application. (2)

### **Caries Risk Assessment**

Assessing risk for disease development is an important component of any disease prevention. Risk susceptibility can be determined on a variety of levels. Assessment of a

person's risk for dental caries relies on a number of factors. These factors could include, but are not limited to the following:

- Caries history
- Poor preventive practices
- Unhealthy nutritional habits
- Deep grooves of tooth morphology
- Medical conditions

Based on the clinical evaluation and information derived from a patient's medical and dental history, the patient can be classified as being at low risk (no new or incipient carious lesions in the past year), medium risk (one new carious lesion in the past year or one or more of the factors listed above), or high risk (two or more carious lesions in the past year or two of the above factors). Since dental caries is a bacteria-dependent disease, preventive measures such as sealants can be implemented once those at risk are identified. (3)

### **Sealant Placement Immediately After Fluoride**

For years there existed an opinion that a recent fluoride exposure, such as in-office fluoride treatment, would interfere with the etching pattern and, therefore, the retention of sealants. Studies have now shown this opinion is not correct. Therefore, sealant application can be planned to follow fluoride treatment during the same office appointment if desired.

### **Indications**

- Caries risk, regardless of the age of the patient, should be a major criterion for selecting teeth for sealant application.
- Patients who are at moderate or high risk for developing caries should receive preventive sealants.
- Patients having incipient caries (limited to enamel) of pits and fissures are candidates for therapeutic sealants.

### **Advantages**

- Sealants are minimally invasive and require no patient compliance after they have been applied other than good oral hygiene.
- Sealants can be applied by auxiliary personnel.
- Long-term sealant retention rates are high.
- Fully retained sealants are 100% effective and have been proven to halt the caries process.

**Limitations**

- Adequate isolation and correct application technique are essential for sealant retention. Always follow the manufacture's instructions when using their products. (4)

**Recommendations**

The dental literature supports:

- Bonded resin sealants, placed by appropriately trained dental personnel, are safe, effective and underused in preventing pit and fissure caries on at-risk surfaces. Effectiveness is increased with good technique and appropriate follow up and resealing as necessary.
- Sealant benefit is increased by placement on surfaces judged to be at high risk or surfaces that already exhibit incipient carious lesions.
- Glass ionomer materials have been shown to be ineffective as pit and fissure sealants, but could be used as transitional sealants on teeth that are not yet fully enough erupted for placement of a resin sealant.
- Caries risk, and therefore potential sealant benefit, may exist in any tooth with a pit or fissure, at any age, including primary teeth of children and permanent teeth of children and adults. (1, 2)

**Clinical Procedures Involved In Successful Sealant Application**

- The tooth must be isolated so that adequate access is established to observe the field and to reach tooth surfaces with the appropriate instruments. This isolation must also insure that saliva contamination of the surfaces to be sealed can be prevented at critical points in the procedure.
- The surfaces should be cleaned with a prophylaxis brush or rubber cup and a cleansing agent that contains no oil or other substance that cannot be completely and quickly washed from the surfaces with water. The cleansing agent should be carefully washed from the surfaces using a water syringe and aspiration or high speed evacuation.
- When the teeth are effectively isolated from saliva contamination, the surfaces are dried and etched by application of a 30–50% phosphoric acid solution for 15 to 30 seconds (always follow the manufacturer's instructions for the sealant being used). The solution is gently agitated during the application. It should cover all of the areas to be sealed.

- The acid should be washed away with water and aspiration or high speed evacuation. The surfaces are carefully dried and inspected to ensure that the frosty-appearing etch covers the area intended. The absolute avoidance of contamination with saliva or air-line moisture or oil is critical from the time of acid removal and drying until the sealant is cured. If contamination is suspected, re-etching of the surface for twenty seconds is indicated.
- The sealant should be applied according to the manufacturers' instructions. Care should be taken to avoid entrapment of air bubbles, to extend the sealant into all the grooves and pits, and to avoid extension of the sealant onto unetched smooth surfaces or soft tissues. The sealant must remain uncontaminated and undisturbed until it is cured to hardness.
- The sealant should be examined to ensure that underextension, overextension, undercuring, or voids have not occurred. A reasonable attempt should be made to remove the sealant to determine if adequate bond strength has been established. (5)

### Sealing Incipient Caries

Heller et al. (1995) evaluated the effect of sealants placed as part of a school-based program on permanent first molar teeth after five years. Sealants were applied to both sound teeth and those with incipient carious lesions (where the fissure is stained but not yet cavitated). For the initially incipient carious surfaces, the 5-year decay rate was 10.8% for sealed surfaces and 51.8% for unsealed surfaces. Initially sound surfaces had a decay rate of 8.1% for sealed surfaces and 12.5% for unsealed surfaces. The study showed potential efficiencies in targeting teeth with incipient caries for sealants.

### Efficacy

Initial clinical trials using a random half-mouth design and first or second generation sealant materials established the efficacy of sealants. Llorda et al. (1993) used a systemic process to select and review studies of one time sealant placement on permanent teeth in subjects unexposed to other preventive measures. Pooled results from 17 studies found that second generation sealants reduced caries over 70%.

A sealant is virtually 100% effective if it is fully retained on the tooth (NIH 1984). Mertz-Fairhurst (1984) reported 92 to 96% retention rates in second generation sealants after 1 year, with 67 to 82% retention after 5 years. A review of studies of long term retention of second generation sealants showed 41 to 57% intact after 10 years (Ripa 1993). Retention results for third generation sealants are similar to those for second generation systems (Ripa 1993). (6)

### References

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5. NIH Consensus Development Program. National Institutes of Health Consensus Development Conference Statement December 5-7, 1983. Dental Sealants in the Prevention of Tooth Decay.
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## **Running a School-based Pit and Fissure Sealant Program**

### **When Should The Program Start?**

The amount of time needed for a school-based sealant program will be determined by the number of schools that will be served and the number of students who will be treated. Larger programs will obviously need more time and should plan on starting in September, within a few weeks after the beginning of the school year.

### **Which Age Groups Should Be Targeted?**

Many sealant programs target children in the first, second, sixth, and seventh grades. This coincides with the eruption patterns of the first and second molars. Incisors and premolars are sealed if they have deep grooves. Each school-based program should keep records of the number of children seen by grade level and the percent of target teeth that are fully-enough erupted to be sealed in each grade level. This will allow the local program to alter its target age groups if need be to capture the greatest possible number of target teeth.

### **Scheduling**

A schedule should be generated in the month of August showing which schools are scheduled for sealants. A school calendar should be requested from each school district participating in the program to allow the sealant program to mesh with the school schedule with the least possible interruption of school activities. The following criteria are taken into consideration when planning the schedule:

- How the scheduling of schools went the previous school year
- Parent-teacher conferences
- Early release



- Testing
- Field trips
- Assemblies
- Other

Once the schedule is completed, it is sent out to the schools along with a memo, a school information sheet, and a copy of the consent forms. The memo should ask the schools to look over the schedule and to contact the dental program immediately if conflicts exist. The school information sheet requests that each school include their address, the name of the principle, the name of the contact person in charge of the prevention programs.

Some programs have found it helpful to get the information packets and consent forms to the schools before the start of the school year. This allows the schools to distribute the consent forms with any registration materials and other information that is usually distributed at the start of classes. This in turn often guarantees a higher return rate for completed consent forms.

### **Training For Staff**

A departmental in-service for all dental staff participating in the sealant program should be performed a week or so before the sealant program starts seeing patients. The in-service should cover the following topics:

- Proper use and maintenance of sealant equipment
- Patient care
- Proper sealant technique
- All of the forms used
- Prevention of back injury - how to properly lift objects
- Teamwork

### **Sealant Program Coordinator**

Each dental program conducting a sealant program should appoint one individual to coordinate the program. This individual can be a dentist, hygienist, dental assistant, or clerk. The sealant program coordinator should be responsible for the following tasks:

- Obtaining school schedules and setting up the sealant program schedule
- Notifying schools a week to two week in advance of arrival dates and times
- Notifying dental staff of possible delays in the schedule
- Checking on consent form returns

- Working closely with school nurses and health aids to keep the program flowing efficiently
- Ensuring that appropriate dental staff are scheduled for the sealant program each day

### **Which Schools Should Be Included In The Sealant Program?**

The Dental Program should contact all BIA schools and public schools on the Reservation, as well as selected off-reservation schools. To determine which off-reservation schools should be included, the sealant coordinator needs to determine which schools have the highest number of Native American students in their student body. Once those schools are identified, an invitation letter should be sent to the school nurse or health aid along with a description of the program, how it works, what role the school plays, and how the program will benefit their students. The letter should be followed by a phone call. The school also needs to be informed of the facilities that the sealant program will need in order to set up equipment and provide services.

### **Day of Arrival**

On the day of arrival to a school the first contact should be with the school nurse/health assistant. The following information should be obtained:

- A list of all students eligible for the program
- Consent forms
- A map of the school
- A schedule of when classes switch
- Lunch
- When school lets out

After this information is collected the sealant coordinator or other designated team member needs to begin filling out the screening forms and note-home forms with the students' information. The school nurse/health aid can also be asked to send new copies of the consent form home with any students who have not yet returned the form.

### **Getting Students To The Sealant Program**

Once the sealant equipment has been properly set up, a designated member of the sealant team needs to begin bringing students from the classroom four or five at a time. Each student should be given a toothbrush and instructed to dry-brush their teeth while they are waiting their turn. After the students are screened and sealed, they should be given a "Take-Home Note." This note informs parents/guardians of the following:

- That sealants were placed (or not placed and why)
- If the student is in need of further dental care

- If the student was cooperative or not

If students are found with abscessed teeth or other urgent dental needs, these needs should be noted on the take-home note and on a list kept by the dental program. Parents should be instructed to seek care for the urgent needs through the appointment and walk-in policies of the dental program. A copy of the Urgent Treatment List can be given to the school nurse/health aid who should be encouraged to follow up on the students placed on that list. Some programs give expedited entry to their appointment systems to patients with urgent needs identified in the sealant program.

### **Day to Day Operations**

At the end of the day a supply list should be generated for the following day to insure that instruments and supplies do not run short during any day.

Once a school is completed the following things take place:

- The Urgent Treatment List is given to the nurse
- A school inventory sheet is generated, which records the following:
  - How many Native American students are enrolled at the school
  - How many students returned consent forms
  - How many students were actually treated
  - How many students were absent
  - How many students were placed on the Urgent Treatment. List
  - How many days were spent at that school

This information is helpful in scheduling the following year.

### **Supply List**

The following lists of supplies and instruments should be adequate to run any sealant program. Additions to and deletions from the list can be done by any program to meet local needs.

#### **Supplies**

- Dri-angles small and large
- Cotton rolls
- Sealant material, either auto-cure or light cure
- Kwick tips
- Hi-volume evacuators
- Saliva ejectors
- Cotton pellets

- Patient napkins
- Disposable air-water tips
- Mixing wells, and mirrors
- Masks
- Gloves
- Adult and child toothbrushes
- Alcohol based hand cleaner
- Antibacterial soap
- Bottled distilled water for closed dental units
- Sandwich bags to cover lights
- Surface disinfectant
- Ultrasonic solution
- Towels for sterilization area
- Cleaners
- Trash bags

**Instruments/Equipment**

- Mirror
- Cotton pliers
- Cotton roll holders, adult and child
- Explorers
- Curing light(s) if light-cured sealant is used
- Sealant applicator (brush, dycal applicator, applicator that comes with the sealant kit)
- Safety glasses
- Broom/dust pan
- Ultra-sonic unit (if instruments are sterilized on-site)
- Autoclave (if instruments are sterilized on-site)
- A soaking/storage basin (if instruments are transported back to the dental clinic for sterilization)

**Forms**

- Consents forms

- Supply lists
- Take-home notes
- Urgent treatment lists
- School inventory sheet
- Screening exam form (carbon copy)

### **Sealant Equipment**

Each dental program conducting a school-based sealant program will have to decide whether to use portable equipment or a mobile dental unit. Portable equipment can work fine for small and medium sized programs, but large programs serving many different schools might want to consider the use of a mobile dental unit.

### **Portable Equipment**

Portable units that work well for sealant programs are available from several vendors, including:

- ADEC Corporation
- Aseptico
- DNTLWorks

Depending on the size of the program and the number of students to be treated, the dental program will need either one or two complete units:

- Patient chairs
- Dental light(s)
- Two operator chairs per unit
- Dental unit(s)
- One compressor (can drive two units) unless using units with self-contained compressors such as the DNTLWorks
- Storage boxes for supplies
- A mini-van for transporting equipment and supplies from school to school

Facilities needed for a portable unit include the following:

- Need to be close to outlets
- Water source

Advantages:

- Less expensive

- Low maintenance costs

Disadvantages:

- Loading and unloading heavy equipment and supplies
- More likely to become damaged
- Sometimes a burden for schools to find room with adequate outlets and water source

### Mobile Dental Unit

Mobile dental units are available from several vendors, including, but not limited to the following:

- LifeLine <http://www.lifelinemobile.com/>
- <http://www.startracksmaterial.com/fordf5504x4.html>
- <http://www.medcoach.com>
- <http://www.internationalmobilehealthassociation.org/corporate.html>
- [http://dentalvan.com/dental\\_van.html](http://dentalvan.com/dental_van.html)
- <http://www.medcoach.com/products/dental/>
- <http://www.usv1.com/Mobile-Clinics.html>

A mobile dental unit can also be designed and sourced through GSA

Advantages:

- Self-contained electric and water/waste source
- No loading and unloading of heavy dental equipment/supplies

Disadvantages:

- Much higher initial cost
- High maintenance costs
- Larger vehicle
- More responsibility

The ASTDD has developed a Web site (<http://www.mobile-portablemanual.com>) that will be launched in late 2006 or early 2007 which has five chapters: Intro and Planning, Mobile Vehicles, Portable Equipment, Mobile-Portable Hybrids, and Evaluating Effectiveness and Outcomes. It will provide information to help plan for mobile vs. portable and is a companion manual to [www.dentalclinicmanual.com](http://www.dentalclinicmanual.com) which also has information comparing fixed, portable and mobile dental units.

## Billing

Medicaid will pay for sealants for their beneficiaries. A member of the sealant team needs to be assigned the task of properly completing all necessary paperwork to insure that billing and collections for the sealants take place.

## Additional Sources of Information on School-Based Sealant Programs

Many State, County, and local Public Health departments operate school-based dental prevention programs. Additional information can be found on the following Web sites. The Washington State manual gives detailed descriptions of equipment needs and specifications, supplies lists, etc.

- <http://www.astdd.org/bestpractices/pdf/DES38002OHsealantprogram.pdf>
- The Seal America protocols: <http://www.mchoralhealth.org/seal/>
- Wisconsin Seal-A-Smile program:  
<http://www.chawisconsin.org/oralHealthSealASmileProgram.htm>
- Washington State sealant and fluoride varnish guidelines:  
[http://www.doh.wa.gov/cfh/OralHealth/manuals/Sealants/2002\\_sealant\\_varnish\\_manual.pdf](http://www.doh.wa.gov/cfh/OralHealth/manuals/Sealants/2002_sealant_varnish_manual.pdf)

## Nutrition and Dental Caries

This section addresses two questions:

1. What is currently known about nutrition and dental caries?
2. What are some practical suggestions related to nutrition and dental caries that dental staff can share with patients, with caregivers of young patients, and with other health-care professionals?

Several definitions may prove helpful in understanding this section:

**Dental caries** = tooth decay

**Cariogenic foods** = foods (including beverages) capable of causing dental caries because they are converted to acid by microorganisms in the mouth

**Fermentable carbohydrates** = carbohydrates like sugar and starch that bacteria can convert to acid; fermentable carbohydrates are cariogenic

**Cariostatic foods** = foods that cannot be converted to acid by microorganisms in the mouth

### 1. What is Known About Nutrition and Dental Caries?

Dental caries can develop when the following conditions are present:

- Cariogenic bacteria are present in the mouth
- Fermentable carbohydrates are present in the mouth
- Caries-susceptible tooth surfaces are present
- Time is sufficient for caries to develop

The bacteria use the fermentable carbohydrate as food, and in doing so, the bacteria produce acid. The strength of the acid increases the *more often* fermentable carbohydrates are eaten and the *longer* they stay in the mouth.

### ***Fermentable Carbohydrates***

*Sugars* are fermentable carbohydrates, so they are cariogenic. Sugars include white and brown sugar, honey, fructose, and syrup. The sugar in fresh and dried fruit and in fruit juice is also a fermentable carbohydrate. Sweet drinks such as soda pop and other foods like candy, which are made from sugar, contain a lot of fermentable carbohydrate. In fact, soda pop is the source of large amounts of sugar in the diets of many Americans, including AI/ANs: Each 12-ounce can of regular soda pop has approximately 10 teaspoons of sugar — that works out to 55 teaspoons per two-liter bottle!

*Starch* is a fermentable carbohydrate. Flour has a lot of starch, so flour and foods made with flour such as bread, cereal, crackers, tortillas, and pretzels contain fermentable carbohydrates. Foods like potato chips and taco chips also have fermentable carbohydrate because they are made from a starchy vegetable.

Foods made with sugar *and* starch can be cariogenic. Cookies, cake, pie, and doughnuts and other such foods contain a lot of fermentable carbohydrates. These foods also tend to stick to the teeth and stay in the mouth much longer.

Noncariogenic sweeteners include artificial sweeteners such as aspartame and saccharin (brand name products like Equal and Sweet’N Low) and naturally occurring sugar substitutes such as sugar alcohols like mannitol, sorbitol, and xylitol.

### ***Overall Diet***

Although much research has examined sugar and starch in the decay process, most of this work has focused on specific foods eaten separately, not on the varying patterns of different foods that people eat over a period of time. *For this reason, specialists in nutrition and oral health recommend that patients first eat a healthy diet overall, and then look at their sugar and starch intake, especially as snacks.*

*Eating habits.* Frequent eating of snacks with fermentable carbohydrate increases the risk of dental caries.

*Water.* Drinking water after meals and snacks can help prevent caries by decreasing the amount of food that sticks to the teeth.



*Saliva Production.* Some foods stimulate saliva production, which can help prevent caries in two ways: First, saliva buffers the acid in the mouth. Second, increased saliva makes a person swallow more often. This means that foods (and any acid) are in the mouth a shorter time, so they are less likely to cause caries. Foods with fiber — vegetables, fruits, and whole grains — stimulate saliva production.

*Oral hygiene habits.* Brushing with a fluoridated toothpaste after eating meals and snacks can greatly reduce the risk of caries. When brushing isn't possible, rinsing the mouth with water and chewing sugarless gum are helpful alternatives.

*Fluoride.* Fluoride in drinking water and toothpaste can help prevent dental caries. Some fluoride enters the tooth directly through the tooth surface (topical), and some enters the tooth internally from the bloodstream (systemic). The degree to which fluoride's positive effects can be overcome by a poor diet is unknown.

## **2. What Are Some Practical Suggestions Related to Nutrition and Dental Health that Dental Staff Can Share with Patients, with Caregivers of Young Patients, and with Other Health-Care Professionals?**

Following is a list of suggestions for adults and caregivers of young patients:

### ***Food and Tooth Decay: What Can YOU Do to Prevent Cavities?***

#### **Nutrition-Related Suggestions for Adult Patients**

- *Eat a healthy diet* by following MyPyramid.
- *Avoid soda pop*
  - Drink water to quench thirst.
  - Choose healthier alternatives to soda pop: for example, fruit juice mixed with club soda.
  - Drink Native teas or mineral water.
  - Be a healthy role model for children in your family and community: drink less soda pop!
- *Snacks*
  - When you snack, choose healthy snacks like those listed in the box on the second page following.
  - Limit snacks like candy and raisins that have a lot of sugar and stick to teeth.
  - Drink water with snacks.
  - After you snack, brush your teeth, rinse your mouth out with water, or chew some sugarless gum.
- *Artificial sweeteners and preferences for sweet foods*
  - If you chew gum, chew sugarless gum.

- Try to develop preferences for less sweet foods. To do so, limit your intake of artificially sweetened foods. In addition, try to eat foods with less added sugar: for example, eat more fruit for dessert.

### **Nutrition-Related Suggestions for Caregivers of Young Patients**

- Encourage children to eat a healthy diet
- Avoid soda pop
  - Serve children water to quench their thirst.
  - Serve children low-fat regular or chocolate milk instead of soda pop.
  - If children don't drink soda pop, don't start them on it!
  - If children drink soda pop, limit the amount and frequency.
- Other sweets
  - Limit the amount of candy, regular gum, and other sweets (like cookies, cake, and doughnuts) that children are offered.
  - When children eat candy and other sweets, try to include these with a meal rather than as snacks.
- Snacks
  - Serve children healthy snacks like those listed in the box on the next page.
  - Limit snacks like candy and raisins that have a lot of sugar and stick to teeth.
  - Try to limit snack times to no more than three per day.
  - After children snack, encourage them to brush their teeth, rinse their mouth out with water, or — if they are old enough — to chew some sugarless gum.
- Artificial sweeteners and preferences for sweet foods
  - If children chew gum, provide them with sugarless gum.
  - Help children develop preferences for less sweet foods. To do so, serve children artificially sweetened foods only occasionally. In addition, offer foods with less added sugar; for example, serve fruit more often for dessert.

### **Suggestions for Other Health-Care Providers**

- Encourage patients and caregivers of young patients to develop positive dental health habits by following the suggestions listed in this section.
- Support local initiatives to fluoridate the community water supply, and to improve the nutritional quality of the local food supply. For example, encourage vendors to supply healthy alternatives in vending machines, encourage schools to provide healthy meals, encourage local grocery stores to offer high-quality fruits and vegetables, etc.

- Encourage routine, periodic visits to the dentist. These visits can help to prevent decay as well as allow for early detection and treatment when decay occurs. These visits also give dental staff the opportunity to involve patients in health education and decay prevention activities.

### Healthy Snack Ideas:

Fruits and vegetables cut up and served with low-fat dip  
Tortilla with melted cheese\*  
Low-sugar cereal\* with milk\*  
Cottage cheese with crushed pineapple  
Low-fat fruit yogurt  
Sliced apple with peanut butter\*  
Sliced turkey with a glass of orange juice\*  
Cucumber slices spread with cream cheese  
Cheese\* and crackers  
Graham crackers and chocolate milk

*\*Items available through the WIC Program*

***Remember that many local traditional foods  
may also be healthy snacks!***

## Food Pyramid

The US Department of Agriculture released the MyPyramid food guidance system ([www.mypyramid.gov](http://www.mypyramid.gov)) in 2005 as a replacement for the Food Guide Pyramid. MyPyramid is based on the 2005 USDA Dietary Guidelines for Americans (<http://www.healthierus.gov/dietaryguidelines/index.html>). Along with the new MyPyramid symbol, the system provides many options to help Americans make healthy food choices and to be active every day.

MyPyramid is broken into the following guidelines:

- Grains
- Vegetables
- Fruits
- Oils
- Milk
- Meat and Beans
- Physical Activity

General recommendations for each topic include the following:

Grains:

- Make half of all grains consumed whole-grains
- Eat at least three ounces of whole grain products every day
- Look for “whole” before the grain name on lists of ingredients

Vegetables:

- Eat more dark green vegetables
- Eat more orange vegetables
- Eat more dry beans and peas

Fruits:

- Eat a variety of fruit
- Choose fresh, frozen, canned or dried fruit
- Go easy on fruit juices

Oils:

- Make most of your fat sources from fish, nuts, and vegetable oils
- Limit solid fats like butter, stick margarine, lard, and shortening

Milk:

- Go low fat or fat-free
- If you can't consume milk, choose lactose-free products or other sources of calcium

Meat and Beans:

- Choose low-fat or lean meats and poultry
- Bake, broil, or grill (don't fry)
- Vary your choices with more fish, beans, nuts, peas, and seeds

Physical Activity

- Find a balance between food and physical activity
- Be physically active at least 30 minutes most days of the week
- Children and teenagers should be physically active at least 60 minutes every day, or most days

Additional details on the recommendations are available on the Web site. The site also contains links and educational materials for both consumers and professionals (<http://www.mypyramid.gov/professionals/index.html>). It is recommended that the reader explore these Web sites and download the various posters, PowerPoint presentations, and other resources to aid in your nutritional counseling for the dental patient.

### **Additional Resources**

ADA's position on soft drinks and oral health

[http://www.ada.org/prof/resources/topics/topics\\_softdrinks.pdf](http://www.ada.org/prof/resources/topics/topics_softdrinks.pdf)

ADA's information for the professional on diet and oral health:

<http://www.ada.org/prof/resources/topics/diet.asp>

ADA's consumer information on diet and oral health:

<http://www.ada.org/public/topics/diet.asp>

AAPD brochure on diet and snacking:

<http://www.aapd.org/publications/brochures/snacking.asp>

AAPD's Policy on Dietary Recommendations for Infants, Children, and Adolescents:

[http://www.aapd.org/media/Policies\\_Guidelines/P\\_DietaryRec.pdf](http://www.aapd.org/media/Policies_Guidelines/P_DietaryRec.pdf)

Dentalresource.org: <http://dentalresource.org/topic44nutrition.htm>

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### **XYLITOL**

Xylitol is a natural sugar alcohol that sweetens without causing decay. It actually inhibits caries formation. Below are some facts about xylitol.

- Xylitol is a naturally-occurring 5-carbon sweetener found in berries, fruits, vegetables, mushrooms, etc., and is even produced in the human body. It is also known as pentose, pentitol, polyalcohol, and polyol.
- The xylitol used in most products is produced from birch trees.

- Its taste is indistinguishable from sucrose and it is 40% less caloric.
- Slow absorption evokes low glycemic response.
- MS are unable to metabolize Xylitol. This prevents the bacteria from forming acids that cause caries.
- Xylitol enhances remineralization.
- Xylitol is unique among the polyols because it inhibits the growth of MS, thereby reducing caries susceptibility. Continued use of xylitol will help to reduce the number of bacteria in plaque.
- Xylitol is significantly more effective than other sugar substitutes in reducing the weight of plaque in the oral cavity. It also reduces the proportion of insoluble polysaccharides and increases the proportion of soluble polysaccharides present in plaque which results in plaque that is less adhesive.
- Regular use (5 to 10 grams per day) has been shown to reduce caries by 30 to 85%.
- Xylitol works well in conjunction with fluorides.
- Xylitol lowers the rate of otitis media in children (gum by 40%, syrup by 30%).
- Xylitol is safe and approved by the FDA for use as a food additive in “sugar-free” products since 1993.
- It is safe to use for diabetics since it does not raise blood sugar levels.
- Xylitol comes in a crystal form which gives a strong, pleasant cooling sensation when dissolved in the mouth.
- Xylitol gum is being used in Head Start programs as a preventive measure to help reduce caries formation.
- The US Army has found the evidence supporting Xylitol so compelling that it has added xylitol-containing chewing gum to all Meals Ready to Eat (MREs) and all base exchanges.
- Xylitol gum is effective when 3–5 pieces (each containing 1.6 grams or more of xylitol) are chewed daily for 5 to 15 minutes.
- Xylitol gum can be purchased online and at health food stores such as Wild Oats, and Whole Foods.
- Xylitol causes GI laxative effects at very high doses (over 50 to 70 grams per day).

The most fundamental difference between xylitol and other sweeteners is that xylitol reduces the amount of plaque and the virulence of MS in plaque. Xylitol functions as a modulator of the oral flora. Oral bacteria will not adapt to metabolize xylitol regardless of the duration of its use, so its benefits continue while it's being consumed and after xylitol

is no longer a part of daily use. This effect has been shown to persist for at least five years.

A study published in the Journal of Dental Research (March 2000) demonstrated significant reductions in the transmission of MS from mother to child as a direct result of the consumption of chewing xylitol-containing chewing gum by their mothers.

Soderling E. et al; J Dent Res 2000 Mar; 79(3)882-7:

- 169 mother-child pairs, 2 year study
- All mothers had high S. mutans during pregnancy
- Study group chewed 2–3 sticks of xylitol gum per day starting 3 months after delivery
- 2 control groups, 1 treated with chlorhexidine and 1 treated with fluoride varnishes at 6, 12, and 18 months post delivery
- At 2 years of age, 9.7% of the children of mothers in the xylitol group had detectable S. mutans levels compared with 28.6% in the chlorhexidine group and 48.5% in the varnish group
- Appears to work by selecting for S. mutans with impaired adhesion properties

A follow-up study published in the Journal of Dental Research looked at whether maternal consumption of sugar free chewing gum sweetened with xylitol could reduce the risk of dental caries in their children. Earlier published studies have demonstrated that prevention of colonization by these bacteria in early childhood can lead to reduction of dental decay and that mothers are the primary source of infection with MS. These bacteria are passed from mother to child through everyday contacts such as kissing and tasting of food.

Isokangas P et al; J Dent Res 2000 Nov;79(11):1885-9

- Follow-up of the same children in the previous study
- Examined annually out to 5 years by double-blinded examiner
- dmft of xylitol group at 5 years was 70% of that in the fluoride or chlorhexidine group

In study in which xylitol was placed in a reservoir in the pacifiers of one year old children (Aaltonen et al. Acta Odontol Scand. 2000 Dec; 58(6):285-92.), xylitol was shown to produce the following results:

- Reduced mutans strep infection by 16%
- Reduced caries to zero in test group ( $p < 0.001$ )
- Reduced otitis media by 19%–38%

IHS dental staff can easily implement a xylitol gum program by providing the gum to post-natal mothers as an indirect preventive method (to decrease the transmission of *S. mutans* from mother to child) or by providing the gum to a fixed group of children, such as Head Start, working in collaboration with the Head Start teachers.

Additional information about xylitol and its use in caries-prevention programs can be found at the following links:

[http://www.aapd.org/media/Policies\\_Guidelines/P\\_Xylitol.pdf](http://www.aapd.org/media/Policies_Guidelines/P_Xylitol.pdf)

<http://www.xylitol.org/>

<http://jada.ada.org/cgi/reprint/137/2/190> (you will need to be an ADA member to access this article)

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### **Early Childhood Caries**

Early Childhood Caries (ECC), formerly known as Baby Bottle Tooth Decay, presently affects as many as 50% of AI/AN children under age five. ECC is defined as dental decay of varying severity affecting at least two of the four primary maxillary anterior teeth of children under age three years and attributable to improper feeding practices. ECC encompasses a broader etiology with a wider range of interventions, and includes conditions such as rampant caries in posterior primary teeth.

ECC and its consequences are causes of major resource expenditures in the IHS Dental Programs. New approaches for the prevention and treatment of ECC must take into account the permissive behaviors in families. The prevention of ECC must be integrated with other health disciplines such as medical, mental health, and nutritional care in order to have a significant impact, because ECC occurs before most young children reach the dental clinic.

Virtually everyone can support initiatives to improve the health status of young children. ECC is an important dental health issue around which extensive, strong community-based HP/DP programs can be built.

### **Primary Prevention**

Recommendations for parents and caretakers:

1. Never put a child to bed with a bottle containing anything but water.
2. Do not let a child walk around or sit with a bottle during the day.
3. Teeth should be cleaned daily, beginning when they first erupt.
4. Start a child drinking from a cup no later than one year of age.
5. Encourage parents/caregivers to bring their child to the dental clinic by age 12–18 months for a check-up.

### Prevention Activities

The IHS Dental Program developed educational materials for parents and caregivers. *Stop Dental Decay Among Our Native American Children!* contains information about caring for children's teeth from ages one to five years, focuses on ways that parents/caregivers can take care of their children's teeth, and includes clinical primary intervention recommendations. CDC has also developed a manual entitled, *Preventing BBTD : A Comprehensive Training Program for Community Workers and Health Professionals*.

Dentists in the IHS, as well as private dentists in the community, should encourage parents to bring their children to the clinic at about age one year for a screening exam. This visit also provides an opportunity to discuss oral healthcare with parents and caregivers.

The following steps will provide assistance in implementing an ECC program:

1. Establish Baseline Prevalence of ECC in the Community

This measure will provide you with a means to measure your effectiveness and evaluate your program. It will also give you local data to generate support for the program. A community-based sample, such as WIC clinics, Head Start, or day care centers, is preferable to a dental clinic-based sample, because those who receive clinical services may not be a representative sample. On the other hand, if a large percentage of children receive oral exams in a clinical setting, this sample would suffice.

A visual examination is all that is required to determine if there are any carious lesions or restorations on the four maxillary primary anterior teeth. Most of the surveys to date have been conducted in Head Start centers using flashlights or overhead light where adequate. Only mirrors were generally used and there were no radiographs used.

To determine prevalence, count the total number of children screened and divide this number into the number of children with ECC. ECC is defined as two decayed, extracted, or restored teeth of the four maxillary anterior teeth. The resulting figure is the prevalence of ECC in your community.

To evaluate program effectiveness, examine the same-age children in the same setting in three to five years and compare your findings.

## 2. Select a Site Coordinator

Each potential site should select a suitable site coordinator, keeping in mind the central role and contribution that this person can make to the success of an ECC program. Characteristics of effective coordinators include enthusiasm, commitment, ability to motivate other people, and credibility among both the lay community and the health professionals. Each site also should consider obtaining training for the site coordinator from IHS to assure an acceptable level of knowledge about implementation of the program and to obtain technical assistance for the transfer of the program.

## 3. Obtain Support Contracts

You will need to contact several key persons in your community to get their support and cooperation. The best way to do this is to contact them on an individual basis. Written agreements of support for implementation of the ECC program from local political and health agencies are recommended. These agreements are not legally binding, but document a commitment within the political structure of the community. They are often used to inform the community about the benefits of the program.

## 4. Assemble a Task Force

The task force should be composed of policy-makers, parents, health workers, and other people who have the potential to make a substantial contribution to the program. The role of the task force is to “customize” the ECC program to the community, report on activities, plan future strategies, and evaluate the program’s success. The task force meets three to four times a year (more often during the early design stages of the program). Head Start, WIC, day care providers, and other local groups should be encouraged to participate.

## 5. Design a Program Plan

The program plan should be customized to the community and encourage the ongoing development of strategies and education materials tailored to the population. A budget should be developed as part of your program plan. The development of a program plan is largely a function of the task force.

The plan will be used primarily to monitor the success of the program within the community. An evaluation plan should include measurement of ECC prevalence and surveys of knowledge, attitudes, and behaviors of the caretakers of young children.

## 6. Develop an Evaluation Plan

### Additional Resources

CDC video training program: <http://www2.cdc.gov/phtn/catalog/bottle.asp>

AAPD Definitions, Oral Health Policies, and Clinical Guidelines:

[http://www.aapd.org/media/Policies\\_Guidelines/D\\_ECC.pdf](http://www.aapd.org/media/Policies_Guidelines/D_ECC.pdf)

[http://www.aapd.org/media/Policies\\_Guidelines/P\\_ECCClassifications.pdf](http://www.aapd.org/media/Policies_Guidelines/P_ECCClassifications.pdf)

[http://www.aapd.org/media/Policies\\_Guidelines/P\\_ECCUniqueChallenges.pdf](http://www.aapd.org/media/Policies_Guidelines/P_ECCUniqueChallenges.pdf)

ADA Statement on ECC

<http://www.ada.org/prof/resources/positions/statements/caries.asp>

ECC fact sheet: <http://www.mchoralhealth.org/PDFs/ECCFactSheet.pdf>

ASTDD best practices:

<http://www.astdd.org/bestpractices/pdf/DES51002VTbbtdprogram.pdf>

Journal of the California Dental Association. *Causes, Treatment and Prevention of Early Childhood Caries: A Microbiologic Perspective*

<http://www.cda-adc.ca/jcda/vol-69/issue-5/304.html>

## Risk-Based Periodontal Disease Prevention and Treatment

### Background

The effective treatment of periodontal disease in a public health setting has always been challenging. Recent advances in the understanding of periodontal diseases are offering new opportunities for prevention and treatment using a public health approach. Natural history studies have revealed the presence of individual periodontal risk differences within populations. Individuals with similar levels of periodontal risk can be placed in subgroups. Subgroups with high periodontal risk generally involve a relatively small percentage of the total population. Moderate-risk subgroups are quite large, accounting for the majority of any population. Factors that increase the risk of periodontal breakdown are now well known. Individuals who smoke and those who suffer from diabetes, immune suppression diseases, and certain blood dyscrasias are all at high risk for periodontal disease. Some individuals may fall into the high-risk category simply because they inherit an immune system that is less than efficient in managing the periodontal disease pathogens or the inflammatory processes these bacteria produce. There is also evidence that periodontitis and its associated systemic inflammation increases risk for several chronic illnesses such as diabetes mellitus, cardiovascular diseases, and certain respiratory conditions, as well as increasing risk for adverse pregnancy outcomes.

A better understanding of the effects of so called “scaling and root planing” (S/RP) has occurred in recent years. Many synonymous, and perhaps confusing, terms are used today to describe the S/RP activity. Some clinicians refer to S/RP as deep scaling, pocket debridement, cavitroning, or ultrasonic cleaning. However, probably the best description is root debridement. Regardless of its name, the process of removing all soft and hard debris from the root surfaces, even if it is done without perfection, results in greatly enhanced periodontal health. Removing or even disturbing subgingival plaque and calculus deposits causes a dynamic interactive process that involves bacterial recolonization, activation of the immune system (particularly specific circulating antibodies), and initiation of wound healing.

New chemotherapeutic agents have been developed as adjuncts to periodontal treatment, including subgingival irrigation with anti-infective agents such as chlorhexidine and locally delivered resorbable antibiotics. These agents can improve the success of S/RP, improve nonresponding sites, and prolong the period of gingival health between cleaning sessions.

## **Purpose**

The purpose of this clinic manual is to describe diagnosis and treatment methods which combine population-based periodontal disease risk assessments with current treatment technologies. The methods described in this manual prioritize care delivered to a population by targeting individuals with the highest risk for periodontal breakdown. High-risk individuals will receive the most intensive therapy and follow-up. Care will be provided to moderate-risk or advanced disease individuals based on the resources available to the treating staff and facility. *Note: The system of prioritized periodontal treatment delivery described in this manual assumes that all dental staffs are capable of providing the treatment needs associated with CPITN/PSR scores of 0 through 3 for all patients receiving examinations in their clinics.*

## **I. Early Disease Assessment and Treatment**

### **A. Periodontal Disease Assessment (CPITN 0 to 3)**

At each initial examination appointment (0150) and at least annually, the periodontal status should be assessed. The diagnosis and risk assessment of individuals will be based on the Community Periodontal Index of Treatment Needs (CPITN)/Periodontal Screening and Recording (PSR). A brief outline of CPITN/PSR scores and corresponding diagnoses is shown below:

- American Academy of Periodontology and Community Periodontal Index of Treatment Needs (CPITN)
- Classification of Periodontal Diseases and Conditions

Classification of Periodontal Disease	Conditions	CPITN
Periodontal Health	None	<b>0 - Periodontal Health</b>
Gingivitis/Gingival diseases	No pockets, bleeding on probing A. Dental plaque-induced gingival diseases B. Non-plaque-induced gingival lesions	<b>Sextant Scores of 1 and 2</b> <b><i>Bleeding on probing, and/or calculus or restoration overhang present</i></b>
Chronic Periodontitis A. Localized B. Generalized (> 30% of sites are involved) <b>Example:</b> Two sextants of CPITN of 4 could be "localized chronic periodontitis" and maybe three or more sextants would be "generalized chronic periodontitis"	<u>Age Distinction:</u> Was described as adult onset periodontitis, in people older than 35 years. <u>Severity of Disease:</u> <u>Slight:</u> 1-2 mm clinical attachment loss (CAL *); (3-4mm pockets, < 30% bone loss) <u>Moderate:</u> 3-4 mm CAL; (4-6mm pockets, < 50% bone loss) <u>Severe:</u> ≥5 mm CAL; (≥ 6mm pockets, > 50% bone loss) <b>Written Diagnosis:</b> <b>Use the descriptors localized or generalized depending on the distribution of sextant scores, and severity of disease.</b> <i>Examples:</i> <i>Generalized slight chronic periodontitis</i> <i>Generalized slight, locally severe chronic periodontitis</i>	<b>Sextant Score of 3 to 4</b> <b><i>CPITN- 3 = 3.5 – 5.5 mm probing depth</i></b> <b><i>-4 = ≥ 6mm probing depth</i></b> <u>Severity of Disease:</u> <u>Slight – CPITN of 3</u> <u>Moderate – CPITN of 3</u> <u>Severe – CPITN of 4</u>
Aggressive Periodontitis A. Localized B. Generalized (> 30% of sites are involved)	<u>Age Distinction:</u> Usually described as early onset < 35 years of age or rapidly progressing <u>Severity of Disease</u> (same as above): <u>Slight:</u> 1-2 mm CAL; (3-4mm pockets, < 30% bone loss) <u>Moderate:</u> 3-4 mm CAL; 4-6mm pockets, < 50% bone loss <u>Severe:</u> ≥5 mm CAL; ≥ 6mm pockets, > 50% bone loss <i>In the world of oral epidemiology, any pocket depth ≥6mm is considered a "deep pocket" with advanced or severe periodontal disease.</i> <b>Written Diagnosis Example:</b> <i>Localized Severe, Aggressive Periodontitis</i>	<b>Sextant Score of – 3 to 4</b> <b><i>CPITN - 3 = 3.5 – 5.5 mm probing</i></b> <b><i>-4 = ≥ 6mm probing depth</i></b> <u>Severity of Disease:</u> <u>Slight – CPITN of 3</u> <u>Moderate – CPITN of 3</u> <u>Severe – CPITN of 4</u>
Periodontitis as a Manifestation of Systemic Diseases	A. Associated with hematological disorders (neutropenia, leukemia) B. Associated with genetic disorders (Down's, histiocytosis) C. Not otherwise specified	

Classification of Periodontal Disease	Conditions	CPITN
<b>Necrotizing Periodontal Diseases</b>	<u>Necrotizing Ulcerative Gingivitis (NUG)</u> – gingival disease...does not extend into periodontal attachment. <u>Necrotizing Ulcerative Periodontitis (NUP)</u> - extending into periodontal attachment	
Abscesses of the Periodontium	A. Gingival abscess B. Periodontal abscess C. Pericoronal abscess	
<b>Periodontitis Associated With Endodontic Lesions</b>	Combined periodontic-endodontic lesions	
<b>Developmental or Acquired Deformities and Conditions</b>	A. Localized tooth-related factors that modify or predispose to plaque-induced gingival diseases/periodontitis B. Mucogingival deformities and conditions around teeth C. Mucogingival deformities and conditions on edentulous ridges D. Occlusal trauma	

\* Clinical Attachment Loss, obtained by adding recession from the CEJ to probing depth (or subtracting if a pseudopocket).

Remember, the CPITN does not recognize recession and clinical attachment loss. A patient could have generalized severe periodontitis with 70% bone loss and mobile teeth, but 3mm or less pocket depths due to recession. CPITN scores could look like: X / 2 / 2 because probing depths are shallow. 2 / 2 / X

For additional information on periodontal classifications, contact the American Academy of Periodontology at [www.aap.org](http://www.aap.org).

In addition to clinical descriptions, the CPITN also provides standard treatment requirements for each score of 0 through 3. Standard treatments exist for these minimal disease scores because the treatment needs are relatively simple. With appropriate treatment and patient home care, CPITN scores of 1, 2, and 3 can be returned to 0 (periodontal health). The following describes the treatment needs associated with CPITN scores of 0 through 3:

CPITN SCORES	Treatment Needs
0	Promote self-assessment skills
1	Oral hygiene instructions (ohi)
2	OHI + ultrasonic cleaning/overhang removal
3	OHI + Ultrasonic cleaning



## **B. Treatment (CPITN 0 to 3)**

Standardized treatment needs have been established for the minimal periodontal disease conditions described by CPITN scores of 0 through 3. These standardized treatments have been found to be helpful guides to dental auxiliaries who often are assigned the task of providing the basic periodontal care associated with low CPITN scores.

### **1. Self-Assessment — CPITN Score 0**

Self-Assessment is a method taught to patients that enables them to determine the status of their own oral health. The self-assessment techniques most commonly used focus on the identification of gingival bleeding as an indicator of the presence of gingival and/or periodontal disease.

### **2. Oral Hygiene Instructions (OHI) — CPITN Scores >1**

Oral hygiene instructions should include individualized patient education with emphasis on plaque and bleeding self-assessment, use of cleaning devices (toothbrushes, proxabrushes, rubber tips, floss and floss aids) and in some cases, the home use of chemotherapeutics and irrigators.

The cornerstone of oral hygiene instructions is teaching the proper use of the toothbrush. A sulcular brushing technique, the Modified Bass Technique, is suggested as the standard for OHI.

Once toothbrushing competence has been achieved, techniques for interproximal cleaning can then be taught. The use of rubber tips and proxabrushes (where possible) should be emphasized. The mastery of dental flossing is difficult. Flossing aids may be indicated to improve compliance and effectiveness.

### **3. Ultrasonic Cleaning — CPITN Scores 2 to 3**

In recent years, research has lead to a great improvement in the understanding of the biological effects of traditional S/RP. Due to this greater knowledge, a revolution has occurred in the approach, methods, and instrumentation used in nonsurgical periodontal therapy. Studies have demonstrated that root surfaces do not need to be meticulously scraped or planed to remove “infected cementum and dentin.” *The goal of periodontal root debridement currently is to simply remove all hard and soft debris from the roots.* This task can be most easily accomplished through the use of ultrasonic instruments. Dental researchers have compared traditional hand instrumentation with sonic and ultrasonic instruments. The conclusion is that both instruments produce

similar results with regard to crown and root debridement and improvements in the health of periodontal tissues. However, it is generally conceded that sonic and ultrasonic instruments are faster and easier to use than hand instruments. Further, technologic advances have greatly reduced the size of many ultrasonic tips, which are now capable of functioning in deep pockets and able to reach into small defects, irregularities, and furcations that a hand instrument cannot reach.

#### IV. Advanced Disease: Risk Assessment and Treatment

##### A. Risk Assessment (CPITN 4 or Deep Pockets)

Once CPITN scores reach 4 (pocket depths  $\geq 6$  mm in a sextant), it is certain that periodontal attachment loss has occurred. Pocket depths of 6 mm or greater are generally considered to be deep pockets. Deep pockets suggest advanced or advancing disease. For a small percentage of any given population, deep pockets occur earlier in life (before age 35). An assessment system was developed which includes *both disease severity and age* to establish risk for disease. A model for risk assessment, using CPITN and age, is presented below:

Population Periodontal Treatment Needs Using CPITN			
CPITN SCORES	Treatment needs		
0	OHI		
1	OHI		
2	OHI and prophyl		
3	OHI and prophyl		
$\geq 4$	AGE DETERMINES RISK CATEGORY		
Deep Pockets	14 – 35 YEARS <b>HIGH RISK</b> OHI High Intensity, Non-Surgical Chemotherapy Active Recall	36 – 59 YEARS <b>MODERATE RISK</b> OHI Closed or Open Root Debridement Recall as Resources Allow	$\geq 60$ YEARS <b>LOW RISK</b> OHI Closed Root Debridement Recall as Resources Allow

Dental managers who wish to address the advanced periodontal disease in their treatment population can utilize this model to target high-, moderate-, and low-risk groups for care. Patients at high-risk can be prioritized for treatment. *Young individuals with advanced disease are at the highest risk for tooth loss and therefore should be given the highest priority for treatment.* Another important advantage this model affords is that dental managers, considering their resources, i.e., facility and staff size, can rationally control the access of advanced disease patients to their clinic(s).

## 1. High-Risk Patients

Population Periodontal Treatment Needs Using CPITN			
CPITN Scores	Treatment Needs		
0	OHI		
1	OHI		
2	OHI and prophy		
3	ohi and prophy		
≥4	AGE DETERMINES RISK CATEGORY		
Deep Pockets	14 – 35 YEARS HIGH RISK OHI High Intensity, Non-Surgical Chemotherapy Active Recall		

### a. Assessment of High-Risk Patients

Age and severity parameters for high-risk individuals were established using available epidemiologic studies and the American Academy of Periodontology's definition of early onset periodontal diseases, now known as Aggressive Periodontitis. Therefore, any individual 14–35 years of age with one or more site of CPITN scores of 4 would be determined to be at high-risk for periodontal disease. The high-risk assessment criterion is designed to identify attachment or bone loss on individuals within the 14–35 age range.

*Note: It is possible that people who are older than 35 years of age can also be categorized as high-risk. Episodic dental users with aggressive periodontitis may not have received a dental examination until after age 35. At 36–45 years of age for example, these high-risk individuals, who have not received routine treatment, would be expected to have generalized advanced bone loss and perhaps some missing teeth. Likewise, older individuals (age 36–45) who suffer rapid bone loss, such as uncontrolled diabetics and heavy smokers, should also be included as high risk. Untreated high-risk people will lose many of their teeth in the third and fourth decade of life.*

### b. Oral Hygiene Instructions for High-Risk Patients

Although oral hygiene instructions are an essential element of overall periodontal treatment, positive oral hygiene behavior changes often do not result. However, if the intent of this risk-based periodontal disease treatment approach is to prioritize care for those who need it most (i.e., high-risk individuals), then it makes sense to offer the best and most intense therapy possible. This also applies to oral hygiene instructions. For

high-risk individuals, a high-intensity oral hygiene program should be provided.

**Patient Revisits:** An evaluation of the patient's oral home care is essential at each dental visit. Based on this evaluation, the high-intensity oral hygiene program may have to be repeated. However, as the patient becomes aware of the information provided and oral hygiene improves, many of the steps above may be skipped at the recall visit.

### c. Treatment for High-Risk Patients

Treatment should be based on a high-intensity, nonsurgical approach using adjunctive systemic antibiotic therapy. Emphasis should be placed on the use of ultrasonic rather than hand instruments. Frequent, periodic root debridement should be the goal. Local anesthetics will frequently be required for the adequate cleaning of deep pockets (CPITN 4) with ultrasonic instruments. The use of local or topical gel anesthetics may not be required for subsequent recall cleaning visits if root surfaces are relatively free of deposits.

**Root Debridement Procedure:** Cleaning all root surfaces is the most important aspect of nonsurgical periodontal therapy. Removing plaque and calculus from subgingival areas has challenged dental providers since plaque was determined to cause gum disease, over one hundred years ago. Dental researchers in the last four decades have repeatedly documented the difficulty of removing soft and hard debris from root surfaces that are irregularly shaped and cannot be visualized. The effectiveness of instrumentation during root debridement decreases progressively with increasing pocket depths. Maintaining sharp curettes, obtaining secure finger rests, activating the appropriate instruments at the correct angles, and cleaning all root surfaces are some of the major obstacles that must be overcome in traditional hand root planing. Obviously, the success of hand instrumentation is determined largely by the skill level of the operator. In order to provide hand-instrumented periodontal services to a large population, it is necessary to have many highly-skilled providers. This requirement is not achievable for many publicly-funded programs.

Fortunately, technology has produced and constantly improved the sonic and ultrasonic instruments. With advances in these instruments and our current understanding of root debridement, ultrasonic machines can virtually replace hand instruments. Ultrasonic instruments offer many advantages over hand instruments. Most importantly, they require less skill to master, they require less time to effectively debride roots, produce less hand fatigue for the operator and do not need to be sharpened. Training in the ultrasonic method of root debridement is definitely required, but much less practice time is needed to master the skill.

**Technique:** *The use of ultrasonic instruments is recommended for high-risk patients. Frequently, local anesthetic is required for initial subgingival cleaning procedures.* However; subsequent recall procedures, which do not include heavy calculus removal, can usually be accomplished without local anesthetic. The working tip of the ultrasonic instrument should be applied to the tooth surface in small erasing or scribbling motions. The debridement process should begin at the coronal aspect of the tooth, moving gradually to the most apical area of the pocket. Care must be taken to assure that all crown and root surfaces of each tooth are touched by the instrument. The last few millimeters of the instrument tip must always remain in motion and in contact with the tooth surface. Do not put the point of the tip on the root surface, however, as it can damage the root. Very little force should be applied to the instrument. It is also important that the instrument tip of any sonic or ultrasonic instrument never be directed “end-on” to the tooth surface. Following the initial use of the ultrasonic instrument during the procedure, the operator should carefully re-examine all crowns and roots with a periodontal probe, pig-tail explorer, or other suitable instrument to assure that the surfaces are free of hard and soft debris. Any remaining deposits can be removed with either the ultrasonic instrument or hand instruments.

**Irrigation:** Irrigating or lavaging anti-infective agents into the most apical aspects of periodontal pockets helps to eliminate resistant anaerobic organisms. They serve as an adjunct to the cleaning process by improving the healing response and delaying bacterial recolonization of the periodontal pockets. These agents can be employed in conjunction with the coolant spray of certain ultrasonic scaling units or as a separate subgingival irrigation procedure following the ultrasonic cleaning. It appears that the exposure time of the anti-infective agents to the subgingival bacteria is critical for the success of the procedure. *Studies have demonstrated a minimum of 5–10 minutes of constant lavage or exposure is required to produce the desired effect.* When an anti-infective agent is used with the ultrasonic instrument, the minimum exposure time is automatically achieved. Hand irrigation, conducted as a separate procedure, does not appear as effective. The chemotherapeutic agent currently recommended is a prescription mouthrinse with 0.12% chlorhexidine (CHX).

**Systemic Antibiotics:** Antibiotics should be considered for use on high-risk periodontal patients during the initial cleaning visits. The purpose of systemic antibiotic usage is to optimize healing and reduce the chances of re-infection of the periodontal pocket. Systemic antibiotics do this by eliminating periodontal pathogens that have penetrated gingival tissues. Their use should be considered during the initial cleaning visits on any high-risk individual 14–35 years of age who has two or more sextants of CPITN 4 scores. If no health related contraindications exist, antibiotics should be prescribed to high-risk individuals for a period of 7–21 days.

During this period of time the entire mouth should be thoroughly cleaned, usually over two appointments. Antibiotic use without full mouth root debridement is of very little benefit. The antibiotic recommended for routine use is doxycycline. Doxycycline is a long-acting tetracycline that is effective against most periodontal pathogens (Gram negative facultative and anaerobic rods) and also acts as an enzyme suppressant so there is less collagen breakdown. Doxycycline, because of its long-term action, requires the patient to take only one or two capsules each day, thus enhancing patient compliance. Doxycycline is also relatively inexpensive since it is a generic drug. Doxycycline should be prescribed as follows:

- Rx: Doxycycline 100 mg
- Disp. 42 capsules
- Sig. 1 capsule twice a day until all are taken.

If Doxycycline cannot be given, or if a refractory disease condition exists, Augmentin 500 mg can be substituted in those not allergic to penicillin or amoxicillin. Augmentin should be taken three times per day, and the prescription should read:

- Rx: Augmentin 500 mg
- Disp: 30 capsules
- Sig: 1 capsule q. 8 hours until all are taken.

A third antibiotic regimen includes the use of both amoxicillin and metronidazole, which is particularly effective in those under 20 years of age:

- Rx: Amoxicillin and Metronidazole, 250mg of each
- Disp: 24 tabs of each
- Sig: 1 tab each every 8 hours until all are taken.

Systemic antibiotics can be helpful in achieving maximum results from the initial patient debridement. However the benefits of systemic antibiotics in this usage scheme must be weighed against their associated problems. Frequent antibiotic use can promote resistant bacterial strains. Antibiotics often cause significant side effects such as allergic reaction, nausea, diarrhea, upset stomach and fungal overgrowths. It is therefore recommended that systemic antibiotics be administered to high-risk individuals only during the initial debridement process. Antibiotics need not be prescribed again during recall cleanings unless a refractory condition exists. The frequency of antibiotic use in conjunction with subsequent debridement has not been established. Therefore, repeating the use of systemic antibiotics will remain a professional judgment decision until studies provide sound guidelines.

#### d. Recall for High-Risk Patients

High-risk periodontal patients will require frequent individualized recall throughout their lives. Recall appointment intervals should be from 1 to 6 months, based on the patient's individual needs. Maintenance appointments should emphasize OHI, subgingival cleaning, use of anti-infective agents, follow-up pocket depth measurements, and encouragement of home care. In addition, high risk individuals may also be targeted for informational mailings regarding their risk for periodontal disease and need for frequent dental visits.

*Recall or maintenance care is the key to the success of the periodontal disease prevention and treatment program.* High-risk periodontal patients must be identified and continuously followed. This will require a significant effort in establishing and maintaining a high-risk patient register.

### 2. Moderate-Risk Patients

Population Periodontal Treatment Needs Using CPITN			
CPITN Scores	Treatment Needs		
0	OHI		
1	OHI		
2	OHI and prophy		
3	ohi and prophy		
≥4	AGE DETERMINES RISK CATEGORY		
Deep Pockets	14 – 35 YEARS <b>HIGH RISK</b> OHI High Intensity, Non-Surgical Chemotherapy Active Recall	36 – 59 YEARS <b>MODERATE RISK</b> OHI Closed or Open Root Debridement Recall as Resources Allow	

#### a. Moderate-Risk (or Advanced Disease)

Once the needs of the high-risk group have been addressed, the dental manager can consider the formidable task of treating individuals from the moderate-risk category. The moderate-risk group can be expected to make up 70–80% of any given population. Unlike high-risk people, individuals with moderate-risk will likely retain a functional dentition (20 or more teeth) for most of their lives. Studies have shown that while the moderate-risk people will retain 20 or more teeth, they will also develop deep periodontal pockets in the 4th, 5th, and 6th decades of life. Longitudinal tooth loss studies indicate that moderate-risk individuals will experience some tooth loss, usually maxillary and mandibular second and first molars, followed by incisor teeth. While the definition of a functional dentition describes a minimal masticatory ability, it is somewhat misleading,

because it fails to account for the likely presence of advanced periodontitis. Clearly, individuals with moderate risk for periodontal disease will present with periodontal treatment needs in the second half of their lives.

#### b. Treatment for Moderate-Risk (or Advanced Disease) Patients

Due to the slower rate of periodontal disease progression in moderate-risk individuals, the treatment approach can be less intense than that provided to the high-risk patient. Under this model, less frequent recall would be required of the moderate-risk patients. However, the goals of treatment (root debridement and oral hygiene maintenance), are the same for both the high-and moderate-risk groups. For many patients, twenty-five or thirty years of poor oral hygiene, subgingival calculus accumulation, and untreated disease have resulted in only moderate bone loss. For these somewhat periodontal disease-resistant patients, one or two appointments for thorough supra- and subgingival cleanings will provide dramatic reductions in the progression of periodontal breakdown. The benefits of the periodontal debridement will be long-lasting due to the slow reformation of plaque retentive features (calculus) and harmful bacteria.

*The usual approach to treatment of moderate-risk patients is closed (non-surgical), subgingival root debridement.* Local or topical gel anesthetic is usually indicated to assure patient comfort and allow for thorough root debridement. An alternative to local is topical anesthesia, such as use of a lidocaine and prilocaine gel delivered into the sulcus (i.e. Oraqix®).

#### c. Recall for Moderate-Risk Patients

Dental research has established that periodontal health can be maintained through continuous 3-month professional prophys. However, this research does not account for individual periodontal risks. For moderate-risk patients, it is reasonable for the dental provider to consider recall intervals longer than three months. Six month, annual, or even longer recall visits may be prescribed, based on the patient's individual needs, clinic resources, and program priorities. Again, the moderate-risk group accounts for the majority of any population. Therefore, it is doubtful that many publicly-funded program would have the resources necessary to provide three-month recalls to the entire moderate-risk group.

### 3. Low-Risk Patients

Population Periodontal Treatment Needs Using CPITN	
CPITN Scores	Treatment Needs
0	OHI
1	OHI
2	OHI and prophy
3	OHI and prophy



Population Periodontal Treatment Needs Using CPITN			
CPITN Scores	Treatment Needs		
≥4	AGE DETERMINES RISK CATEGORY		
Deep Pockets	14 – 35 YEARS <i>HIGH RISK</i> OHI High Intensity, Non-Surgical Chemotherapy Active Recall	36 – 59 YEARS <i>MODERATE RISK</i> OHI Closed Root Debridement Recall as Resources Allow	≥60 YEARS <i>LOW RISK</i> OHI Closed Root Debridement Recall as Resources Allow

**Low-Risk Patients:** Members of the low periodontal disease risk group are a fortunate few. Despite 40 or more years of exposure to oral bacteria, these individuals have either failed to develop periodontal breakdown or their attachment and bone loss is minimal. *Indeed, true low-risk people will probably never develop deep pockets.* This fact essentially eliminates this group as a risk group. Therefore, the final working periodontal risk model can be reduced to the following:

Population Periodontal Treatment Needs Using CPITN		
CPITN Scores	Treatment Needs	
0	OHI	
1	OHI	
2	OHI and prophy	
3	OHI and prophy	
>4	AGE DETERMINES RISK CATEGORY	
Deep Pockets	14 – 35 YEARS <i>HIGH RISK</i> OHI High Intensity, Non-Surgical Chemotherapy Active Recall	36 YEARS and OLDER <i>MODERATE RISK or ADVANCED DISEASE</i> OHI Closed Root Debridement Recall as resources allow

## Summary

The intent of the Risk-Based Periodontal Disease Treatment model is to provide the dental public health provider with a rational approach for identifying and prioritizing periodontal treatment within a population. This model uses CPITN/PSR scores and age for predicting periodontal risks and treatment priorities. High-risk individuals should receive the highest priority for care. Generally, treatment is based on root debridement, anti-infective agents, and periodic recall. Ultrasonic instruments are utilized due to their efficiency and ease of operation. Chemotherapeutics, such as mouthrinses, irrigants, and local and systemic antibiotics, are suggested for those at high risk for periodontal disease. Special efforts should be taken to educate high-risk patients concerning their disease risk and self-care and treatment needs. High-risk individuals should also receive every

opportunity for frequent and continuous recall. Moderate-risk or advanced disease patients will receive less intense treatment and recall. The ability to treat moderate-risk or advanced-disease individuals from a given population or community should be a priority for local dental providers.

### **Periodontal Disease Treatment Protocol for Individuals with Type 2 Diabetes Mellitus (DM)**

The following treatment protocol has been developed, based upon the findings of the periodontal disease clinical trial conducted on Pima Indians with Type 2 DM and longitudinal data at the Periodontal Disease in Diabetics Model Program sites.

#### **I. Dental Examination**

A thorough dental examination should be conducted on each patient. Bite-wing and panographic radiographs should be obtained as a minimum requirement. Additional x-rays can be taken as needed. A complete medical history should also be taken at this time to determine health status, including the presence of an established diagnosis of Type 2 DM.

**Periodontal evaluation:** The CPITN or the Periodontal Screening and Recording (PSR) index should be used to determine the periodontal status during each dental examination. The deepest pocket in each sextant should be identified and recorded. *The treatment protocol should be implemented on all consenting dental patients who present with both of the following conditions:*

- Type 2 DM
- CPITN scores of 4 in *two or more* sextants

A determination should also be made at this time of teeth with a hopeless periodontal prognosis. Hopeless teeth are those that are visibly depressible and/or have bone loss to one or more root apices. Hopeless teeth can be removed at the appropriate time during treatment, including during the initial debridement procedure.

#### **V. Dental Treatment Planning**

The priority of dental treatment is an important element of the overall treatment plan. Emergency or acute disease obviously takes precedence over chronic conditions. However, once the acute problems have been addressed, it is often difficult to establish a rank order of treatment priorities. Balancing chief complaints, chronic conditions, prosthetic needs, and clinic resources can challenge the dental provider's treatment planning skills.

For individuals who qualify for the periodontal disease treatment protocol, i.e. diabetics with two or more sextants of CPITN score of 4 and evidence of inflammation/infection, the following treatment planning order of priority should be followed:

1. Emergency Care (trauma, acute pain and infections, etc.)
2. Control of rampant caries and Imminent Pulpal Involvement
3. Initial Periodontal Therapy (full mouth treatment)
4. Restorative Treatment
5. Elective Surgical Treatment (3rd molars, perio, etc.)
6. Prosthetics
7. Other Higher Levels of Care

## **VI. Initial Periodontal Treatment**

The periodontal treatment protocol for dental patients with Type 2 DM uses a combination of non-surgical instrumentation (ultrasonic) with a systemic antibiotic and anti-infective agent irrigation. The protocol calls for two half-mouth treatment sessions which are usually scheduled one hour per session. A description of the treatment protocol follows:

### **A. Piezon Master Set-Up**

The EMS Piezon Master® will serve as the standard ultrasonic instrument for this treatment protocol.

#### **1. Preparation of Irrigant Solution:**

Chlorhexidine (CHX) solution:

Use 0.12% chlorhexidine as the irrigant of first choice. Place the chlorhexidine in the plastic irrigant bottle provided with the Piezon Master. Fill the bottle approximately 3/4 full. *CHX should be used full strength and never diluted.* (The 0.12% chlorhexidine is FDA-approved at a minimum effective concentration.)

2. **Plug in the Piezon Master and turn on switch on the back of the machine. Be sure the selector switch found on the right side of the Piezon Master is in the scaling/irrigating position. Place the plastic bottle containing the irrigating solution into the receptacle on the top of the machine and with a gentle clockwise 1/4 turn lock the bottle into position. Use high power settings for the Piezon Master (approximately  $\geq$  3/4 maximum settings).**

### **B. Initial Treatment Procedure**

#### **1. Oral Hygiene**

Oral hygiene instructions should be given, emphasizing the use of a soft bristle brush and rubber tip. A brush and rubber tip should be given to the patient at this time. For patients with sufficient interproximal space, interproximal brushes may be demonstrated and provided. Oral hygiene instructions should be introduced gradually so that the patient is not overwhelmed by too much information. Simple techniques of brushing and rubber tipping can be introduced initially while more advanced home care instructions, such as proxabrush and floss use, can be taught at subsequent visits.

- 2. Set up the Piezon Master and have a mirror, explorer, and probe available.**
- 3. Anesthetize upper and lower quadrants on the same side of the mouth.**
- 4. Begin from the distal of the last tooth and continue to the midline. Use nerve blocks or regional anesthesia as appropriate. Once the anesthetic from these injections has taken effect, inject every interdental papilla. For routine anesthesia, use xylocaine with 1:100,000 epinephrine. Other anesthetics can be utilized, as indicated by existing patient health conditions.**
- 5. Half mouth periodontal charting is provided if not already obtained at the oral exam      appointment.**
- 6. Initial Ultrasonic Debridement**

The Perio Regular “P” tip should be selected and placed on the Piezon Master handpiece for the initial debridement procedure. The “P” tip should be considered the universal operating tip for subgingival use.

Note: During operation, the Piezon Master moves the instrument tip in a linear, back-and-forth motion. For this reason, the Piezon Master tip is effective only when the thin, blade-like edge of the tip is applied to the tooth surface. This is unlike the magnetostrictive instruments, such as the Dentsply Cavitron®, which moves its instrument tip three-dimensionally, or in all directions.

Start on the distal of the most posterior tooth of the given quadrant and proceed around the buccal aspects and interproximals to the midline with the Piezon Master. In the deep, inflamed pockets place the tip of the instrument apically along the axis of the tooth until bony resistance is felt. You should feel the osseous tissue and the contours of the tooth as this process occurs. This aggressive,

deep cleaning ensures more effective removal of deep subgingival calculus as well as infected pocket lining. Debride all surfaces carefully. Although the procedure emphasis is on root debridement, all supragingival calculus should also be removed. Repeat the ultrasonic debridement from the lingual. In the deep, inflamed pockets, granulation tissue, pocket epithelium and plaque will be removed and the interdental papilla may be released. In the shallow to moderate depth pockets, it is important to go to the depths of the pocket and completely (360°) around each tooth to remove all plaque and calculus in the lateral and apical projections of the pockets.

**7. Check all surfaces for smoothness and hardness.**

**8. Final Ultrasonic Debridement**

- a. Debride with the Piezon Master Perio Slim Tip PS using irrigating solution, approximately 30 seconds per tooth, from the buccal and the lingual as in the initial debridement. Concentrate on those areas that feel rough upon root surface testing. The total ultrasonic debridement (initial and final) per two quadrants may require refilling of the irrigant bottle.
- b. If the interdental papillae become detached as a result of the debridement procedure, simple pressure on both sides of the papilla (forcing the buccal and lingual papillae back into their natural positions) for several minutes may be all that is necessary. However, for severe displacement of the papillae, suture the buccal and lingual papilla over the interproximal bone with a single interproximal suture. Use 3-0 or 4-0 suture material with no periodontal dressing.
- c. All overhangs should be removed at this time with the dental handpiece and a flame-shaped or other appropriate bur.

**9. Extract all periodontally hopeless teeth at this time.**

**C. Postoperative Care**

**1. Patients should be given doxycycline 100 mg twice a day for 21 days.**

Note: It is essential for patients to be scheduled to receive their second half-mouth initial treatment during the 21-day period while taking the systemic antibiotics. If there is a possibility of a missed second appointment, start the antibiotic at the second treatment appointment. If the patient's blood sugar is well controlled, gingival inflammation is mild, and there are just a few, isolated deep pockets, doxycycline does not have to be prescribed.

It is often helpful to make the patient two, one hour treatment appointments following the dental examination. The two appointments should be within a 21-day period of time. Anywhere from one to seven days is ideal. This will allow both treatment sessions to occur during the course of antibiotic coverage.

2. **The patient should rinse 2 times per day with 30 ml of CHX solution for two weeks after each debridement procedure.**
3. **Patients should be given appropriate over-the-counter (OTC) analgesics (ibuprofen 400 mg, acetaminophen 650 mg, etc.) either before or immediately after the debridement procedure(s). A seven-day supply of these analgesics should also be prescribed to the patient. For patients with lower pain thresholds or in those whom more extensive pain is anticipated, a stronger drug can be prescribed, such as acetaminophen with hydrocodone or codeine.**
4. **Post-operative emergencies**

Treat abscesses with incision and drainage and local irrigation with povidone iodine (10%) and H<sub>2</sub>O<sub>2</sub>. As an alternative, a small open-flap surgical procedure can often be helpful in gaining access to the affected tooth root as well as encouraging drainage. Do not use systemic antibiotics unless the patient is febrile.

## **VII. Continuous Periodontal Therapy (Recall)**

Results of the Gila River Indian Community periodontal disease clinical trial indicate that patients will experience periodontal improvements, i.e., attachment gains, pocket depth reductions, reduced gingival bleeding, etc., for up to six months following the initial debridement procedure(s). Therefore, all patients who are receiving the diabetes/periodontitis treatment protocol should be recalled six months following their initial periodontal treatment. According to the study results, the six-month post-treatment period marks the beginning of harmful bacterial recolonization of the periodontal pockets in Type 2 DM patients. It is at this time periodontal treatment should intervene, by again removing and/or destroying the subgingival periodontal pathogens. *Continuous six-month treatments should maintain the diabetic patients' periodontal health.*

### **A. Six-Month Recall and Periodontal Examination**

At the first six-month visit, and at all subsequent six-month recalls, a periodontal pocket assessment must be conducted in all sextants. Using the CPITN, the deepest pockets must be identified and recorded in each sextant. *The extent of treatment will be based on the presence or absence of deep pockets.* Deep pockets are defined as CPITN scores = 4 (i.e.,  $\geq 6$  mm in depth).

## 1. Deep Pockets — Retreatment Procedure (CPITN=4)

The identification of deep pockets (CPITN=4) in any area of the mouth, 6-months following initial treatment, *or at any recall visit*, will require retreatment. Retreatment should be performed only in those specific sites where deep pockets exist. No attempt should be made to retreat the entire sextant or full mouth unless deep pockets are generalized. The retreatment procedure should follow that described in the initial periodontal treatment section above, with the exception that systemic antibiotics should not be prescribed. An option is a systemic enzyme suppressor such as Periostat®, particularly in those patients with moderate to heavy bleeding on probing and generalized mediocre to poor response to the initial therapy:

- RX: Periostat, 20mg
- DISP: 180 tabs
- SIG: 1 tablet twice a day for 90 days

### Locally Delivered Antibiotics:

Isolated deep pockets with bleeding on probing are excellent candidates for treatment with locally delivered antibiotics. Therefore, locally delivered antibiotics can be used in conjunction with the retreatment procedure(s). The currently available commercial products are a resorbable chlorhexidine chip (Periochip®), a doxycycline gel (Atridox®), and a minocycline microsphere (Arestin®).

## 2. No Deep Pockets — Deplaquing Procedure (all CPITN sextant scores $\leq 3$ )

### Piezon Master Set-Up:

The instrument set-up for follow-up treatment is similar to that of the initial treatment(s). A Piezon Master will serve again as the primary instrument. Peridex will also be used as the irrigating agent. As an alternative, a 5% iodine solution can be used for those individuals sensitive to chlorhexidine. *The thinner Piezon Master “PS” tip is recommended for most shallow pocket recall treatment.* This tip is smaller and able to reach into pockets without distention of the soft tissue.

#### a. Local Anesthesia

Usually, no local anesthesia will be required for recall treatment visits. Patient sensitivity can normally be controlled through adjustment of the Piezon Master power setting. For very sensitive patients, however, local or topical gel anesthesia may be needed.

### b. Calculus Removal

Heavy subgingival calculus should not be expected at the subsequent recall appointments. However, light, supragingival calculus may be encountered, particularly in mandibular anterior areas. All calculus should be thoroughly removed at recall visits.

### c. Deplaquing

The main objective of six-month continuous periodontal treatment is the removal of all soft root debris and disinfection of the periodontal pocket. The process of removing the soft, bacterial plaque is often referred to as “deplaquing.” The deplaquing procedure should be carried out with the Piezon Master Perio Slim “PS” tip, as described above. All supra- and subgingival tooth surfaces should be meticulously debrided and irrigated using the ultrasonic instrument and chlorhexidine irrigant.

Note: A significant difference in the debridement procedures exist between the initial treatment(s) and subsequent recall or continuous therapy visits. Debridement apically “until bony resistance is felt,” should be performed only during the initial treatment visits. Recall treatment should involve debriding root surfaces apically only to the level of soft tissue attachment, i.e., to the base of the periodontal pocket. **In order to maintain periodontal attachment gains, no attempt should be made to feel the osseous tissue during the debridement procedures at recall visits where CPITN sextant scores are < 4.**

### d. Systemic Antibiotics

No systemic antibiotics or enzyme suppressors will be required at 6-month recall visits. Exceptions may occur to this general rule for refractory patients. However, consultation with a periodontist is suggested to determine specific therapy.

Note: Some patients may demonstrate periodontal abscess formation and/or generalized pocket suppuration prior to the six-month return visit. These “refractory” patients will require more frequent and perhaps more specific periodontal therapy. Consultation with a periodontist for treatment is recommended for these individuals.

## B. 12-Months and Beyond (Continuous 6-Month Recall)

It is obvious that individuals with Type 2 DM and periodontal disease will require constant monitoring and continuous periodontal therapy as long as they have Type 2 DM and teeth. The treatment protocol described above allows the dental provider to effectively manage Type 2 DM patients who are at higher risk for periodontal breakdown. A continuous six-month recall treatment for life is recommended for most protocol patients. For individuals who practice excellent oral hygiene and whose periodontal



tissues remain healthy, recall intervals longer than six months can be contemplated. *Each dental provider will have to assess at each appointment the status and progress for his or her Type 2 DM periodontal patients.* However, even for periodontally stable patients, periodic monitoring of periodontal status is essential for the maintenance of periodontal health.

The provision of an effective treatment protocol for Type 2 DM individuals with periodontal disease is important. However, clinic management activities are also essential in order to carry out the treatment program. The establishment of the following systematic approaches to support the treatment protocol is also suggested:

### **1. Type 2 DM /Periodontal Patient Register**

The establishment of a method of identifying and following Type 2 DM dental patients is necessary for any long-term patient success. Currently, computers with database software, the Electronic Dental Record, or the RPMS/DDS systems exist which would allow the development of a Type 2 DM dental patient register (database) and tracking system. Any number of other systems is possible, including a notebook and pencil! *Without an adequate system of tracking patients and their recall needs, the treatment protocol will not provide long-term health benefits.*

### **2. Patient Monitoring**

In order to determine the long-term success of the treatment, clinical status measurements will need to be obtained for each patient at some regular time interval. Unfortunately, CPITN/PSR serve only as crude indicators of periodontal status. For a more definitive measure of periodontal health, a full-mouth probing and recording is recommended at least annually for patients on the Type 2 DM/periodontitis protocol register.

### **3. Program Dropouts**

It is inevitable that some individuals receiving the treatment protocol will choose not to continue with the program. This non-compliance will manifest itself in many different ways. Some patients will return every 6 months, some once a year, and others only occasionally. Two important issues are faced with non-compliant patients:

#### **a. Clinic Access**

An important question arises concerning what clinic access non-compliant patients should have? *For periodontal patients with*

*Type 2 DM, special clinic access should be afforded despite less than perfect compliance.* Diabetics with periodontal disease represent a special “risk-group” within the population. As such, extra efforts should be expended in attempting to reach this group. Although problems will occur with broken and canceled appointments for these patients, continued special clinic access should be given. Compensation for broken appointments can be managed in several different ways, e.g., over-scheduling, local callback lists, confirming appointments, etc.

**b. Back To Go**

At some point, the question will occur for “protocol drop-outs,” who periodically present to the dental clinic ... Shouldn’t this patient start all over with the treatment? The clinical conditions which would indicate starting the treatment protocol over are somewhat variable. However, here are some general rules to follow:

Patients who did not finish the initial treatment:

For patients who received only partial initial treatment and then dropped out (and it has been less than three years), initial treatment protocol can be performed on the untreated portion of the mouth using chlorhexidine and doxycycline as per the protocol. The previously treated area of the mouth can be debrided according to the 6-month recall instructions, i.e., the presence or absence of deep pockets. From this point on, 6-month recall visits should be scheduled.

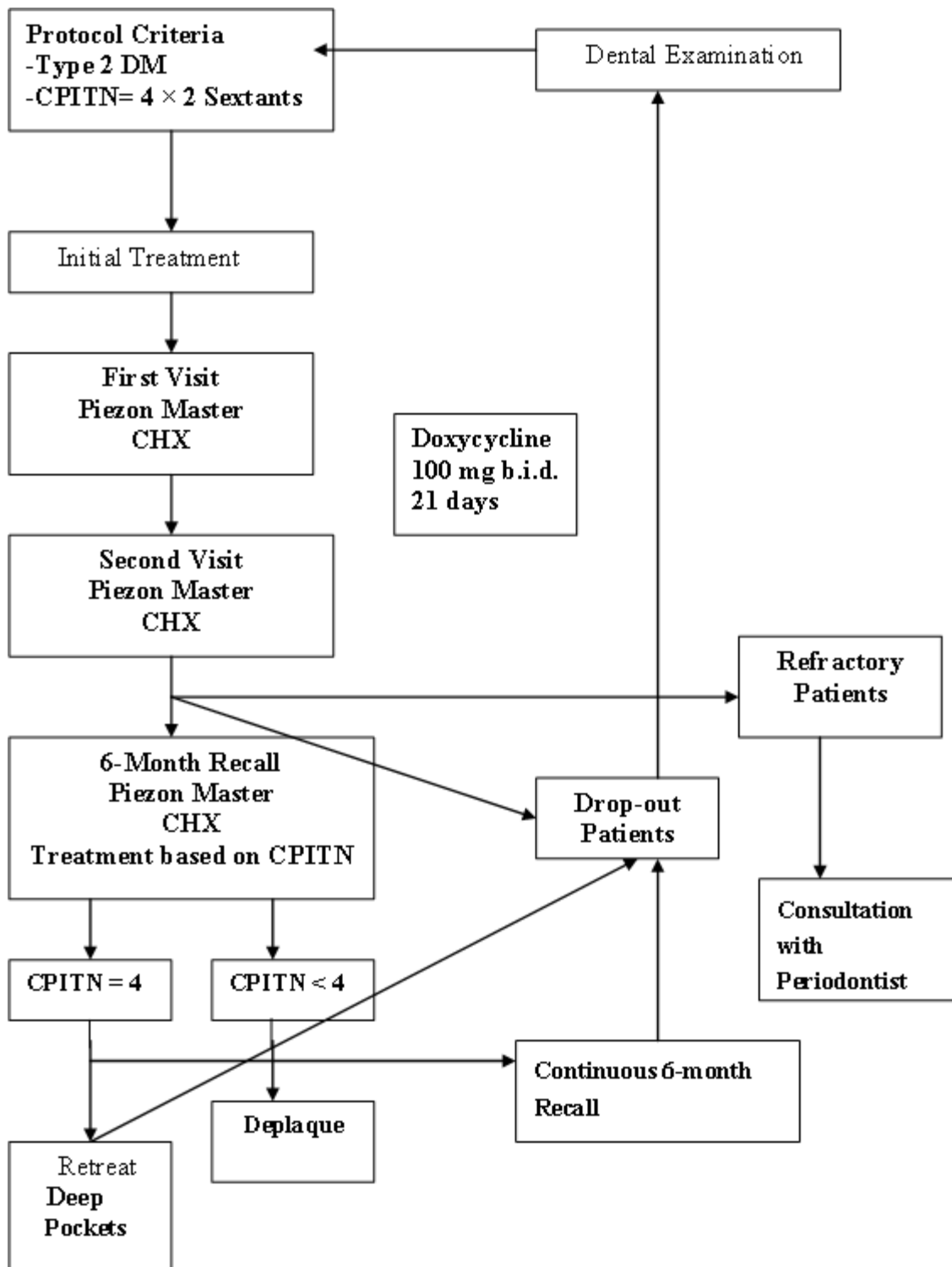
Patients who finished initial treatment, then dropped out:

*< 3 years since initial treatment:* Schedule patient for 6-month recall treatment procedures (based on CPITN scores), with 6-month recall.

*> 3 years since initial treatment:* Schedule patient to begin initial treatment protocol again, with 6-month recalls.

**4. Staff Training Needs**

Training of the dental staff in the implementation of this protocol is important prior to beginning the first treatment. However, after the initial training needs have been met, ongoing program monitoring, maintaining quality of care among the providers, and training new staff members will provide continuous training challenges for dental managers.



## VIII. Treatment Protocol Quick Reference Guide

### Oral and Oropharyngeal Cancer

#### Prevention and Early Detection

There are approximately 28,150 new cases of oral and oropharyngeal cancer per year in the United States and about 8,370 deaths from these diseases (1). Incidence is twice as high in men as in women, and 95% occurs in persons over the age of 40. Approximately 50% of persons diagnosed with oral cancer survive less than five years after diagnosis. Of the 13 major cancer sites, oral cancer has the fifth lowest survival rate. Incidence of oral and oropharyngeal cancer and survival rates, as well as stages when detected, appear to be related more to socioeconomic factors than to ethnic differences.

Several surveys have shown that a large percentage of the AI/AN population engage in behaviors that place them at high risk for oral and oropharyngeal cancers. These behaviors include the frequent use of alcohol and tobacco products. Of particular concern is that in some areas 30 to 50% of AI/AN children and teenagers routinely use smokeless tobacco (2). The report of the Advisory Committee to the Surgeon General on “The Health Consequences of Using Smokeless Tobacco” in 1986 made it clear that “the oral use of smokeless tobacco represents a significant health risk” and “can cause cancer (3).”

A view widely shared among IHS dentists and physicians, but yet to be proven scientifically, is that oral and oropharyngeal cancer rates in Native Americans are low, despite the prevalence of high-risk behavior. Nevertheless, the importance of early detection as a means of increasing the five-year survival rate and decreasing survival morbidity of persons with these cancers cannot be overstated (4). Over half of oral cancers have metastasized or become invasive by the time they are diagnosed (5). Oral cancer may be painless or otherwise asymptomatic in its early stages. This underlines the importance of guaranteed access to care and regular oral examinations, including a thorough soft tissue examination for all dental patients. Of equal or greater importance is the need to educate patients regarding the risk factors and warning signs associated with these cancers.

**Oral cancer prevention programs should therefore include the following activities:**

- 1. Thorough soft tissue examinations of all patients, including emergency encounters, with documentation of normal and abnormal findings in the medical or dental chart. This should include careful examination for cancerous lesions of the oral cavity, especially in the elderly and in patients who use tobacco and/or excessive amounts of alcohol, as well as in those with suspicious symptoms or self-identified lesions.**

- 2. Documentation of individual preventive planning for all dental patients who present for an initial or periodic oral exam, which includes asking adults and adolescents to describe their use of tobacco and alcohol and offering appropriate counseling referrals for those who smoke, use smokeless tobacco, present evidence of alcohol abuse, or have chronic occupational exposure to sunlight. Information on tobacco use is to be documented on the preventive assessment section of the dental exam form and also should be included in the health history questionnaire.**
- 3. In-service training for medical staff (including physicians, nurses, and physician's assistants) in oral and oropharyngeal cancer etiology, pathogenesis, detection, and prevention. They should be encouraged to include inspection of the oral soft tissue in routine physical examinations, especially in geriatric patients and in patients who use tobacco and alcohol.**
- 4. Individual and community education concerning the risk factors and warning signs associated with oral and oropharyngeal cancer, including discussion of smoking, smokeless tobacco, sun exposure, alcohol, and local irritants.**
- 5. School-based education on the hazards of smoking and smokeless tobacco use; school and community-based cessation programs.**
- 6. Community-based prevention and intervention strategies. Some examples of intervention/cessation programs follow:**
  - a. The National Cancer Institute (NCI) and the American Cancer Society have recently joined forces to mount the largest demonstration project for tobacco control ever conducted. The project, the America Stop-Smoking Intervention Study (ASSIST) (6), is designed to reach over one-fifth of the U.S. population and at least 15 million smokers through community-based tobacco control coalitions. The NCI encourages the involvement of dental professionals in tobacco issues and this project. This project is community oriented. It provides "an excellent opportunity for dentistry to become involved with a social concern that affects oral health as well as general health and public well being" (Dr. Mecklenburg). Further information may be obtained from the NCI Smoking, Tobacco and Cancer Program on the internet at <http://www.cancer.gov/cancertopics/tobacco>.**

- b. Successful tobacco use interventions include drug-based cessation programs using pharmacologic nicotine and combined drug and behavioral tobacco cessation programs. Methods that have not proven successful are acupuncture, hypnosis, OTC medications, and nostrums. Tobacco cessation strategies can be reinforced through psychological counseling, group therapy, or self-help programs.
- c. Studies indicate that smokers are more likely to use a telephone-based cessation service than they are a face-to-face program (20). Quitlines also offer important advantages from a health education / program perspective. Quitlines function based on a centralized system of operation and promotion, allowing for:
  - Economies of scale, where financial and staffing resources can be utilized more efficiently
  - Standardized protocols and training for all cessation/counseling activities
  - Routine monitoring of counseling for quality assurance and continuity of services
  - Easier collection and evaluation of data
  - Ease of marketing and promotion, as only one campaign is necessary, though it may be (or need to be) large scale

The national Quitline number is 1-800-QUIT-NOW.

- d. An example of a multi-method approach to tobacco cessation is the Stanford Stop Smoking Program. This program uses a pharmacological agent (nicotine gum), self-control strategies, a set of self-help manuals, and a personal contract setting a quit date. The program can be obtained from the Stanford Health Promotion Resource Center, on the internet at <http://hprc.stanford.edu/pages/store/itemDetail.asp?39>.

Excellent self-help materials are also available through the American Cancer Society (1-800-227-2345 and on the Web at <http://www.cancer.org>) and the American Lung Association (1-800-586-4872 and on the Web at <http://www.lungusa.org/tobacco>). The State of Arizona also offers online individual tobacco treatment certification training, approved by the IHS tobacco task force, at <http://bandura.sbs.arizona.edu/hcp/right.html>

- e. “Teens and Tobacco, A Community Handbook for Developing a Youth Diversion/Tobacco Awareness program” is a program based on the Minnesota Plan for Nonsmoking and Health. This program is available on the internet at <http://www.ansrmn.org/Youth%20Access.htm>.

- f. Healthcare professionals are in a uniquely favorable position to influence their patients' tobacco use behavior. Dr. Louis Sullivan, former Secretary for HHS, estimates that if every physician routinely counseled his or her patients about the dangers of tobacco use and encouraged them to quit smoking, at least one million Americans would stop smoking in one year. Dentists can be equally effective in promoting tobacco avoidance by showing patients the tangible drawbacks of tobacco use, such as staining of teeth, bad breath, etc. During routine oral examinations, dentists can inform their patients that tobacco causes oral and other types of cancer. They can join their medical colleagues in encouraging their patients who use tobacco to enter tobacco cessation programs.
- g. A guide for clinical intervention, "Clinical Opportunities for Smoking Intervention," is available from the Public Health Service, National Institutes of Health. NIH Publication No. 86-2178, August 1986. This guide describes specific ways that dentists and physicians can promote tobacco cessation, including the following:
  - Act as a role model by not using tobacco and creating a tobacco-free environment
  - Provide information on risks associated with tobacco and reduction of risk if the patient stops
  - Encourage abstinence by direct advice and suggestions
  - Refer the patient to a tobacco cessation program
  - Prescribe and follow up on use of specific cessation and maintenance strategies
- h. Additional resources can be found on the CDC's Tobacco Information and Prevention Source Web site at <http://www.cdc.gov/tobacco/> or by calling 1-800-232-1311.

The U.S. Preventive Task Force questions the efficacy of routine screening examinations for oral cancer by primary clinicians for all asymptomatic persons. However, it does recommend that all patients should be counseled to receive regular (annual) dental examinations, to discontinue the use of all forms of tobacco, and to limit consumption of alcohol. It also recommends that persons with increased exposure to sunlight should be advised to take measures to protect their lips and skin from the harmful effects of ultraviolet rays (8).

A complete oral examination must include both inspection and digital palpation of circumoral as well as intraoral structures. Adequate lighting, a tongue blade or depressor, a dental mirror, some strips of gauze, and rubber gloves or finger cots are the only materials required. The examination should be systematic and repeatable. It should include all

hard and soft tissues and underlying structures of the oral and perioral region, with attention given to color, tissue tone, surface texture, and radiological findings. The following sequence is recommended:

1. Obtain a thorough medical history. Question patient about alcohol and tobacco use and occupational sun exposure.
2. Visually inspect the head and neck for keratoses, ulcers, unusual pigmentation, skin blemishes, asymmetry, and abnormal masses.
3. Palpate the regions of the major salivary glands and the lymph nodes of the head and neck, noting any abnormal swelling, masses, or indurations.
4. Inspect and palpate the external vermillion border and the commissures of the lips.
5. Thoroughly examine the intraoral cavity, proceeding from anterior to posterior oral structures and pharynx. The sequence may be: lips, buccal mucosa, floor of the mouth, tongue, hard and soft palate, faucial arches and tonsils, posterior pharynx, retromolar areas, teeth and gingiva. To properly inspect the tongue, it should be grasped with gauze and pulled forward to expose the lateral borders, while the cheek is retracted with a tongue blade or dental mirror. Following careful inspection, these areas should be thoroughly palpated with thumb and index finger of the gloved hand to detect areas of swelling, roughness, induration, or asymmetry.

In 1987, the National Institute of Dental Research suggested the following classification system of mucosal lesions associated with smokeless tobacco use (9-11):

**Degree 1** Slight superficial wrinkling of the mucosa. Color of the mucosa may range from normal to pale white or gray. Mucosa does not appear to be thickened.

**Degree 2** Distinct whitish, grayish, or occasionally reddish color change. Wrinkling is obvious, but there is no thickening of the mucosa.

**Degree 3** Mucosa is obviously thickened, with distinct whitish or grayish color change. Deep furrows are present within the thickened area.

Although self examination has been an effective form of screening for some types of cancer, such as breast cancer, the efficacy of self screening for oral and oropharyngeal cancer is questionable, except for lip cancer. The time required for the dentist to teach patients self examination techniques might be better spent in performing thorough soft tissue



examinations, counseling patients regarding high risk behaviors and the recognition of warning signs, and teaching other healthcare professionals oral soft tissue examination techniques.

### **Warning Signs Of Oral And Oropharyngeal Cancers (13)**

1. A swelling, lump, or growth in or about the mouth, with or without pain
2. White, scaly patches or red, velvety areas in or about the mouth
3. A sore or ulceration in or about the mouth that does not heal within two weeks
4. Numbness or tingling in any part of the mouth
5. Repeated bleeding for no apparent reason
6. Loosening of teeth with no apparent cause
7. Excessive dryness or wetness of the mouth
8. Prolonged hoarseness, sore throat, persistent cough, or the feeling of a “lump in the throat”
9. Difficulty in chewing, swallowing, speaking, or opening the mouth

### **High-Risk Groups**

1. Persons who use tobacco
2. Persons who drink alcohol
3. Persons with a history of cancer or premalignant lesions
4. Professions that are chronically exposed to the sun (e.g., farmers, sailors, fishermen)
5. Males over age 40

The use of toluidine blue (tolonium chloride) vital stain has been advocated by some oral cancer experts as diagnostic adjunct to subjective clinical impression in detecting oral cancer (14). While staining of early mucosal cancers is more objective than clinical impressions without staining, familiarity with stain interpretation is necessary. This technique is not recommended as a routine screening tool for IHS general practitioners. The U.S. Preventive Task Force stated that further research is needed to evaluate the accuracy and acceptability of this technique

before routine use in the general population can be considered (15). Exfoliative cytology, while used extensively in the diagnosis of less visible and accessible lesions, it is not a substitute for biopsy in the diagnosis of oral cancer, although it can be a useful diagnostic adjunct in some cases. A problem with exfoliative cytology is the suspected frequency of false negatives, which can lead to a false sense of security (16). For definitive diagnosis of oral cancer, excisional or incisional biopsy is essential (11, 17).

(It should be noted that approximately 400,000 patients per year develop oral complications as a result of cancer therapy. Following diagnosis of any cancer, a pre-treatment oral examination is vital to identify preexisting oral problems which may have an impact on cancer therapy).

**Conclusion:** Early detection of oral and oropharyngeal cancers result in more easily treated lesions with less post-treatment morbidity and increased survival rates (18). An effective primary preventive program should include public awareness of the disease, including knowledge of warning signs and risk factors. It should also include education of medical and paramedical personnel in the symptomatology and pathogenesis of these cancers and training in early detection techniques. The avoidance of tobacco products in any form, particularly in combination with heavy alcohol consumption, is crucial to the prevention of oral and oropharyngeal cancer (19).

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### **Traumatic Injury/Accident Prevention**

The incorporation of activities and education targeted at reducing the occurrence of accidental injury to the structures of the head and oro-facial area is essential in any community-based health promotion program. While current legislation is in place to regulate the use of mouth-protecting devices in many organized school sport activities, there is little emphasis placed on injury prevention in the less traditional, nonrecognized, direct-contact types of athletics. Additionally, the prevention of oral injuries, particularly in children, which may occur through normal everyday activity, is an often overlooked area.

Components that should be addressed within health promotion planning include:

- A cooperative relationship established between the dental department and school officials/athletic programs to help provide properly fitting mouth protectors for students participating in sporting activities. The availability of resources must be a consideration when planning a mouth protector program. Coaches can be particularly effective in encouraging support for mouth protector programs and increasing compliance in use by players.
- Fabrication of impression-made, custom-fit double-layered heat-and-pressure-laminated, ethylene vinyl acetate (EVA) type devices affords the highest degree of protection and comfort, although “boil and bite” types of protectors are also of value in individual application. Studies indicate that the use of mouth protecting devices may also significantly reduce injury risk to the head and neck, as well as to the oral structures, by cushioning blows that might otherwise cause concussions or lead to jaw fractures.
- The use of mouth protecting devices should be stressed, and not just for sports such as football, wrestling, and hockey. Injury to teeth and oral structures in such activities as basketball, soccer, volleyball, weight lifting, rodeo, cycling, etc., could be reduced through the use of mouth guard appliances.
- An educational component should be included in school programs to heighten the awareness of students to the common causes of injury to the teeth and mouth:

- Slipping/falling on objects or slick surfaces of floors, steps, or sidewalks.
- Injury caused by pushing impact at water fountains.
- Playground equipment such as swings, teeter totters, monkey bars, and slides.
- Improper use of teeth for chewing on objects such as ice, hard candies, popcorn hulls, pencils, etc., or use of teeth to cut or pry hard objects.
- Skateboard, roller/ice skating, tricycle/bicycle accidents.
- The use of safety belts and child restraint seats/devices should be encouraged in conjunction with community injury prevention programs. Many injuries to the oro-facial area could be reduced or prevented through the use of these methods.
- In addition to the information that is taught on the prevention of trauma through good safety habits, education should also include first aid/emergency care for initial treatment if injury does occur. This is of primary importance for Head Start and other school teachers/personnel and should include procedures to follow for broken, loosened, or avulsed teeth; soft tissue injury and to stop bleeding; and a referral procedure to the nearest clinic or provider for definitive care. Posting of emergency instructions and procedures is recommended for all school settings.

Through the use of the ideas presented, a strong program can be developed to help reduce the incidence of injury to the head and oro-facial area.

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## Additional Resources

[http://www.ada.org/public/topics/mouthguards\\_faq.asp](http://www.ada.org/public/topics/mouthguards_faq.asp)

[http://www.aapd.org/media/Policies\\_Guidelines/P\\_Sports.pdf](http://www.aapd.org/media/Policies_Guidelines/P_Sports.pdf)

The AAPD's decision tree for the treatment of an avulsed tooth can be found at:

[http://www.aapd.org/media/Policies\\_Guidelines/RS\\_TraumaFlowSheet.pdf](http://www.aapd.org/media/Policies_Guidelines/RS_TraumaFlowSheet.pdf)

The CDC's systematic review of the effectiveness of population-based interventions to encourage use of helmets, facemasks, and mouthguards in contact sports can be found at:

<http://www.thecommunityguide.org/oral/oral-int-ie-sports.pdf>

## Head Start

Since 1976, the Head Start Bureau of the Administration for Children, Youth and Families and the IHS have had an interagency agreement that requires the I.H.S. dental program to provide T/TA to the Head Start Indian Grantee programs. In FY 90 the agreement was expanded to include mental Health, and nutrition. Head Start's basic philosophy is built on a foundation of family community, and cultural strengths. Head Start focuses on the positives in every child and family. Parents are the most powerful role models and teachers for preschool children therefore all aspects of HP/DP will be more effective when the family is included in the process.

T/TA is an important role for any member of the IHS dental staff. Experience suggests that open lines of communication are an essential beginning and a simple in-service often facilitates the communication. In an ideal situation, a multidisciplinary effort with Head Start, the IHS and state and local governments to coordinate other HP/DP initiatives should be emphasized. Master planning with parents and representatives from Head Start and the governmental systems would also be conducted. However, initial planning should focus on parent involvement, healthcare financing and access to care.

Suggested activities for training and technical assistance from the dental program:

1. Participation in the local Head Start Advisory Committee.
2. Training of Head Start staff in the caries disease process and disease intervention options.
3. Dental HP/DP for parents and children e.g. *Ready! Set! Go!* (IHS.) and *Bright Smiles/Bright Futures* (Colgate-Palmolive Company)
4. Screening and prioritization of treatment needs and caries management.
  - a. Consider implementing Alternative Restorative Technique (ART)
  - b. Consider glass ionomer sealants if the child is precooperative for radiographs
5. The IHS dental program is often the primary source for Medicaid dental services however, it is important to identify alternate resources. It is recognized that often it is very difficult to find a provider who accepts Medicaid payments for dental services. In spite of such reality the dental office should encourage eligible families to enroll in Medicaid and identify any state or local public health dental clinics.
6. Establish appropriate caries intervention based on caries risk.
  - a. Knowledge of the community water fluoride level is the foundation of caries intervention options.
  - b. Fluoride varnish is the preferred topical fluoride modality.

- c. As data and formulation improves Chlorhexidine gel or varnish at the head Start classroom should be considered for high risk children.
  - d. Data for a Xylitol chewing gum program (4 grams daily) has mixed results but should be considered at the Head Start classroom.
  - e. Fluoride mouth rinse is not recommended for Head Start aged children. Young children often swallow much of the fluoride rinse; therefore children under age six are at risk of fluorosis in the anterior teeth.
7. Head Start actively pursues enrollment of children with special needs. Special needs children often manifest with craniofacial anomalies and may involve complex treatment requirements with challenging funding problems. Grants applications are available for children with special needs and craniofacial anomalies. The applications are simple to complete and always are accompanied with clear instructions.
- a. Cleft palate Association
  - b. First Hand Foundation
  - c. Shriner's Hospital and the Crippled Children's Fund

## References

Head Start performance standards. U.S. Department of Health and Human Services. Administration for Children, Youth and Families. Head Start Bureau.

Dental caries: The disease and its clinical management Blackwell publishing 2003, Edited by Ole Fejerskov and Edwina Kidd

## School Based Oral Health Promotion/Disease Prevention Programs

School-based preventive dentistry programs in public schools and Indian schools have been successful in reducing the caries incidence among children (1). These school programs usually have both clinical and classroom components. The clinical component often includes sealants, alternative restorative techniques, OHI, professional prophylaxis, and fluorides. The classroom component often includes self-applied fluorides, classroom education, and school water fluoridation. The type of programs implemented should be based upon risk for dental disease.

Sealants are the single most effective measure for preventing dental caries in school-aged children (1). With periodic observation and reapplication when necessary, sealants are effective in reducing the prevalence of pit and fissure caries (2). Since pit and fissure caries account for approximately 90% of the caries in children 6-13 years old, school-based prevention programs should include sealants (3).

The ART is an effective way to stabilize a carious lesion until the child can access more comprehensive dental care. Glass ionomer is an ideal material because it provides

effective sealing, continued fluoride release and allows remineralization to commence. This process is done by removing soft demineralized areas of dentin and placing the glass ionomer material as instructed by the manufacturer. This technique should only be done if the lesion has not reached pulpal material, is not abscessed and is not causing pain to the child.

Community water fluoridation is still the most effective, yet inexpensive, means of delivering the benefits of fluoride to school-aged children (1). In nonfluoridated communities, school water fluoridation or school-based fluoride swish programs can provide both systemic and topical benefits of fluoride and are particularly valuable in communities where the caries rate is high (4). Community and school water fluoridation or school-based fluoride swish program success requires designating responsibility and providing training to water operators or fluoride coordinators. Dental programs frequently provide technical assistance and monitor fluoridation programs operated by Tribal authorities.

Self-applied fluoride (mouthrinses and supervised toothbrushing with a fluoride dentifrice) can provide an additional 20-40% reduction in dental decay (5). The decision to implement these programs should be carefully weighed, based on the status of water fluoridation and the caries rate, particularly smooth surface caries rate. Institutions such as schools are ideal settings for fluoride mouthrinse programs, as high levels of compliance are possible and the beneficial effects are maximized. Many state dental programs provide supplies for fluoride mouthrinse programs.

Classroom teachers are the most effective instructors for school-based oral health education (6, 7) and can incorporate simple, accurate elements of oral health education into routine teaching activities. Dental professional personnel should assist the teacher by evaluating the oral health curriculum, suggesting supplementary material, and providing technical assistance through in-service training (8). A curriculum which offers regular reinforcement of oral health concepts through the school years must be available in order to promote adequate knowledge, skills, and attitudes (KSA) for self-care. Also, the oral health curriculum should be an integrated component of a total health curriculum, if possible. Evaluation of the curriculum can be conducted through KSA surveys before and after the material is presented.

School-based oral disease prevention programs should be implemented for all schools with 25-50% or more enrolled AI/AN students. The local Dental Program should identify the schools within the service area and determine where school-based prevention programs could be established. Proper planning for these programs includes obtaining necessary approvals from the principals and school board members and parents. Providing consent forms in school registration packets is an efficient method for obtaining parental permission and can increase participation in these programs.

Indian schools, including BIA and BIA contract schools, are administered following federal guidelines. A variety of clinical and non-clinical services can be delivered at the school site because BIA schools are not restricted by state and county regulations.



School-based prevention programs that include self-applied fluorides, sealants, school water fluoridation, and classroom education should be considered for all BIA schools.

Public schools must conform to state and local guidelines, consequently the logistics and legalities of school-based prevention programs can be complicated. However, prevention programs in schools with less than 25-50% AI/AN children can be established by developing linkages with state and local education departments. The National Preventive Dentistry Demonstration Program has shown that oral disease prevention programs in public schools that include both clinical and classroom elements can be successful (1).

Important elements of a school-based oral disease prevention program are:

1. Pit and Fissure sealants

- Target grades are often selected for school sealant programs. Children in grades 1, 2, 6, and 7 should be screened, as they are most likely to have newly-erupted molars that meet the criteria for sealant placement (9). However, in communities with high caries rates, it is preferable to see all grades each year to evaluate retention of sealants, teeth needing sealants, and referral for decay.
- Portable dental equipment is effective for sealant placement and can be brought to the school site. If transportation is available, children can be bused to the clinic for sealant placement.
- Sealants provided in a school setting are reported as Level II clinical services. These programs generally enhance the clinical dental program. It is important for programs not to view sealants as a one-time event for life. Sealants need to be monitored.
- See the section on sealants for selection and placement guidelines.

2. Self-applied fluorides

- School-based FMR programs, fluoride tablet programs, and supervised toothbrushing with a fluoride dentifrice are effective ways of delivering the benefits of fluoride to school-aged children. Cost-effectiveness should be determined based upon the caries rates of the children in the community.
- The safety of FMR and tablet programs is an important consideration. All personnel mixing and dispensing fluoride should participate in regular training sessions to review proper handling procedures. Fluoride must be stored in a secure place and distribution of mouthrinse and tablets should be monitored. The National Institutes of Health (NIH) publication, "Preventing Tooth Decay: A Guide for Implementing Self-Applied Fluorides in School Settings," is a valuable resource (10).

- The number of children participating in mouthrinse programs can be reported through the Dental Data System. Contact your Area Dental Consultant or Prevention Officer for further information.
3. Topical Fluoride
- Children accessing the dental services via school sealant programs can be provided with topical fluoride according to the needs of the individual child. Target those children with new smooth-surface caries, a history of high caries, or handicapped conditions for APF topical procedures.
  - See the section on fluorides and oral prophylaxis for guidelines.
4. Oral Health Education
- Determine if the health education curricula used by the schools in your service area have oral health components. Schools often welcome assistance from dental professionals when evaluating materials. Visits by dental providers to the classroom build good public relations.
  - The Service Unit Dental Program can assist in the implementation of oral health education programs that address topics of particular concern to AI/AN populations, such as:
    - Prevention and cessation of smokeless tobacco use and smoking
    - Prevention/treatment of rapidly progressing periodontal disease
    - Prevention of Baby Bottle Tooth Decay (BBTD)/ECC
  - Classroom instruction by itself should not be expected to influence individuals' behavior such that a group's oral health status improves. However, the value of classroom instruction should not be discounted. It is important that people have sufficient and accurate information about oral disease prevention to make informed decisions regarding personal and community oral health promotion measures.

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### **Child Abuse and the Mandated Reporter**

Child abuse has been recognized as a major risk to the health and well-being of all children, including AI/ANs. Today, child abuse is reported more frequently than in previous decades. In 1991 the U.S. Advisory Board on Child Abuse and Neglect reported that more than 2.5 million American children suffer from child abuse. AI/AN children are statistically at higher risk for abuse than the general population. Identification of children, adults, and elders who have experienced domestic abuse is the first step in preventing further injury.

Most states have identified dentists and dental staff as mandated reporters of child abuse. This means that if you know or even suspect that a child is a victim of abuse you must, by law, report it to your local authority.

Research indicates that 2/3 to 3/4 of patients presenting with injuries from physical abuse will have suffered trauma to head and neck, areas in the normal working zone of dental care providers. Therefore, dental staff are in a perfect position to identify signs of child maltreatment.

Further education in identifying, reporting and managing patients who are victims of abuse is available through the Preventing Abuse and Neglect Through Dental Awareness (PANDA) coalition. An online PANDA CE course can currently be accessed on the IHS intranet at: <http://home.ihs.gov/> then select medical programs, then Oral Health Promotion/Disease Prevention, click on Programs, and then select PANDA Course. The

site is currently being revised with the hope of making access to the course easier, and to incorporate a self administered post test and printable certificate of completion.

**What is Child Abuse?**

The act of inflicting injury or the failure to act so that injury results.

The degree of injury is not the basis for making the decision to intervene.

**What is Physical Abuse?**

Any act which results in nonaccidental physical injury.

This may include severe corporal punishment and can happen when an adult shakes, strikes, or throws a child. It also includes intentional assault such as burning, biting, twisting limbs, or cutting.

Indicators used to distinguish physical abuse from accidental injury include: location and pattern of the injury that is not consistent with an accidental injury, unexplained injury, an injury that is unusual for the specific age group, injuries in different stages of healing, evidence of multiple previous injuries, inconsistent stories given by parent and child to explain the mechanism of injury, and delay in seeking care for the child's injury.

**What is Physical Neglect?**

Neglectful treatment or maltreatment of a child by a parent or caretaker that harms or threatens harm to the child's health or welfare.

General neglect occurs when a parent or caretaker allows a child to be in a situation that could result in physical injury to the child. Severe neglect occurs when a parent or caretaker causes or permits the child to be in a situation that damages a child's health or welfare.

The extreme or persistent presence of the following factors indicate some degree of child neglect:

- Lack of adequate medical or dental care
- Poor personal hygiene
- Inadequate dress for the weather
- Poor supervision
- Unsanitary home conditions
- Poor nutrition
- Apathetic, withdrawn, antisocial, or destructive behaviors

**What is Dental Neglect?**

The AAPD defines dental neglect as willful failure of a parent or guardian to seek and follow through with treatment necessary to ensure a level of oral health essential for adequate function and freedom from pain and infection.

**What is Sexual Abuse?**

Sexual assault on or the sexual exploitation of a minor or acts perpetrated for the intent of arousal and/or gratification of either the perpetrator or the child.

Sexual abuse encompasses a wide range of behavior from touching to full intercourse with a minor as young as an infant. It includes physical sexual assault or molestation, lewd or lascivious conduct, activities related to pornography depicting minors, and promoting prostitution by minors. It is estimated that a pedophile will molest approximately 300 times in his lifetime.

Indian reservations and Indian organizations may attract molesters because of their isolation and lack of reporting. The federal Indian Child Protection Act mandates fingerprinting and background checks for individuals who will be working with Native children through federally funded programs.

Some indicators of child sexual abuse include sexual acting out (sometimes in public) on peers, toys, or pets. Behaviors that may occur during the dental visit are complaints of discomfort in sitting or walking, chronic urinary problems, a display of seductive behavior toward you, fear of going home, fear of shots or other body invasions, and fear of restrooms.

**What is Emotional Maltreatment?**

Verbal assault like belittling or sarcasm, unpredictable responses, constant family discord and double-message communication that constitute willful cruelty or unjustifiable punishment of a child.

Emotional abuse can lead to severe psychological disorders, handicap development, and lead to behavioral problems including criminal activity.

Some signs of emotional maltreatment are depression, withdrawal, phobias, and decreased communications. Sometimes these children are clingy, or they might whine, rock, pick at scabs, or make statements like, "I'm bad."

**Reporting Child Abuse and Neglect**

In most states health practitioners, including dentists and dental hygienists, must report suspected or known child abuse. In many states it is a crime to not report. Mandated reporters may be subject to civil and/or criminal legal action if they fail to report.

Usually state law says that suspicions or knowledge of child abuse should be reported to the local law enforcement or child protective service immediately or as soon as practically possible. There is a federal/Tribal procedure established for those Tribes large enough to have federal/Tribal law enforcement staff available. Check with your clinic and local law enforcement for established child abuse reporting protocols. There is immunity for mandated reporters who make a report in good faith.

Proper documentation of cases of suspected or known abuse is critical, as there is a very real possibility that the practitioner will be required to present their records in court. Documentation should include radiographs and photos as appropriate. Parental consent is not required for photographs in these cases. In addition copious objective notes should be made. Subjective notes should be limited to comments such as “injuries appear consistent with physical abuse” or “In this provider’s opinion.....” and should avoid unfounded accusations or diatribes against the suspected perpetrator. When a mandated reporter reports child abuse as required by law, the physician-patient privilege (confidentiality) does not apply to information reported following procedures defined in the law. All dental practitioners should be familiar with the state and Tribal laws pertaining to child abuse reporting.

The goal of child abuse reporting is to eliminate the needless suffering many children experience daily. We, as mandated reporters, have an obligation to help our communities interrupt the destructive cycle of abuse in Indian communities.

## **Chapter 5, Delivery of Dental Services**

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## Introduction

The IHS dental care delivery system is based on a public health approach. Winslow, who is known as the father of public health, defined public health as “*the science and art of preventing disease, prolonging life, and promoting physical health and efficiency through organized community efforts.*”

The definition of *dental public health* that has been developed by the American Board of Dental Public Health and accepted by the ADA, the American Association of Public Health Dentists, and the Dental Health Section of the American Public Health Association, is as follows:

*Dental public health is the science and art of preventing and controlling dental diseases and promoting dental health through organized community efforts. It is that form of dental practice which serves the community as a patient rather than the individual. It is concerned with the dental education of the public, with applied dental research, and with the administration of group dental care programs as well as the prevention and control of dental diseases on a community basis.*

Public health is “people’s health,” a consideration of the health of a population group. It goes beyond the prevention of disease, promotion of health, and prolongation of life *on an individual basis* by focusing on the *collective health status* of a group of people. This concern for a population group requires a broadened concept of patient and procedures among dental staff practicing in the IHS. Following are some of the concepts that dental public health emphasizes:

- Group oral health education
- Community-wide fluoride programs (systemic and topical)
- Organization of services to be provided based upon the disease occurrence in the total population, rather than ideal treatment for the patient currently being attended
- Consideration of the demand for service by the total population

An excellent reference for dental staff involved in a public health practice is *Dentistry, Dental Practice, & the Community*, by Brian Burt and Stephen Eklund, 6th edition, W.B. Saunders Co., 2005. This text provides an excellent comparison between dentistry for the individual and dentistry for the community. Following is a synopsis of that comparison:

- Prior to treating an individual, an examination is performed. Prior to treating a community, a survey of the needs of the population is performed.
- A diagnosis of the patient is analogous to an analysis of the survey data from a community.
- A treatment plan is developed for the patient, while a program plan is formulated to address the needs of the community.
- The treatment phase for the patient is comparable to program operation for the community.
- Remuneration by the individual patient is in the form of payment, while the program for a community would be financed through a formulated budget authorized by some public or private agency.
- Evaluation of the individual patient is performed during follow-up visits and subsequent examinations, while evaluation of the efficiency, effectiveness, and appropriateness of community programs is made by program administrators and/or others by means of follow-up surveys, financial analyses, and other evaluation mechanisms.

The commitment for a public health approach does not lessen the need for efficient, high quality clinical dental care for AI/ANs. The prevention and early treatment of dental caries and periodontal disease requires both immediate clinical intervention and long-term community interventions. The efficient delivery of clinical dental services that can facilitate the oral health status of a community constitutes the major activity of the IHS Dental Program.

An important component of public health dentistry is access to care for all members of the eligible population who need and desire care. Access to care issues in turn lead to the concept of levels of care to ensure that the greatest number of services can be provided for the greatest number of people with the resources that are available. This is accomplished by directing resources first toward treating emergency conditions, then for preventing dental disease, then for providing routine dental care such as restorative treatment, and finally, if resources remain, for complex rehabilitative procedures.

### **Assessing and Meeting the Needs and Expectations of Customers**

The results of a survey assessing IHS patient needs and expectations, which was initiated at the Tribal Consultation Meeting in Albuquerque, NM, in December of 1994, were consistent with previous consumer satisfaction studies. Patients expect the following:



1. Short waiting time to get an appointment and short time waiting to be seen at the appointment
2. Quality care
3. Access to services from providers who are caring, competent, and respectful of the patient and the patient's traditions

In the survey patients also identified the following needs for Indian health programs:

1. Integration of prevention and community outreach into the health programs
2. Recognition of the role of traditional healing practices
3. Training of more AI/AN providers from their communities to serve their people

Perhaps the most significant finding from the 1994 consumer survey was a patient satisfaction rate of 83% (“very satisfied” or “somewhat satisfied”) for all disciplines, including dental. In the 1988–1990 International Collaborative Study of Oral Health Outcomes (ICS-II), the proportion of patients who were “satisfied” or “very satisfied” with access was 69% at one IHS site and 74% at the other IHS site. Satisfaction with the quality of care was 91% and 95% at the two sites. Finally, satisfaction with the patient-provider relationship at these sites was 79% and 84%, respectively.

While these satisfaction rates are an indication that Indian health programs are perceived by most patients as meeting their needs, there is room for improvement in any healthcare system having more than 10% “somewhat unsatisfied” or “very unsatisfied” patients.

The findings in these surveys suggest that dental programs should address patient needs and expectations relative to access to services, to the patient/provider relationship, and to cultural sensitivity and access to traditional healing. Finally, dental programs should assess patient satisfaction on a regular basis. Information on how to develop and implement a patient satisfaction survey is contained in Chapter 7 of this manual.

### **Access to Services**

In the 1993 publication, *Access to Healthcare in America*, the Institute of Medicine (IOM) defined “access” as “the timely use of personal health services to achieve the best possible health outcomes.” It is important to note that two components must be present for “access” to occur: utilization of services and desirable health outcomes. This suggests that providers must identify and maximize access to those healthcare services that can be shown to influence health status.

Managing access to care represents perhaps the most complex, demanding, and frustrating of all processes which the IHS continually faces. Programs are forced to ration or limit access to care because the programs are funded well below the level of need. A

similar situation exists for other healthcare programs across the nation, but for most Indian health programs the limitations on access are especially significant, and patients either are turned away or limited to certain services on a daily basis. In the current political environment, increased federal resources to address this problem are not likely. This is the reality that Indian health programs must face.

In the attempt to provide the most good for the most people, decisions about access to care should be addressed at the program level, with input from Tribal or health board members, patients, and other community members. The access policies should be made public information and posted in clinics. Programs should strive to provide access to services that are adequate, acceptable, efficient, and effective, which can be defined as follows:

**Adequate Access to Services**

*For the Individual:* Providing services that patients need and want, without excessive barriers.

*For the Community:* Providing coverage of the most important health problems in the population.

**Acceptable Services:**

*For the Individual:* Providing services that meet the patient's needs in terms of the interpersonal relationship between the practitioner and the patient.

*For the Community:* Addressing problems that the community feels are the most important.

**Efficient Services**

*For the Individual:* Providing services in a manner that treats the patient's time as though it were of value and not wasted.

*For the Community:* Providing a large volume of services and health benefits for the population, relative to the resources expended.

**Effective Services:**

*For the Individual:* Getting desirable results (health benefits) for each patient from the services that the patient receives.

*For the Community:* Reducing a large proportion of the health problem or problems that a program was designed to reduce.

The effectiveness of prevention programs can be celebrated more easily at the community level than the individual level. Individuals are not likely to take note of a condition that

they never had, but the realization that a large proportion of people in a community were saved from a disease or condition can be motivating and empowering to the community.

### **Patient/Practitioner Relationship**

Patients are astute in determining the quality of their interpersonal relationships with healthcare providers. The very best technical and scientifically-based healthcare can be perceived by the patient as worthless or inappropriate if they perceive the provider as rude, insensitive, uncaring, patronizing, or arrogant. Even though the technical quality of the treatment rendered to people is important, the quality of the patient/provider relationship, as perceived by the patient, can sometimes have greater effects on the patient's long-term health status.

Because healthcare personnel often are from different cultures than their patients, they may not be aware of or may not understand local cultural norms. Following are three strategies that can help to improve the patient/provider relationship:

1. Recruit and train local AI/ANs in the health professions so more providers are from the culture they serve.
2. Provide a cultural orientation for healthcare providers who are not familiar with the local community or traditional healing practices.
3. Adopt the integrated perspective advocated by the IHS, wherein a negotiated approach to serving patients is combined with specific provider behaviors.

The guidelines which follow represent critical elements for establishing a desirable one-on-one relationship with patients. Ideally, this relationship will result in an atmosphere of trust, where the patient will share openly with the practitioner about any requests, concerns, or interests.

### **Patient Care Checklist**

1. Greet and Acknowledge the Patient by Name

Begin with a respectful greeting using the patient's name, and include "hello," "good morning," or similar expressions in the native language, if appropriate. Local norms should determine if the first name is used or Mr., Mrs., or some other culturally-appropriate expression.

2. Introduce Yourself

Providers should introduce themselves at the first meeting and when it has been a long time since they have seen each other. Provider name badges help patients remember names, but they should not replace introductions.

### 3. Provide Support and Reassurance

Recognize the patient's nonverbal cues to pain or fear and respond to those cues through attentiveness, nonverbal expression, and reassurance. Culturally-acceptable norms should be followed regarding touch, eye contact, etc.

### 4. Facilitate a Dialogue

This sets the stage for developing a “negotiated relationship” between the provider and consumer. Issues that relate to patient choices of care or willingness to comply with recommendations should be negotiated with the patient. Ask carefully-considered non-judgmental questions and listen attentively to determine the patient's needs and expectations. Specific kinds of questions to consider include the following:

- Why is the patient presenting for treatment, i.e., what is the patient's request or problem?
- What does the patient think is wrong or needed? Does the patient have alternative or traditional beliefs about his/her needs? Is the patient seeking assistance from available traditional healing methods?
- What does the patient expect from treatment? What level of responsibility is the patient assuming for his/her condition and/or follow-up care?

### 5. Respond and Teach

Based on what has been learned through the dialogue and clinical assessment, clarify the options for treatment, being careful not to talk down to the patient or to use jargon and unfamiliar concepts. The intent is to respectfully respond to the patient's perspective and:

- Acknowledge and clarify the similarities and differences in his perspective and what is clinically evident. Inform the patient as to what you are able to provide for him or her, considering alternatives of traditional medicine, if available and desired.
- Actively teach the patient with the intent of informing and empowering the patient to assume appropriate responsibility for his/her health (or his/her child's health).
- Negotiate with the patient and/or family to involve them in decisions that are appropriate and important in the care delivered and follow-up required.

- Tailor treatment and follow-up, as much as possible, to the individual's or family's existing routines, and provide all important instructions in writing.
6. Express a Warm Goodbye

Answer any final questions and close with a gesture of goodbye.

### **Patient Satisfaction Assessment**

Healthcare facilities should conduct regular patient satisfaction surveys in order to determine that the needs of the community are being met. A regularly-collected, reliable, and valid consumer satisfaction assessment mechanism is not simply a matter of good public relations, but is an essential element of good public health practice. Without a satisfaction assessment mechanism, very few dissatisfied customers actually complain. This unspoken discontent can be the source of additional problems in the healthcare facility. Frequent patient satisfaction surveys help the program to identify problems and make necessary improvements quickly, in order to minimize discontent and increase satisfaction among patients. Information on how to develop and administer a patient satisfaction survey is included in Chapter 7 of this manual.

### **Access To Care**

#### **General Considerations**

Implicit in the IOM's definition of access is acceptance of the importance of and interrelationship between the use of health services and desirable health outcomes. This view of access applied to dental care is particularly valid because, unlike many illnesses addressed in the medical clinic, the vast majority of disease treated by a dental program is not self-limiting. Dentistry treats primarily dental caries, periodontal disease, oral trauma, and the prevention of these conditions. In most cases, unmanaged dental conditions get worse, requiring a greater expenditure of resources, time, and effort when treatment is provided. The IOM report suggests that, by accepting this definition, we are compelled to identify and maximize access to those healthcare services that can be shown to influence health status, and then determine if the differences in health status across populations can be explained in terms of problems or barriers to access.

When viewed from this perspective, managing access to care represents perhaps the most complex, demanding, and frustrating of all processes with which I/T/U programs are continually faced. But as several AI/AN patient/consumer surveys have shown, it is probably the most important process. As providers and policy makers, we try to find less offensive ways to describe this process, such as "managed care," but the reality is that we are continually forced to ration or limit access to care because we are funded well below the level of need. This situation is not unique to Indian health settings. A great majority of healthcare programs ration care, in that they do not provide their patients every service they want, anytime they want it. But the reality of most I/T/U programs is that limitations on access are significant; every day patients are either turned away or limited to certain

services. Based on the current political environment, increased federal resources to address this problem are not likely. This is the painful reality facing I/T/Us in the foreseeable future.

Managing access is much like managing chronic diseases; the problems are never really solved. It lies at the foundation of the recognized public health goal of “*doing the most good, for the most people, at the lowest possible cost, and in a manner that is acceptable to those served and those serving.*” Such a demanding task should keep us from ever being completely satisfied with how we are managing access and inspire us to continually look for more effective strategies.

Unfortunately, access policies are sometimes the sole creation of a clinic or program staff. Policies made in such a vacuum are not likely to be understood by consumers, compromise self-determination and community empowerment, and ultimately compromise program goals. Healthcare resources represent community resources, thus communities must have a major stake in determining how they are used. This is even more critical when the resources are few and community health problems are many. Potentially useful collaborators in developing access policies should include Tribal and/or health board members, patients/customers, and other community members. To support informed decision making, these people should be provided training about public health principles, local disease patterns, and the opportunity costs versus the benefits of enhancing access to a particular group or condition over others. The access policies made with such understanding should then be made public information and posted in clinics.

### **Practical Considerations of Managing Access to Dental Care**

Unlike other health problems, regular utilization of dental services is strongly associated with better dental health status. Thus, the IOM’s “timely use of personal health services...” relative to dental care, is regular periodic care for all beneficiaries. Therefore a dental program’s ultimate goal should be to provide access to basic care for all beneficiaries. In practical terms this means maintaining access for routine users, while encouraging “emergency” or “episodic” users to become routine users. As access to dental care improves, a greater percentage of the population can reach a maintenance level of care. Users on a maintenance level have lower treatment needs than episodic users. New disease in those on a maintenance level is generally easier and less time-consuming to treat. Ultimately, as more beneficiaries become routine users and reach maintenance level, the yearly need for services (i.e., workload) for a given population is reduced. As preventive technologies continue to improve, this effect is likely to be even more pronounced.

Extending access to dental care in a program that is under-funded is indeed a challenge, but it is possible in most situations through effective program management. Clear adherence to public health principles is required, along with the most efficient use of available resources. Strategies to increase access can be broken down into the following areas:

- Integration of Dental Program with Other Healthcare Disciplines and Resources

It is not necessary for dental staff to do everything. Health educators, community health representatives, water system operators, public health nurses, medical clinical staff, system administrators, volunteers, and other agencies (state, federal, local, institutional, educational) should be sought out and utilized. Integration of oral health messages with other programs is achieved, and additional dental staff time becomes available to do those things that only trained dental staff can do. This increases access to clinical care without compromising access to community care.

- Efficient and Effective Use of Program Resources

An ongoing process of program evaluation should be in place to maximize opportunities for improving access to care. This would include scheduling of staff and patients, evaluation of adequacy of existing staff and facility, development of accurate projections of program needs, impact of episodic users, and use patterns of existing facility and staff. Detailed information on these and other aspects of efficiency and effectiveness can be found in the *Dental Clinic Efficiency and Effectiveness Manual*, included in Chapter 7 of this manual.

- Development of Conservative Strategies of Treatment

The majority of a dental clinic's time is generally devoted to restorative dentistry. Half the restorative dentistry provided in this country is the replacement of existing restorations. The initial placement of a restoration statistically dooms the tooth to a future of repeated replacements with ever larger and more invasive restorations. Restorative dentistry is a destructive process, in that irreplaceable natural structure is lost to restorative materials that are poor substitutes for the natural tooth structure. When considering doing restorative dentistry, the risk of not doing it (the status of the existing disease and the destruction it is causing) clearly must be greater than the risk of placing restorations. For more information on this subject, see the "Dental Caries Risk Assessment" guidelines, which can be found in Chapter 4 of this manual.

A more conservative and cautious approach to clinical treatment will lead to fewer treatment needs (as identified by the dentist), thus freeing up additional clinic and staff time. The availability of bonding agents, glass ionomers, sealants, and a wide variety of other preventive and restorative materials allows a dentist to more confidently take a less aggressive view of treatment.

An appropriate level of recall for the individual patient also should be sought, to prevent the overuse of unneeded evaluation and treatment by

some patients at the expense of under-utilization of these services by others. All patients *do not* need to see their dentist every six months. Patients should be recalled based on their individual oral healthcare needs. Many patients are at a sufficient level of oral health to be placed on a recall interval of one year or longer.

In summary, maximizing access to preventive and corrective dental services should be a primary goal of a dental program. How access is managed sends important messages to a community, which is another reason for involving the community in the process. The outline that follows is offered as a means to present some of the many factors that are important to consider and to have ongoing dialogue with stakeholders in designing access policies. As suggested in this discussion, resolving all the issues listed in this outline (and others you may identify) is clearly a “mission impossible,” given the current level of dental resources. Nevertheless, these factors should be periodically examined in light of the unique characteristics of each community, with the goal of maximizing access and achieving the highest possible levels of oral health.

### Considerations for Managing Access to Healthcare in Indian Health Settings

<b>I. Equitability Considerations</b>
Are there significant barriers to access for those who work? (e.g., for what hours are appointments available?)
Are there significant barriers to access for those without telephones? (e.g., must appointments be made by phone?)
Are there significant barriers to access for those who live farther away? (e.g., must appointments be made in person before 8:00 a.m.?)
Are there significant barriers to access to families receiving care? (e.g., are appointments unavailable for more than one family member?)
Are there significant barriers to access to the elderly and institutionalized? If so, are there potential mechanisms available to address access barriers to these groups?
<b>II. Behavioral Considerations</b>
Are undesirable health behaviors being rewarded or ignored by the access policies? (e.g., no consequences for broken appointments or providing prosthetics to people with poor periodontal control)
Are desirable health behaviors being punished by the access policies? (e.g., it is much harder to obtain routine or preventive care than emergency care)
<b>III. Other Considerations</b>
Individual patient factors, age, overall health status, probability of compliance, the provider's ability to improve the patient's condition, role model considerations
Political pressures:
– Pressure to generate income from insurance
– Pressure to treat political leaders, health workers, and their families
– Pressure from Area Office to follow public health principles
– Pressure from the community to provide expensive specialty services
Health staff morale (e.g., “burning out” staff with lack of variety, lack of challenge, or overwork)



Maintaining professional competence (e.g., improving skills by providing more sophisticated procedures or services)
Using community health status data to identify target groups for care
Monitoring satisfaction with access policies to determine need for changes

### **Schedule Of Dental Services (Levels Of Care)**

The Schedule of Dental Services was developed by the IHS DOH to assist community dental programs in managing their resources effectively to provide access to care in a “demand care” setting. The schedule categorizes *all* types of dental services into *Levels of Care*, a priority-based listing which is outlined below and described on the following pages.

Services which alleviate pain or prevent disease are given a higher priority than those intended to prevent or contain disease, or correct damage caused by disease. Thus, emergency care has the highest priority (Level I), while providing access to complex rehabilitative care (Level V) is given the lowest priority for expending the available resources.

Level I	Emergency Oral Health Services
Level II	Preventive Oral Health Services
Level III	Basic Oral Health Services
Level IV	Basic Rehabilitation Oral Health Services
Level V	Complex Rehabilitation Oral Health Services
Level IX	Exclusions

The majority of treatment needs in AI/AN communities falls within the first three levels, sometimes called “basic care,” which comprise the most cost-effective services to provide on a community-wide basis. As additional funds become available for dental care, the schedule can be used to expand access to care beyond basic services in an orderly, equitable, and cost-effective manner.

The schedule forms a consistent structure for program planning as well as for the treatment planning of individual patients. However, it is intended to be a flexible tool which can be adapted to the situation of each community and of dental patients. Factors such as the availability of alternate resources, community water fluoridation, patient age, and the prognosis for success, as well as other conditions, each play a role in determining how the schedule should be applied to individuals and target groups. *The general principle for implementing the schedule is always to use the available resources for providing the greatest health benefit to the greatest number of people for the longest time possible.*

Over the past decade, the Schedule of Dental Services has proven its value to I/T/U dental programs in many ways. The following list summarizes some of the common uses:

- Provides consistent structure for program/provider performance evaluations (in-house and JCAHO).
- Provides a way to document dental program activity and adequacy of funding during Tribal self-determination contracts and self-governance compact negotiations.
- Provides a framework for contracting a scope of work and standards of care with private care providers. These contracts may be administered by local authorities or indirectly through outside agencies (Delta Dental, Blue Cross/Blue Shield, etc.).
- Provides a basis for planning dental facility expansion and manpower enhancements to improve access to care, using anticipated care utilization rates and population growth estimates.
- Provides a way to demonstrate and compare the dental needs and relative level of access to care among AI/AN communities of all sizes and backgrounds (for annual budget preparations to the U.S. Congress and other potential funding sources).

### **Description of the IHS Schedule of Dental Services Levels of Care Structure**

#### ***Level I: Emergency Oral Health Services***

Emergency dental services are those necessary for the relief of *acute* conditions. Emergency dental care services include all necessary laboratory and preoperative work including examination, radiographs, and appropriate anesthesia. Emergency dental services shall include but not be limited to the following:

- Control of oral and maxillofacial bleeding in any condition when loss of blood will jeopardize the patient's well being. Treatment may consist of any professionally accepted procedure deemed necessary.
- Relief of life-threatening respiratory difficulty and improvement of the airway (respiratory system) from any oral or maxillofacial dental condition. Treatment may consist of any professionally accepted procedure deemed necessary.
- Relief of severe pain accompanying any oral or maxillofacial dental conditions affecting the nervous system, limited to immediate palliative treatment, but including extractions where professionally indicated.

- Immediate and palliative procedures that include but are not limited to: (1) fractures, subluxations and avulsions of teeth, (2) fractures of jaw and other facial bones (reduction and fixation only), (3) temporomandibular joint subluxations, (4) soft tissue injuries, (5) broken dentures, and (6) chipped tooth.
- Initial treatment for acute infections.

Procedures that are frequently reported in this category of care are listed below:

- Emergency oral examination (limited to problem area)
- One or more periapical radiographs associated with the problem
- Simple tooth extractions
- Temporary or sedative restorations
- Palliative procedures
- Prescription medications for pain and infection
- Endodontic access preparations
- Draining of oral abscesses
- Denture repairs and other urgent repairs

### ***Level II: Preventive Oral Health Services***

The listed services are those which prevent the onset of the dental disease process. Some of the services provided to individuals are modified by IHS definitions, exclusions, limitations, and processing policies. Please refer to the appropriate sections for further descriptions of exclusions, limitations, and processing policies.

The preventive oral health services most frequently provided are:

- Adult prophylaxis with or without topical fluoride
- Child prophylaxis with or without topical fluoride
- Sealants by tooth or quadrant
- Preventive (self-care) training
- Periodontal recall procedures
- Athletic mouthguards
- Water fluoridation activities
- Group education
- Tracking of number of children receiving supplemental fluorides per month

***Level III: Basic Oral Health Services***

Basic dental care includes those services provided early in the disease process and which limit the disease from progressing further. They include most diagnostic procedures, simple restoration of diseased teeth, early treatment of periodontal disease, and many surgical procedures needed to remove or treat oral pathology.

The Level III procedures commonly reported include the following:

- Initial or periodic oral exam
- Bitewing and panoramic radiographs
- Diagnostic casts
- Space maintainers
- Amalgam restorations (1,2,3-surface)
- Composite restorations (1,2,3-surface)
- Stainless steel crowns (primary teeth only)
- Therapeutic pulpotomy (primary teeth only)
- Anterior endodontics (one canal)
- Periodontal scaling/root planing
- Biopsy, excision of lesion

***Level IV: Basic Rehabilitative Oral Health Services***

Basic rehabilitation services are those necessary to contain the disease process after it is established or improve the form and/or restore the function of the oral structures. The word “function” as used here includes some psychosocial considerations as well as the mastication of food. These services are more difficult to provide since the disease process is well established. The investment of resources will have a good cost-effectiveness because the procedures are directed at containment or basic rehabilitation. They include but are not limited to complex restorative procedures (onlays, cores, and crowns), the majority of endodontic procedures, most advanced periodontal procedures, prosthodontic appliances that restore function, preprosthetic surgery, and most interceptive or limited orthodontic procedures.

The following Level IV services are those most frequently utilized:

- Complex amalgams (four or more surfaces)
- Cast onlays or crowns with or w/o porcelain
- Post and core restoration
- Crown buildups

- Acid etch retainers (Maryland Bridge)
- Bicuspid endodontics (two canals)
- Apicoectomy/retrograde filling
- Gingivoplasty
- Limited/interceptive orthodontics

### ***Level V: Complex Rehabilitative Oral Health Services***

The complex rehabilitation services listed in Level V are those that require significant time, special skill or cost to provide. Certain patients will require referral to dental care providers skilled in providing the specific procedure and/or which have limited their practice to that specific specialty area. Generally the patient must present special circumstances that would warrant the added time and transportation associated with specialty referral. Level V services may not improve the overall prognosis for most patients so patient selection is of critical importance when considering the provision of these services.

The Level V services most frequently provided are:

- Molar endodontics (three or more canals)
- Periodontal surgery (mucogingival and osseous)
- Complete and partial dentures
- Denture rebase (laboratory)
- Fixed bridgework (retainers and pontics)
- Implants
- Surgical extractions (impactions)
- Analgesia (e.g., nitrous oxide)
- Cephalometric or TMJ radiographs
- Occlusal adjustment (complete)
- Periodontal surgery
- Overdentures
- Consultation for specialty services
- Precision attachment prosthetics
- Comprehensive orthodontics (Class I, II, or III)
- Surgical extractions (bony impactions) and unusual or complex oral surgery

- Maxillo-facial prosthetics
- Intravenous (IV) sedation, general anesthesia

***Level IX: Exclusions***

These services have been determined to be of limited benefit in the treatment of oral disease or maintenance of oral health. These services have a variable rate of success, are difficult to monitor from an appropriateness or effectiveness standpoint, are not universally defined or accepted as the preferred method of treatment. Some of the services listed under exclusions require heroic effort and therefore are questionable from a cost benefit standpoint. Other services use material which is obsolete or of disputable effectiveness. In other cases the services are considered part of treatment and do not warrant a separate fee or value. In certain other cases the IHS simply will not pay for the service.

The following procedures are examples of exclusions which are frequently reported:

- Removable unilateral space maintainers
- Silicate restorations
- Gold foil restorations
- Cast inlay
- Porcelain inlays or crowns
- Full resin or resin/metal crowns
- Direct pulp caps
- Unilateral cast partials
- Chairside denture relines
- Pulpotomy in permanent tooth
- Tooth transplantation
- Removable appliance therapy
- Behavior management
- Broken appointments

**Limitations**

Provisions have been added to the IHS Schedule of Dental Services to limit the frequency of certain procedures provided to individual patients. The limitations are similar to those accepted in contracts managed by most third-party payers and therefore should be acceptable to most practicing dentists. The limitations are to be used in conjunction with applicable modifiers for specific services to assure that care is provided with optimal effectiveness.

The following table lists dental services which are subject to the specific limitations given:

Procedure	Limitation
Initial oral exam	Once per patient
Periodic oral exam	Once per six-month period
Full mouth radiographs	Once during three-year period
Supplemental bitewings	Once per six-month period
Prophylaxis	Once per six months, includes education
Topical fluoride	Selected patients with high caries activity
Crowns	Only when a less complex restoration is not possible (supported by x-rays)
Class II posterior composites	By report only
Periodontics	Limitations on type and frequency of services vary with disease severity
Prosthodontics	No replacement within five years
	Chrome/acrylic material of choice

### Treatment Modifiers

To further enhance the appropriateness and effectiveness of oral healthcare for Native Americans, the Schedule of Dental Services contains modifiers which practitioners must consider before planning treatment. These modifiers are based upon differences between the needs and circumstances of individual patients. Factors such as the patient's age, their health behavior or motivation, existing medical conditions, as well as other factors, may dictate the priority and extent of dental care which can be provided.

Following is a list of modifiers that may affect the provision of higher levels of care:

- Age of patient
- Arch integrity
  - Strategic importance of teeth involved in treatment
- Patient's health behavior or motivation
  - Compliance
  - Willingness to receive treatment
  - Dependability (history of keeping or breaking appointments)
- Oral hygiene and periodontal status
  - Activity of destructive disease
- Caries activity
  - Recurrent caries
  - Smooth-surface lesions
  - Root-surface lesions

- Pit and fissure lesions
- Medical conditions
  - Diabetes
  - Other systemic conditions which may affect the patient’s ability to receive or respond to dental therapy
- Access to care
  - Distance from clinic
  - Availability of skilled provider
  - Backlog of demand for lower levels of care

### **Relative Value Unit (RVU)**

Since the late 1970s, the IHS has used the “Service Minute” as a measure of productivity and workload. The service minute was a loosely defined measure that was mostly based on the time needed to perform specific dental procedures. By 2002 the nature of dental procedures and practice had changed significantly and it was considered necessary to update the unit of measure.

A contractor with experience in developing relative value tables for public and private organizations was hired to assist in developing a dental relative value unit table for the IHS. A survey containing 125 of the most frequently used dental procedure codes was distributed to all IHS, Tribal and Urban dentists. The dentists were asked to assign a relative value unit to each procedure code using D0150, Comprehensive Oral Evaluation as an anchor code with a value of 1.00, and the following criteria:

1. **Time** (How long does the procedure take?)
2. **Skill** (What level of technical skill is required to accomplish the procedure successfully?)
3. **Risk and/or Benefit to Patient** (How much risk and/or benefit is there to the patient receiving this procedure? For example, incision and drainage of an intraoral abscess may carry more risk and/or benefit for a patient than a prophylaxis.)
4. **Risk to Provider** (How much risk (liability) is there for the provider performing this procedure? For example, removal of a bony impaction may carry more risk for the provider than a single surface amalgam restoration.)
5. **Severity of Problem** (How severe is the problem being corrected by the procedure? For example, pulp therapy may correct a problem more severe than adjusting a denture does.)



6. **Other Resources Needed** (What level of supplies, instruments, equipment, etc. is necessary to perform this procedure? Some procedures require more sophisticated and expensive equipment or instrumentation than others.)
7. **IHS Dental Program Priority** (What level of care does the procedure fall into? Procedures in Levels I-III are of higher priority in the IHS Dental Program than those in Levels IV-VI.)

Based on the survey results the contractor was able to develop a relative value unit for each ADA procedure code that was statistically valid. That table is updated every two years when the ADA/CDT is issued.

## Consultation and Referral

### Consultation with IHS Dental Specialists

The *IHS Dental Program Resource Directory*, also known as the “dental roster,” contains a list of the IHS dental specialists. All of the dental specialties recognized by the ADA are included, except for oral pathology. General practitioners who desire consultation on a specialty case are encouraged to contact one of the specialists on the list. This list may be found on the IHS Web site at <http://www.ihs.gov/medicalprograms/dentaldir/>. The directory can be searched by various criteria to locate the needed specialist. A login is required to complete anything more than superficial searches of the database.

If the IHS area in which the general practitioner works has a consultant for the specialty in question, usually that specialty consultant will be the contact of choice. If the area’s specialty consultant is unavailable, or if the area has no consultant for that specialty, then the general practitioner should contact one of the others on the list.

Ideally, a request for specialty consultation is made in writing, with accompanying radiographs and study casts, as needed. It is a good idea to call the specialist before mailing the request to determine what specific items to include in the consultation request. Form HRSA-199-1, “Patient Referral Notice,” is commonly used for the written request.

If a general practitioner has an urgent question, such as during the treatment of a patient, he or she should not hesitate to contact the consultant by phone. An example is a surgical procedure that has proven to be more difficult than anticipated. In some cases the specialist can provide sufficient guidance over the phone to help the general practitioner complete the procedure.

In some cases, depending on the patient’s proximity to the IHS specialist and the workload of the specialist, it may be possible to refer a patient to the specialist for treatment that is beyond the training and experience of the general practitioner. Areas and/or individual specialists will have policies in place regarding referrals. These may or may

not permit direct care for referred patients. Contacting the specialist is the best way to be informed of the policy.

### **Consultations/Referrals between Dental Clinic and Medical Clinic**

Form HRSA-199-1 also can be used for consultations and referrals between the dentist and the medical clinic. A typical example of a medical consultation is requesting a physician to determine whether a patient's history of heart murmur will require the use of prophylactic antibiotics for dental treatment. An example of a medical referral is sending a young dental patient with severe periodontal disease to the medical clinic to determine whether the patient is diabetic. Similar referrals can be made from the medical clinic to the dental clinic, such as the referral of a known diabetic patient to the dental clinic for periodontal treatment.

### **Pathology Services**

Biopsy specimens from the dental clinic can be sent to the same laboratory service as specimens from the facility's medical clinic. Some dentists prefer an oral pathology service for oral biopsies. If this is the case, it may be possible to make arrangements with one of the schools of dentistry to have biopsy specimens sent there.

IHS programs (and possibly Tribal and Urban programs) can also access the oral pathology services available from the U.S. Navy laboratories at Bethesda, Maryland and San Diego, California. Naval Oral Pathology Services require an appropriately-completed standard form (SF 515) and a special biopsy bottle, mailing container, and label, which are provided by the Navy laboratory. The Navy lab recommends that all tissue removed from patients be submitted for analysis.

Requests for information on the availability of Naval Oral Pathology Services for your program, as well as requests for bottles, containers, and labels, should be made by calling (301) 295-0404. This phone number applies to both the Bethesda and San Diego laboratories.

### **Dental Facility Considerations**

The construction of a new dental clinic requires careful planning to ensure that the resulting facility is functional and a pleasant place in which to work. Without proper planning, a myriad of major and minor problems can occur during the construction phase.

Dental clinics built by the IHS undergo an extensive planning process using standardized designs to provide uniformity. Dental clinics built by Tribal and Urban Indian programs, on the other hand, display a wide variety of designs, because these programs have more flexibility when choosing clinic designs. Not being bound by standard designs provides some obvious advantages, but in some cases architects hired by Tribes or Urban programs have little or no experience in designing dental clinics. Whether new clinics are being constructed by the IHS, Tribes, or Urban Indian programs, the planning phase should include input from sources that are well-versed in the building of dental facilities.

The purpose of this subsection is to provide some general recommendations regarding dental clinic design and dental equipment selection which should be helpful to programs that are planning new dental clinics.

### General Recommendations

- Whether the clinic is being built by the IHS, a Tribe, or an Urban Indian program, it is a good idea to consult the Safety Net Dental Clinic Manual at [www.dentalclinicmanual.com](http://www.dentalclinicmanual.com).

Following are some of the types of information provided by the facilities planning manual:

- Dental clinic designs for facilities of various sizes
- Equipment lists, by room, for real property (furnished when a building is built and usually consisting of large items which are bolted to the wall or floor) and for major unattached equipment such as dental chairs, autoclaves, film processors, and handpieces. Disposable items and hand instruments are not included in these master lists.
- Air exchange recommendations
- Ambient light recommendations
- Safety codes
  - Visit other I/T/U dental clinics. Don't rule out any possibilities, including military installations and veterans hospitals, if they are available nearby.
  - Contact people in other I/T/U dental clinics who have experience in building new facilities, especially those who have recently planned construction of a new clinic.
  - Talk with Area Office staff, including the area dental consultant and the area facilities planning officer.
  - Meet with representatives from dental supply houses. They can provide useful information about clinic design, even though their primary job is to sell equipment.
  - Use the toll-free number of equipment manufacturers to get advice regarding facility requirements for the equipment that you intend to place in the new clinic.
  - Obtain and use government price lists for equipment. Having the catalogs on hand will facilitate the ordering of equipment by allowing for comparison of prices and features.

- Get actively involved in the project. Most construction projects have a better result if the dentists and other dental staff at the facility have direct input at the design stage. If an architect or company representative has made an obvious error, such as forgetting to include a sink in the lab, dental staff members should be able to detect the error.
- Use manufacturer’s templates and size guidelines. If a certain amount of floor space is required, avoid the temptation to get by with less. Follow the manufacturer’s instructions!
- Make every operatory identical, with the exception of quiet rooms and/or operatories used for sedative procedures (these will require increased space for personnel and monitoring). This will help to eliminate the problem of providers using “favorite rooms” the majority of the time, which can have a negative effect on dental clinic efficiency.
- If possible, have windows in the operatories to facilitate the selection of tooth shades and to provide a pleasant atmosphere for patients and staff. North-facing windows are best, and east-facing are second-best.
- Plan for proper air exchange in each operatory. It should be driven with its own special system. Consult the Safety Net Dental Clinic Manual at [www.dentalclinicmanual.com](http://www.dentalclinicmanual.com).
- Provide adequate overhead light in the operatories to prevent eyestrain.
- Provide vacuum and air systems with their own exhaust/intake lines. The trap for the vacuum system should be easily accessible for cleaning. The discharge point for the exhaust should not be near a fresh air inlet or open windows, and it should not discharge into a supply room or other occupied place.
- Provide each operatory with two sinks.
- Provide each operatory with its own x-ray machine.
- Provide plenty of electrical power for each operatory for future expansion.
- Provide each operatory with telephone and data jacks.
- Provide a staff changing area, with lockers, within the dental clinic area. This will facilitate the separation of clothing used to treat patients from clothing that is worn outside of the clinic, which is important for infection control.

### **Square Footage Recommendations**

The *Safety Net Dental Clinic Manual* at [www.dentalclinicmanual.com](http://www.dentalclinicmanual.com) contains detailed charts of size recommendations for various types of space in the dental clinic. Below are recommendations for some of the most common clinic configurations.

*Note:* It is anticipated that the areas in the planning manual will be expressed in square meters, in order to meet government requirements. In this guide the areas will be expressed in square feet.

Conversion Factor = 10.76 ft<sup>2</sup> per m<sup>2</sup>

Fixed Operatories = 110 square feet (sq. ft.) per operatory (usually 10' × 11')

Panoramic x-ray = 30 sq. ft.

Panoramic/Cephalometric combination = 50 square feet

Clean-up Alcove (2 to 3 operatory clinic) = 90 sq. ft.

Clean-up Alcove (4 to 8 operatory clinic) = 100 sq. ft.

Clean-up Alcove (9 to 12 operatory clinic) = 150 sq. ft.

Laboratory (2 to 3 operatory clinic) = 60 sq. ft.

Laboratory (4 to 8 operatory clinic) = 80 sq. ft.

Laboratory (9 to 12 operatory clinic) = 120 sq. ft.

Darkroom (2 to 8 operatory clinic) = 60 sq. ft. (1 automatic developer)

Darkroom (9 to 16 operatory clinic) = 90 sq. ft. (2 automatic developers)

Digital Processing Area = 20 sq ft per scanner/computer combination

Unit Supply Area (2 to 3 operatory clinic) = 40 sq. ft.

Unit Supply Area (4 to 8 operatory clinic) = 80 sq. ft.

Unit Supply Area (9 to 12 operatory clinic) = 120 sq. ft.

Reception Area (2 to 4 operatory clinic) = 100 sq. ft.

Reception Area (5 to 8 operatory clinic) = 120 sq. ft.

Reception Area (9 to 16 operatory clinic) = 240 sq. ft. (two reception areas)

Dental Director's Office = 120 sq. ft.

Dental Manager's Office or DA Supervisor's Office = 100 sq. ft.

Non-supervisory Dentist's Office = 80 sq. ft. (add 40 sq. ft. for each additional dentist)

Toilet (8 to 12 operator clinic) = 50 sq. ft. Clinics with a staff of six or fewer members can save funds by using a unisex staff restroom.

Waiting Area (1 to 4 operator clinic) = 120 sq. ft.

Waiting Area (5 to 7 operator clinic) = 180 sq. ft.

Waiting Area (8 to 13 operator clinic) = 240 sq. ft.

Janitor's Closet = 40 sq. ft.

Cephalometric X-ray (for clinics with full-time orthodontic services) = 100 sq. ft. (if stand alone, may be added to most panoramic radiograph machines)

*Note:* Space is also needed for staff lockers, staff toilets, and employee lounge, but is not listed here.

### **Delivery Systems**

The dental delivery system traditionally used by the IHS is the rear-delivery system. While it has proven to be an economical, functional system, the rear-delivery method does have some shortcomings. As a result, many Tribal and Urban programs and some IHS programs recently have chosen alternative delivery systems. Following is a comparison of the commonly-used delivery systems, showing the advantages and disadvantages of each:

#### **Over-the-Patient Delivery**

Advantages:

- The most ergonomically-sound system for the dentist
- Easily converts to left-handed or right-handed
- System moves up or down with the chair to maintain a constant relationship
- Provides the most practical use of space
- Allows dentist and assistant to handle instruments and switches
- Allows the dentist to let go of the handpiece without looking up

Disadvantages:

- The most visible system to patients in terms of seeing the instruments
- Is confining for patients
- Patients may bump into unit if they rise up suddenly

- Generally *not* recommended for treating children or patients with conditions that result in aggressive behavior or unpredictable movements
- Patient's feet can get tangled in the handpiece cords
- Expense

### **Rear Delivery**

#### Advantages:

- The least expensive system and easily combinable with an assistant cart for little additional expense
- Easily converts to left-handed or right-handed
- The least-visible system for patients
- Easy patient access to dental chair
- Allows handpieces to be transferred and burs to be changed by the assistant
- Easy to connect to in-wall utilities

#### Disadvantages:

- Ergonomically less sound for the dentist, who must twist to reach handpieces or instruments
- Places the dentist at increased risk for sharps injuries from dental burs, due to the location of the handpiece holder near the dentist's forearms and elbows
- Cords can become tangled and difficult to position for dentist use
- Requires two entries to operatory — one for the dentist, and one for the assistant
- Makes working alone or standing up difficult for the dentist

### **Side Delivery**

#### Advantages:

- Provides easy patient access to chair
- Less confining to patients
- Easy to connect to in-wall utilities

#### Disadvantages:

- Most do not convert to left-handed and right-handed

- Handpieces inaccessible to assistant, so dentist must change burs
- Ergonomically less sound for the dentist, who must twist to reach for handpieces or instruments

Because of the lack of convertibility for right-handed and left-handed dentists and the difficulties the system presents for performing four-handed dentistry, the side delivery system is generally not recommended for dental programs serving AI/ANs.

### **Equipment Considerations**

When selecting dental equipment, research the manufacturer of the brand of equipment you are considering to determine (1) the stability of the company and (2) if they provide good customer support for their equipment. Also ask dentists and dental equipment repair services about the reliability and durability of the brand of equipment you are considering.

The Clinical Research Associates Newsletter (Clinical Research Associates 3707 North Canyon Road, Suite 6 Provo, UT 84604 (801)-226-2121) is another source of information for large equipment items such as dental units and chairs, as well as for small equipment items such as ultrasonic scalers, visible light curing units, and handpieces. The publication also contains other equipment and supply information that is very useful when building a new clinic.

General and specific recommendations for the selection of patient chairs, dental units, operators' chairs, assistants' chairs, and other equipment items can be found in various dental periodicals. An example of a useful article is the June 1994 issue of *The Dental Advisor—The Quarterly for the Dental Profession* (Volume 11, Number 2). The Dental Evaluation & Consultative Service (formerly USAF Dental Investigative Service) can also be a source of unsolicited information. This is an independent reviewer of dental equipment and supplies located online at <https://decs.nhgl.med.navy.mil>.

If using literature reviews be sure to locate articles that provide a list of features that a buyer should seek when purchasing dental equipment items and also offers recommendations, including brand names. The article should break down the attributes into primary characteristics, which meet efficiency and infection control needs, and optional features, which depend on the personal needs and preferences of the operator.

The following is a synopsis of the primary features of large operator equipment:

### **Patient Chairs**

- Stable base and lift mechanism (hydraulic type is quieter than screw drive type)
- Seamless and removable upholstery for easy cleaning/repair (all-vinyl is recommended, because it can withstand disinfection procedures)



- Adjustable headrest for patient comfort and operator visibility
- Ergonomic contoured design
- Good lumbar support for patient comfort
- Movable armrests for easy patient access and wheelchair transfers
- Auto preset positioning and auto return with safety stop
- Right/left convertibility
- Foot controls or a touch pad to adjust the chair position

### **Dental Units**

- At least one fiber optic high-speed outlet (two is ideal, to prevent down time in the event of malfunction)
- One fiber optic low-speed outlet
- Smooth snap-on/off handpiece connectors for efficient operation and sterilization of handpieces
- Handpiece flush system for infection control
- Non-ribbed tubing for easy cleaning/disinfection
- Anti-retraction valves for infection control
- Quick connect/disconnect, sterilizable high- and low-volume evacuators and three-way syringes for efficient operation and sterilization
- Self-contained water purification system for infection control
- Right/left convertibility

### **Dental Handpieces**

- Air-powered or electronically powered rotary instruments
- High-speed handpieces and low-speed handpieces for general dentistry
- Surgical handpieces are needed for invasive surgical procedures (these can be air driven and attached in place of the high-speed, Impact Air 45 is an example
  - Specialty specific handpieces may be requested:
    - Surgical specific handpieces are equipped with a wide range of attachments
    - Endodontic rotary handpieces are required for rotary instrumentation (torque controlled electrically driven units are standard)

- Sterilization method determines the number of handpieces needed by a facility (faster sterilization requires fewer handpieces)
- As a general rule you will need four high-speed handpieces/operator and four slow-speed attachments/operator
- **Dental handpieces are expensive, so make sure enough funds are included in your start-up budget**

### **Operator and Assistant Stools**

- Metal frame with five-legged base for stability
- Double wheel castors (need tile castors, not carpet castors, for hard floors)
- Gas cylinder for height adjustment
- Easily reached height adjustment lever or paddle
- Seat pan tilt adjustment
- Multidensity padding for comfort
- Seamless upholstery for easy cleaning
- The stools for the dentist and dental assistant are different, with the dental assistant stool having foot and armrest

### **Dental Radiography (X-Rays)**

- Intra-Oral Radiographs (periapical, bitewing, occlusal)
  - Require standard radiograph machine for exposure
  - Basic dental radiographs show several teeth at a time. These can be standard films developed conventionally way using chemicals or produced with computer if using digital radiography.
- Panoramic Radiographs
  - This dental radiograph shows both dental arches on a single x-ray film that is 5" by 11".
  - The panorex machine requires its own area and may be conventional or digitally produced.
  - It is recommended to be take a panoramic radiograph every 5 years per patient greater than 8, if a facility does not have the ability to purchase this equipment, then a referral system must be in place in order to obtain this type of radiograph when needed.
- Cephalometric Radiograph

- This radiograph shows the entire head and is taken using a panoramic machine with special attachments and may be conventional or digitally produced. Oral surgeons and orthodontists mostly use this type of x-ray. This type of radiograph is nice to have but not required unless your clinic has an orthodontic program.
- Conventional
  - Exposure of photographic film to x-rays and then chemically develop the film in a developer in a darkroom or via a ‘day-light loader’
  - Costs of conventional developing are cheaper in the short-run, but increasing due to cost of chemical handling.
  - Films are archivable, but require physical space to store radiographs.
- Digital Radiography:
  - Images are captured electronically via a charge couple device (CCD) or via a phosphor plate system after exposure to x-rays.
  - These images are then uploaded, viewed and stored on a computer.
  - Computer (CPU), monitor(s) and keyboard are needed in each operatory, back-up storage (server) is need for archiving images).
  - Costs: Initially higher but the unlimited use of a CDD decreases costs decrease with each image processed. The phosphor plates do have a limited life, but are reusable and cost-friendly
  - Cost and space required for darkrooms, film, processing chemicals, and disposal of hazardous waste are eliminated.
  - Time, money, and paperwork can be saved by utilizing digital images.
  - Patient exposure is minimized using digital radiography.

### **Dental Operating Lights**

- Can be wall mounted, ceiling mounted via a track, or chair mounted

### **Computers**

- Needed in the operatory if the clinic will be using digital radiography or electronically maintained charts.
- Computers may be mounted on the dental chair and/or placed on a cabinet in the operatory.
- Specific information regarding specifications can be obtained from the IHS internet site, in the Electronic Dental Record area (EDR).

### **Communication System**

- Small (e.g., only one provider and appropriate support staff), then intraoffice communications can be as easy as word-of-mouth.

- Color-coded flagging systems or light systems frequently are used in multiprovider medical and dental offices to alert the providers when a patient is in a treatment area or when they have a phone call or message.
- An internal paging or intercom system also may be considered.
- Intercom systems can be installed as stand-alone system or as part of the clinic's phone system, decide which type will be used before a phone system is purchased and installed. Local dentists or local group practices may be able to help you decide which system will best suit your needs.
- Phone service planning, have additional lines dedicated for fax machines and Internet access.
- Computer networks.
  - Desirable, but pose risks of unauthorized access to or loss of data.

### **Sample Dental Clinic Equipment List**

Following is a sample of an equipment list. It is not necessarily an all-inclusive list, but it may be helpful to other programs contemplating new construction or remodeling.

#### **Operatory**

- |                           |   |
|---------------------------|---|
| • Amalgamator             | • Hand washing stations (2)                                     |
| • Air compressor, central | • Intraoral imaging system                                      |
| • Air/water syringe(s)    | • Lead apron and hanger   |
| • Assistant's stool       | • Light curing unit   |
| • Assistant unit          | • Nitrous oxide sedation unit                                   |
| • Cabinets with sinks     | • Operating light   |
| • Camera, intraoral       | • Operating stool   |
| • Clock/intercom/timer    | • Oral evacuator: high volume and low volume                    |
| • Coat hooks              | • Oral evacuator utilities (Suction pump, central)              |
| • Computer                | • Oxygen delivery system  |
| • Doctor's unit           | • Prophylaxis unit, ultrasonic                                  |
| • Dental chair            | • Radiograph view box (not needed if using digital radiographs) |
| • Eye wash station        | • Sphygmomanometer  |
| • Fiber optic unit        |   |
| • Gloves/masks            |   |
| • Handpieces              |   |

- High speed
- Low speed
- Contra angle
- Prophylaxis angle
- Straight attachment
- Stethoscope
- Waste receptacle, trash
- Waste receptacle, biohazard
- X-ray unit

**Soiled Clean-Up Area**

- Ultrasonic Cleaner (small)
- Ultrasonic Cleaner for Multiple Cassettes (or washing station)
- Deep Double Sink/Paper Towel and Soap Dispensers
- Wastebasket
- Dishwasher
- Handpiece Lubricating Station
- Autoclave Tape Dispenser
- Compressed Air Outlet
- Eyewash Station

**Laboratory**

- Acrylic polish
- Acrylic tray material
- Alcohol torch
- Articulators:
  - Crown and bridge
  - Denture
- Denture reline material
- Denture repair acrylic
- Bench lathe
- Bench lathe accessories:
  - Arbor bands and mandrels
  - Brush wheels
  - Chucks
  - Felt wheels/cones
  - Polishing wheels
  - Spindles
  - Stone wheels
  - Bench light
- Boley gauge
- Brushes
- Bunsen burner
- Dust collector
- Fire extinguisher
- Handpiece, air driven
- Hand towels and dispenser
- Laboratory bench, with sink
- Laboratory engine and handpiece
- Lab handpiece accessories:
  - Acrylic burs
  - Abrasive disks/mandrels
  - Carbide burs
  - Gold-finishing kit
  - Model-trimming burs
  - Porcelain-polishing kit
  - Rubber wheels and points
- Magnifying loops
- Microetcher
- Model trimmer
- Petrolatum

- Plaster:
  - Lab
  - Model
  - Die
- Plaster bin
- Plaster-mixing bowls, rubber
- Plaster knives
- Plaster spatula
- Plaster trap
- Pliers
- Pressure-curing unit
- Pumice
- Rouge
- Safety glasses
- Saw frame and blades
- Scissors
- Surveyor
- Vacuum-forming machine
- Ventilation System
- Vibrator
- Water Bath
- Waxes:
  - Baseplate
  - Boxing
  - Inlay
  - Rope sticky
  - Utility
- Wax carvers
- Wax spatulas
- Waste receptacle
- Work pan

### **Clean Room**

- Large autoclave (for multiple cassettes — 15)
- Small, fast-turnover autoclaves
- Handpiece autoclave (e.g., Kavoklave)
- Water distiller
- Dry heat sterilizer
- Shelving to hold all clean items (cassettes, etc.)
- Refrigerator
- Label gun (for expiration dates)
- Biological incubator

**Radiograph Exposure/Processing**

- Radiograph Aids
  - Rinn Instruments
  - Snap-a-rays
  - Endo-ray
  - Bite-tabs
- Film:
  - Bitewing
  - Intraoral, Size 0
  - Intraoral, Size 1
  - Intraoral, Size 2
  - Intraoral, Size 4
  - Panoramic/Cephalometric
- Film envelopes
- Film holders/mounts
- Lead apron with neck collar
- Automatic film processor
- Deep sink for cleaning rollers
- Developer and Fixer Recovery Unit
- Film dispenser
- Plastic apron
- Safe light
- View box
- Waste receptacle
- Water Temperature Regulator

**Panoramic Area**

- Panoramic unit (pan/ceph)
- Lead apron/hanger
- Mechanical room

**Office, Chief/Dentist**

- Bookcase(s)
- Chairs/executive
- Chair/guest
- Computer system
- Desk
- File cabinets
- Prescription blanks
- Telephone



**Reception/Business Office**

- Announcement cards
- Answering machine
- Appointment book
- Appointment cards
- Bookkeeping
- Clipboards
- Collection aids
- Computer:
  - Hardware
  - Printer/Scanner
  - Software/supplies
  - Terminals
- Copy machine
- Desk organizer/calendar
- Drug envelopes
- File cabinets/folders
- Letterheads/envelopes
- Office manual
- Office signs (exit, rooms, etc)
- Patient education literature
- Patient records
  - Medical/dental history forms
  - Patient exam charts
  - Patient file folders
  - Periodontal charts
  - Registration forms
  - Stickers for folders
  - Treatment plan/record forms
- Payroll forms
- Postage stamps
- Professional cards
- Recall system (cards, index)
- Referral slips
- Secretary's chair
- Stamp pad
- Standard insurance forms
- Stapler
- Tape dispenser
- Telephone/Intercom System
- Typewriter

**Storage**

- Shelving Units
- Supply Desk/Chair/Filing Cabinets
- Papoose Board
- Washer/Dryer

**Waiting Area**

- Books
- Chairs/end tables/lamps

- Coat rack
- Decorative items
- End tables
- Lamps/lighting
- Magazine rack/magazines
- Toys for children
- Wall mirror

### **Education**

- Sinks for tooth brushing
- Television/Video Cassette Recorder (VCR)/ Digital Video Disc (DVD)
- Models/Posters/Pamphlets/Educational Aids

### **Other Items**

- Instrument cassette system
- Hand instruments (see section below)
- Curing radiometer (curing light tester)
- Electronic thermometer
- Clothing hamper
- Tubs/trays/racks
- Employee lockers

### **Dental Instruments and Supplies for Start Up**

This is a suggested list for a one dentist, 2-3 operator dental clinic. The list is divided into categories of equipment and supplies. Those items listed should be able to take care of most operative, preventive dentistry, endodontic, prosthodontic, and oral surgical needs in a dental clinic. Note that some instruments are listed in multiple sections. Once you and the dentist decide which services your clinic will offer, you can compile the equipment/supply list. Items can be substituted to satisfy personal and professional needs of the dentist(s) that will be working at your clinic. The purpose of this list is to provide you a starting point, not to be “the list.”

### **Operative Instruments (Six Kits Per Dentist)**

<b>Quantity</b>	<b>Item/Description</b>
6	Mouth Mirrors #5 (or #3, or 4 if dentist prefers)
6	Mirror Handles (must fit mirror heads)

Quantity	Item/Description
6	23 Explorer/PSR
6	Scissors, Iris 4 1/2" Straight, Economy
12	Cotton Pliers(s), College #317
6	Spoon Excavator #38-39
6	Amalgam Carrier Double Ended I
6	Amalgam Plugger I/2 Black
6	Cleoid-Discoïd 3/6
6	Cleoid-Discoïd 89/92
6	Hollenbach
6	Interproximal Carver (IPC)
6	Articulating Paper Forceps
6	Rubber Dam Frame
6	Rubber Dam Clamp Forceps
6	Dycal Instrument
6	Tofflemire(s) two per kit, universal

### Handpieces

\*If you do surgical extractions, you will need a surgical handpiece.

Quantity	Item/Description
6	High-Speed Handpiece
3	Low-Speed Handpiece
6	Ball-Bearing Contra Angle Assembly (Latch)
6	Prophy Contra Angle Head Assembly
6	Contra Angle Sheath
2	Straight Attachment
2	Spray and Clean Handpiece Lubricant

### Other Instruments

Quantity	Item/Description
6	Dental Mirrors #5 for Exam Kits
6	Mirror Handles for Exam Kits
6	Explorer/PSR Periodontal Probes for Exam Kits
2	Cement Spatulas #24
9	Aspirating Syringe CW Type
2	Composite Instruments, Set of 3
3	Rubber Dam Punch
3	Rubber Dam Clamps, Starter Kit

### Operative Supplies

Quantity	Item/Description
4	Lidocaine 2% 1: 100,000 epi/can

Quantity	Item/Description
1	3% Mepivacaine/can
1	5% Marcaine 1:200,000 epi/can
2	27 gauge Long Needles/box
2	30 gauge Short Needles/box
2	Topical Anesthetic
2	Sharps Container
1	Accu Film II/box
1	Amalgam -Regular Set/can
1	Glass Ionomer Kit
1	IRM Caps 50/Pkg.
1	Clear Matrix Strips/box
1	Sof-Lex Pop-On Kit #1980
1	Finishing Strips Coarse/Medium 150/Box
1	Lightening Strips Medium 12/tube
1	Polishing Paste/can
4	Tofflemire Matrix Bands #1, .0015 12/Pkg.
4	Tofflemire Matrix Bands #2 .0015 12/Pkg.
1	Dycal Ivory Shade/tube
24	Fluoride varnish boxes
1	Vitrebond 3M/box
6	Bur Block
3	Etch Gel Syringe, with 20 Tips
3	Rubber Dam Green, Medium, 5x5/box
1	Rubber Dam Green, Heavy, 6 x 6/box
1	Wizard Anatomical Assorted Wedges 400/Box
1	MQ Lubricant/tube

### Assorted Burs, Doctors Preference: Disposables

Quantity	Item/Description
1	1 Tray Covers–Mauve 1000/Box
2	2 x 2 gauze 8 ply 200/Pkg
2	4 x 4 gauze 8 ply 200/Pkg
1	Dry-Guard Patient Bibs (rose) 500/Case
4	Napkin Holder
1	Cotton Tip Applicators 6" non-sterile 1000/Box
1	Cotton Pellets #2 2000/Box
1	Cotton Pellets #4 3000/Box
1	Cotton Rolls 2000/Box
1	Cotton Roll Dispenser
1	Plastic Cups, 1000/Case
1	Cup Holder
1	Safe-Tips EZ 150/Pouch
3	High Speed Evacuation Tips 50/Bag

Quantity	Item/Description
3	Saliva Ejectors White Opaque 100/Bag
1	Dappen Dishes 1000/Box
1	Oral Evacuation Cleaner
1	Disposable Spatulas 100/Box
2	Benda Brush 144/Box
1	Disposable Mirrors 72/Box
1	Disposable Traps Dental Unit 144/Box, pick size needed
1	Disposable Traps Central Suction 8/Box, pick size needed Paper Towels

### Infection Control Supplies

Quantity	Item/Description
6	Latex Exam Gloves, pick sizes
3	Sterile Surgeons Gloves, pick size
2	Utility Gloves, pick sizes
6	Face Masks, 50 per box, pick type
6	Safety Glasses (dentist, DA, patient)
3	Disposable Cover Gowns, pick size
3	Antiseptic Hand Soap,
1	Cleaning Solution
3	Disinfectant
2	Self Seal Sterilization Pouches 31/2" x 9",
2	Self Seal Sterilization Pouches 31/2" x 51/4",
2	Self Seal Sterilization Pouches 51/4" x 10"
2	Self Seal Sterilization Pouches 71/2 x 13",
3	Chair Covers 48" x 56"
3	Air/Water Syringe Covers
3	Light Handle Covers
1	ALLRAP 1200 Sheets/Roll
3	Mouth wash, may want to order pump
3	Chlorhexedene oral rinse 16 oz
1	Cure Sleeve, Steri Shield 500/Box
1	Tube Sleeve 2"
3	X-ray sleeve 14" W x 13" D x 241/2" L
1	Biological Monitoring System
1	Biological Indicators (25/box)

### Standard Oral Surgery Kit (Two–Three Kits Per Dentist)

Quantity	Item/Description
1	1 #9 Molt Periosteal Elevator
1	1 Needle Holder, Crile-Wood 6 inch
1	1 301 Elevator
1	1 34 Elevator

Quantity	Item/Description
1	1 Minnesota Retractor
1	1 Curette
1	1 Kelly Hemostats, Curved 5 1/2"
1	1 Mouth Mirror 1 Mouth Handle
1	1 Scissors Kelly 6 1/4", Curved
1	1 Mouth Prop (adult) 2/Box
1	1 Suction Tips

### Oral Surgery Instruments

Quantity	Item/Description
3	Surgical scalpel #15, disposable and retractable (10/box)
3	150 Forceps
3	151 Forceps
3	17 Forceps
2	23 Forceps
2	88R Forceps
2	88L Forceps
2	#1 Forceps
3	Cryer 30
3	Cryer 31
2	Crane Pick
2	Periosteal Elevator #9 Molt
2	Heidbrink #1 Root Tip Pick
2	Heidbrink #2 Root Tip Pick
2	Heidbrink #3 Root Tip Pick
2	Tissue Forceps
2	Rongeurs
2	Bone File, 12 Howard
2	Straight Hemostat, Crile 5 1/2"
2	Needle Holder, Crile-Wood
2	Surgical Handle
3	Dental Mirror for Post-Op Kit
3	Mirror Handles for Post-Op Kit
3	Iris Scissors for Post-Op Kit
3	Cotton forceps for Post-Op Kit
1	3-0 Silk Sutures, 18" Cutting, Needle C-6 12/Box
1	3-0 Chromic Gut Sutures, 27", C-6 12/Box
3	Biopsy Bottles
1	Dry Socket Paste, 1 oz.
1	Iodoform Gauze 1 1/4" x 5 yd.
1	Gelfoam

### Assorted Surgical Burs, Doctors Preference: Standard Endodontic Kit (Two Kits Per Dentist)

Quantity	Item/Description
1	1 Mouth Mirror, #3
1	Mouth Mirror Handle
1	23 Explorer/Perio Probe
1	Scissors
2	Cotton Pliers Self-Locking Grooved
1	Ring Rulers, Right-Handed
1	Endo Excavator #31
1	DG 16 Endodontic Explorer
1	DE condenser 1/3
1	DE condenser 5/7
1	DE condenser 9/11
1	Glick #1
1	Woodson #3
1	Hollenbach
1	Interproximal Carver
1	Cement Spatula
1	Articulating Paper Forceps
1	Rubber Dam Frame
1	Rubber Dam Forceps
1	Tofflemire

### Endodontic Supplies

Quantity	Item/Description
2	Endo Ice (can, refrigerant)
1	Sealer (dentist preference)
1	Gutta Percha (Med-fine, Med, Med-large)
2	Gutta gauge (Maiffer)
2	Gates Glidden Drills (#2,3,4,5,6), 4/box
1	Touch n Heat, System B, or Endo Micro-Torch (Butane Refill)
1	Obtura + GP bullets
1	Paper Points, fine
1	Paper Points, medium
1	Paper Points, coarse
1	RC prep, Premier
2	Cavit, 4 tubes
1	Monojet Syringes 3cc, 5cc 50/box (dentist preference)
2	23 Ga. Side venting needle, 25/box
1	Sodium hypochlorite (bleach), gallon
1	EDTA liquid (32 oz bottle)
	Files, FlexFiles, Flex-R-Files, assorted, Dentist preference

Quantity	Item/Description
	Endo Burs, assorted (recommend: #2,4 round, endoZ or Safe-end)

### Standard Prophylaxis Kit (Two–Three Kits Per Dentist)

Quantity	Item/Description
1	Mouth Mirror
1	23 Explorer/PSR Probe
1	S204S Sickle
1	Sickle 23
1	1/2 Curette
1	11/12 Curette
1	13/14 Curette
1	Sharpening Stone
1	Cavitron Tip, 25K FSI-I0

### Preventive Dentistry Supplies

Quantity	Item Description
1	Reveal Disclosing Solution
20	Fluoride varnish, 50 box
2	Prophy Cups, Screw Type, 36/Pkg.
1	Uni-Pro Prophy Paste, Coarse 200/Box
3	Floss Waxed, 200yd/box

### Radiology Supplies (Conventional Radiography)

Quantity	Item/Description
6	XCP Kit
1	Snap-a-Ray, Set of 3
2	X-Ray Apron, Mauve
2	Apron Hanger
3	View box,
2–3 ea type	EX-58 Flexi-Soft Vinyl Pack #0,1,2 films by box
1	Film Panorex 50/Box
1	Occlusal Film, EO-41P 25/Box
1	FM X-Ray mounts, clear, E-Z mounts, Box
1	X-Ray Envelopes, 21/2" x 41/4", Plain 500/Box

Note: digital radiography requires: CPU, monitors, Image capture device (CCD or phosphor plate), scanner, sterilization materials, storage device, etc.

### Emergency Procedures in the Dental Office

Dental officers in the IHS should be aware that urgent or emergent medical and dental situations may arise in their clinics. It is their responsibility to ensure that they themselves and their dental staffs are well-prepared to cope efficiently, quickly, and



appropriately on such occasions. Preparation and training must take place well in advance so that when action is needed in potentially life-threatening situations appropriate action will be taken.

Equipment for providing supplemental oxygen to hypoxic patients should be available in all IHS, Tribal, and Urban Indian dental clinics. This equipment should provide capabilities for forced respiration through the use of a rubber reservoir bag and a face mask that can produce an air-tight seal around the patient's nose and mouth. An ambu-bag is ideal for such purposes. Portable oxygen machines or nitrous oxide/oxygen machines can also be easily adapted to provide such capabilities.

All dental staff should be trained in cardiopulmonary resuscitation and maintain current certification. Courses may be obtained through local American Red Cross units to assist in meeting certification requirements.

### **Emergency Care Equipment and Drugs Recommended for IHS/Tribal/Urban Indian Dental Clinics**

Each dental clinic should have a plainly marked and readily available emergency drug kit containing the following basic diagnostic and treatment equipment and drugs for emergency use, as recommended by the IHS Oral Surgery Consultant:

#### **Basic Equipment and Drugs**

- Ambu-bag: various sizes (or oxygen machine with bag-valve-mask device for assisting in ventilation procedures for the patients)
- Sphygmomanometer: automated and manual, various sizes (blood pressure cuff)
- Stethoscope
- Molt or McKesson mouth props (or taped stack of 8 to 10 wooden tongue depressors for use as a mouth prop)
- 13-gauge sterile needles (2) (to use in providing emergency airway at cricothyroid space)
- Adult-sized and child-sized oropharyngeal airways (1 each)
- 1/2" or 3/4" wide tape (adhesive, autoclave, paper, or "Scotch")
- Tubex syringes (2) or Luer lock syringes with 22-gauge needles
- Alcohol sponges (in foil wrappers to keep them moist)
- Band-aids (6)
- Sterile 2" × 2" gauze packets (12)
- Sterile 2cc. disposable syringes (4) with 18 and 21 gauge needles

- Drugs:
  - Oxygen: minimum 1 E cylinder for 30 minutes of 8-10L/min
  - Epinephrine: Tubex syringe cartridges with sterile protected needle attached (6) or 1:1000 in unit dose vials (1 mg/ml) or IV fluids (aqueous) 1:1000 in 1 ml for use IM or subcutaneous
  - Benadryl (50 mg/ml) ampule (3)
  - Nitroglycerine tablets (0.15mg) for angina pectoris and 1 bottle of metered translingual spray 0.4mg/dose)
  - Aspirin: Antiplatelet: 3–4 baby chewable aspirin (162 mg)
  - Alupent (Albuterol) inhaler for treatment of acute asthma via metered dose inhaler (asthma patients should have their own inhalers in their possession when receiving dental treatment)
  - Ammonia inhalant (4)
  - Antihypoglycemic: non-injectable (fruit juice, glucostat, soda, granulated sugar)

The rationale behind the preceding list of critical items is that the emergency kit should contain only those items that the dentist knows how to use. In a real emergency, the IV is not the number one tool for treating the emergency. The dentist should focus on doing those things that will increase the patient's chance for a good outcome once the emergency room staff arrives, and should let them start the IV and give the drugs, if possible.

If a crash cart and medical staff are not available in the facility (such as in stand-alone dental clinics without a medical clinic nearby), or if intravenous sedation is being performed in the dental clinic, additional equipment and drugs should be present. A dentist working in such a clinic should plan ahead very carefully for the possibility of a medical emergency, such as considering the likely response time for a 911 call. Advanced training in the treatment of medical emergencies is also strongly recommended, so that he/she will be able to use the following drugs and equipment if necessary:

Additional items for clinics without a crash cart:

- Rubber tourniquets (2)
- Sterile 25-gauge  $\times$  5/8" length, and 22-gauge  $\times$  1 5/8" length needles (3)
- Intravenous infusion set
- IV tubing (2)
- 1000 cc. of normal saline for hypotension
- 500 cc. of 5% dextrose and water for piggyback meds or IV fluids

- Versed 5mls in 5mg/ml dosage or Meperidine (Demerol) in 50 mg. Tubex cartridges with sterile protected needle attached (3) or Talwin 50 mg. ampule
- Ephedrine Sulfate 50 mg. ampule for use as a vasopressor to treat hypotension
- Solu-Cortef (100 mg. vial) for use as an antiinflammatory agent
- Narcan (1 ml. ampule) to counteract narcotic depression
- Amyl nitrite inhalant (3) for coronary artery dilatation
- Valium (10 mg. vial) IV/IM for convulsions
- Glucagon (1 mg. IM) for hypoglycemia
- Glucose 50% (25 mg. in 55 cc vial) for hypoglycemia
- Aminophyllin (500 mg. vial) mix 500 cc D5W for acute asthma
- Atropine (1 mg. ampule) for bradycardia
- AEDs are becoming the standard of care in the private sector, and have been mandated by some states. All stand-alone dental clinics should consider having one on hand.

### **Emergencies in the Dental Office**

#### **Syncope (Mild Neurogenic Shock)**

*Early Symptoms:* Ashen gray (pallor), cold perspiration, nausea, lightheadedness, restlessness (anxiety), talkativeness, tachycardia.

*Late Symptoms:* Depressed medullary function, papillary dilation, low blood pressure, convulsive movements, bradycardia (rapid, thready, or slow, weak pulse), shallow, slow respirations, unconsciousness

*Prevention:* Minimize hypoglycemic risk (advise a light meal), adequate emotional evaluation; barbiturate or tranquilizer premedication; aspiration when giving injection.

*Treatment:*

- Monitor vital signs
- Supine position (lower head slightly, elevate legs and arms (pregnancy—roll to side)
- Oxygen 8–10 l minute
- Spirits of ammonia
- Cold packs to forehead

- Monitor vital signs.
- Reassure patient

### **Hyperventilation Syndrome (Neurogenic)**

*Symptoms:* Hyperventilation (rapid and shallow breathing); apnea; lightheadedness; paresthesia of hands and feet; sometimes carpo-pedal spasm, tension anxiety, chest pain, dry mouth, syncope may develop.

*Prevention:* Adequate evaluation; premedication; “vocal anesthesia.” Stress reduction protocol (confidence, early and short appointments, profound anesthesia)

*Treatment:*

- Terminate procedure
- Sit upright
- Quiet reassurance
- Instruct patient to take slow deep breaths with hands cupped over mouth of use Bag Valve Mask (BVM) with patient holding the mask

### **Allergic Reaction**

- Mild (slow onset)

*Symptoms:* Rash; hives; itching; rhinitis

*Prevention:* Adequate medical history; sensitivity test

*Treatment:* Benedryl 25-50mg oral or IM follow-up with 50 mg PO every 6 hours for 2 days

- Toxic (Severe) Reaction (rapid onset)

*Symptoms:* Rapid onset swelling; asthma; bronchospasm; angioneurotic edema; shock; cardiovascular collapse. CNS stimulation — CNS depression

*Stimulation:* vital signs elevated; apprehensive, excitation, convulsions.

*Depression:* vital signs depressed; lethargy, unconsciousness.

*Prevention:* Adequate medical history; aspiration when injecting; do not approach toxic limit.

*Treatment:*

1. Activate (call) Emergency Medical Services (EMS)

2. Oxygen
3. Epinephrine 0.3 – 0.5mg 1:1000 subcutaneously. Note: contraindicated in presence of severe hypertension
4. If ACLS trained: IV Valium 5-10 mg. for convulsions
5. If ACLS trained ephedrine sulfate 10-25 mg IM or IV
6. Supportive therapy for depression

**Idiosyncrasy**

*Symptoms:* Same as toxic reaction.

*Prevention:* Same as toxic reaction.

*Types:* 1) Local anesthetics — most stimulate, then depress; lidocaine, Carbocaine, and monocaine depress; 2) Barbiturates — CNS stimulation; 3) Epinephrine — tremor, stimulation.

**Coronary Insufficiency (Angina Pectoris)**

*Symptoms:* Severe precordial or substernal pain which may radiate to left arm; pain described as tight or choking; may have headache; duration of pain only a few minutes.

*Prevention:* Adequate history; premedication; prophylactic nitroglycerine.

*Treatment:*

1. Place in a semi-reclined position
2. Monitor and record Vital signs
3. Oxygen
4. 0.3 mg. nitroglycerine sublingually, × 3 if needed
5. Keep patient quiet
6. If in doubt of Angina Pectoris: Activate EMS

**Anaphylactic Shock**

*Symptoms:* Sudden circulatory and respiratory collapse; cyanosis; bronchospasm; weak pulse; spasms; dyspnea; vomiting; headache; coughing.

*Treatment:* Activate EMS. Epinephrine (0.5-1.0 ml 1:1000) IV or SC; oxygen therapy; CPR as necessary.

**Adrenal Crisis**

*Symptoms:* Sudden circulatory collapse (hypotension/syncope); pallor; sweating; headache; pain in abdomen and legs; respiratory collapse; weak pulse; nervousness early, then apathy and unconsciousness; coma; may terminate in death if not treated.

*Treatment:*

1. If conscious: semi-reclined position, monitor vital signs
2. Oxygen therapy
3. Unconscious: Activate EMS; supine position, BLS, oxygen, Solu-Cortef 100 mg. IV.

**Asthma**

*Symptoms:* Wheezing; cough; difficult respiration; cyanosis; agitation, sense of suffocation

*Treatment:*

1. Alupent inhaler 1-2 puffs (use patient's supply)
2. Oxygen therapy
3. Activate EMS, Epinephrine (0.5 ml 1:1000) SC

**Cerebrovascular Accident**

*Symptoms:* Sudden onset; mild dizziness to unconsciousness; varying degree of paralysis; headache; aphasia; nausea; numbness; diplopia; blindness, unilateral weakness

*Treatment:*

1. Activate EMS
2. Position patient reclined with head slightly elevated
3. Maintain airway and provide oxygen
4. Monitor patients vital signs
5. Reassure patient
6. Obtain medical help and transport rapidly

**Insulin Shock**

*Symptoms:* Hunger, nausea, sweating (skin cool and moist), nervousness; headache; mental confusion (poor judgment), dizziness; transient unconsciousness; convulsions; coma

*Treatment:* Give glucose orally if able; or IV dextrose (50 ml 50% sol.) or glucagon 1 mg. IV or IM

**Diabetic Coma**

*Symptoms:* Gradual loss of consciousness; face flushed; dry mouth; breath has fruity odor; headache; weakness; apathy; abdominal pain; nausea

*Treatment:* Recognize early course and obtain medical help; give glucose or dextrose to distinguish from insulin shock

**Airway Obstruction**

*Symptoms:* Nervousness; difficult respiration or complete blockage; paradoxical respiration; cyanosis; laryngeal stridor (harsh grating or creaking sound)

*Treatment:* CPR (FBAO), oxygen therapy, Heimlich abdominal thrust, if clear airway and insert oral airway if above fails, do a cricothyrotomy and give oxygen

**Laryngospasm**

*Symptoms:* Inspiratory and expiratory stridor; complete or partial blockage of airway; paradoxical respiration; cyanosis; initially rapid pulse followed by a slowing pulse rate; terminates in cardiac arrest

*Treatment:* 100% oxygen administered under gentle, positive pressure will sometimes break spasm; activate EMS; Succinylcholine (1/2 cc) given IV and 100% oxygen; if above is unsuccessful, give succinylcholine (3-4 cc) IV and insert endotracheal tube; administer 100% oxygen; alternate method — cricothyrotomy

**Cardiopulmonary Emergency**

*Treatment:*

1. If unconscious: Check respirations; clear airway; insert oral or nasal airway. Activate EMS.
2. If breathing: Give oxygen; suction airway if necessary; give aromatic spirit of ammonia. Check pulse and blood pressure.

3. If not breathing: Establish patient airway; administer oxygen or air via mechanical device or mouth-to-mouth, mouth-to-nose, or mouth-to-airway artificial respiration. Activate EMS. Check pulse.
4. If carotid pulse is present: Continue 12 lung inflations per minute. Check blood pressure. Activate EMS.
5. If apparent cardiac arrest with absence of carotid pulse and dilated pupils: Activate EMS and start CPR.

## References

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Contemporary Oral and Maxillofacial Surgery. St. Louis: The C.V. Mosby Co; 1988; pp 41-70.

Medical Emergencies in the Dental Office, 5<sup>th</sup> ed, Malamed SF, Mosby 2000

Dental Management of the Medically Compromised Patient, 6<sup>th</sup> ed, Little JW, Falace DA, Miller CS, Nelson LR, Mosby 2002

## Additional Resources

Journal of the Canadian Dental Association article: <http://www.cda-adc.ca/jcda/vol-65/issue-5/284.html>

ADA Report on Office Emergencies and Emergency Kits:  
[http://www.ada.org/prof/resources/pubs/jada/reports/report\\_emergency.pdf#search='medical%20emergencies%20in%20the%20dental%20office'](http://www.ada.org/prof/resources/pubs/jada/reports/report_emergency.pdf#search='medical%20emergencies%20in%20the%20dental%20office')

PowerPoint Presentation, Thomas Jefferson University Hospital  
[http://www.tju.edu/omfs/research/powerpoint/medical\\_files/frame.htm](http://www.tju.edu/omfs/research/powerpoint/medical_files/frame.htm) (297 slides, broadband recommended)

AAPD Guidelines:  
[http://www.aapd.org/media/Policies\\_Guidelines/RS\\_MedEmergencies.pdf](http://www.aapd.org/media/Policies_Guidelines/RS_MedEmergencies.pdf)

State of Tennessee Division of Oral Health guidelines:  
<http://www2.state.tn.us/health/oralhealth/pdf/Section4.pdf>

## Pharmaceuticals

Prescription of pharmaceuticals is a form of communication that involves the dentist, the patient, the pharmacist, and the patient's physician. Clear communication among all parties is essential.



When the patient's medical record is available to the attending dentist, prescribed or administered drug information must be recorded on the clinical record for outpatients and on the doctor's orders for inpatients. When no medical record is available, the prescribed medication should be recorded on the patient's dental record.

When prescribing drugs, the dentist should know the properties of the medication being prescribed, including the adverse effects. All prescribed drugs should be consistent with the health needs of the patient.

In hospitals and most health centers, there is ordinarily a pharmacy, with a pharmacist to dispense drugs. In very small facilities, such as health stations or dental trailers, dentists may be required to dispense drugs. In these small facilities, it is important that the following requirements are met:

- The pharmaceutical storage area or drug cabinet must be kept locked when not in use.
- Records should be kept of all drugs dispensed, and the expiration dates should be checked to ensure that outdated drugs are not dispensed. The Drug Enforcement Agency (DEA) *requires* record keeping for all scheduled drugs, including narcotics, chloral hydrate, etc.
- Only small amounts of narcotics should be kept on hand.
- When narcotics are dispensed, a record of the patient receiving them and the amount dispensed must be maintained and provided monthly to the pharmacy issuing the narcotics.
- When a trailer is being transported or stored, narcotic drugs should be removed and locked up in the main clinic or returned to the pharmacy.
- All JCAHO or Accreditation Association for Ambulatory Health Care (AAAHC) standards covering the prescription, storage, dispensing of pharmaceuticals should also be followed.

### **General Recommendations for Narcotic Drugs**

- The use of strong narcotics for chronic pain syndromes should be avoided; the addictive capability of all narcotic compounds is serious.
- No narcotic should be administered or prescribed if a less potent analgesic will suffice.
- Narcotics should not be used primarily to relieve apprehension; barbiturates and tranquilizers are better suited for this purpose.

### **Antibiotic Prophylaxis Against Infective Endocarditis (IE)**

The ADA, in conjunction with the American Heart Association, has developed antibiotic prophylaxis guidelines for patients with heart conditions that may predispose them to infective bacterial endocarditis. The most recent guidelines were published in 1997, and

have been periodically reviewed since then to ensure that the recommendations are based on the most recent scientific findings.

A study that appeared in the *Annals of Internal Medicine* in 1998 concluded that dental treatment does not seem to be a risk factor for IE and that a reconsideration of the usage of antibiotic prophylaxis is in order. Following the publishing of this study, the ADA issued a Statement on Antibiotic Prophylaxis reaffirming the validity of the prophylaxis guidelines. The ADA statement can be found at:

<http://www.ada.org/prof/resources/positions/statements/endoprop.asp>.

Any questions about these guidelines may be addressed by contacting the ADA Division of Science via e-mail ([science@ada.org](mailto:science@ada.org)) or by calling 312-440-2878. ADA members may use the Association's toll-free number (1-800-621-8099) and ask for extension 2878.

The most current guidelines for prophylaxis against IE can be found by clicking on the following link:

[http://www.ada.org/prof/resources/pubs/jada/reports/report\\_endocarditis01.pdf](http://www.ada.org/prof/resources/pubs/jada/reports/report_endocarditis01.pdf). A review of the recommendations was published in the *Journal of the American Dental Association* (JADA) in 2000 and can be found at: <http://jada.ada.org/cgi/reprint/131/3/366>.

The AAPD's guideline on antibiotic prophylaxis can be found at:

[http://www.aapd.org/media/Policies\\_Guidelines/G\\_AntibioticProphylaxis.pdf](http://www.aapd.org/media/Policies_Guidelines/G_AntibioticProphylaxis.pdf)

It is recommended that every dental clinic download a copy of the recommendations and keep them in a readily accessible area of the clinic for quick reference.

The mere presence of a heart murmur does not indicate the need for IE prophylaxis. A study published in JADA in 1998 indicated that many patients who gave a history of a heart murmur did not have evidence of a pathologic heart condition at previous medical exams. A copy of the study can be found at: <http://jada.ada.org/cgi/reprint/129/7/861>.

Additionally, dental professionals need to be aware of the ADA Statement on the HHS Warning to Former Phen-Fen Users, which can be found at

[http://www.ada.org/prof/resources/positions/statements/phen\\_fen.asp](http://www.ada.org/prof/resources/positions/statements/phen_fen.asp).

## **IE, Signs and Symptoms**

IE is a rare condition that presents with flu-like symptoms within two days to two weeks, rarely within four weeks, following dental procedures. The following symptoms can be signs of bacterial endocarditis even if the patient has been properly prophylaxed. Any patient who presents with these symptoms should be immediately referred for medical care.

### **Symptoms:**

- Low-grade fever
- New cardiac murmur

- Arthralgias
- Splenomegaly
- Splinter hemorrhage
- Congestive Heart Failure (CHF)
- Neurological changes
- Embolic episodes
- Osler's nodes: Tender, red , raised lesions on the hands or feet
- Janeway's lesion: Erythematous or hemorrhagic lesions seen on the palm or sole

Preventative/Precautions:

- Good oral hygiene
- Proper teeth cleaning, chlorhexidine rinse prior to extractions to decrease magnitude of possible bacteremias
- Gingivitis and periodontitis increase the frequency, intensity, and duration of bacteremias
- Stress to the patient that they should take their prophylactic antibiotic medication within the proper timeframe, and document in the medical record that the medication has been properly taken

### **Antibiotic Prophylaxis for Total Joint Replacement**

Approximately 450,000 total joint replacement procedures are performed each year in the United States. Deep infections of these total joint replacements usually result in failure of prosthesis and the need for extensive revision. Serious concerns exist that the hematogenous spread of oral bacteria following certain dental procedures can cause such infections and joint failures.

In 1997, the ADA, along with the American Academy of Orthopaedic Surgeons, released antibiotic prophylaxis guidelines for patients who have total joint replacements and may be at risk for developing hematogenous infections at the site of the prosthetic. These guidelines can be found at:

[http://www.ada.org/prof/resources/pubs/jada/reports/report\\_prophy\\_statement.pdf](http://www.ada.org/prof/resources/pubs/jada/reports/report_prophy_statement.pdf). As a supplement to these recommendations, in 2003, the ADA Division of Legal Affairs released A Legal Perspective on Antibiotic Prophylaxis, which can be found at [http://www.ada.org/prof/resources/pubs/jada/reports/report\\_prophy\\_legal.pdf](http://www.ada.org/prof/resources/pubs/jada/reports/report_prophy_legal.pdf). This legal perspective was developed in response to growing concerns about the development of antibiotic resistance and the role that the inappropriate use of prophylactic antibiotics may play in the development of resistance.

As with the recommendations for the prevention of IE, it is highly recommended that every dental clinic download a copy of the Guidelines and keep them in a readily accessible location in the clinic for quick reference.

## Care of the Anticoagulated Patient

### Background

Controversy has surrounded the correct management of patients therapeutically anticoagulated who require dental extractions. One must carefully consider the effect that stopping warfarin therapy for even a few days can have on the patient. Even a moderate amount of bleeding is a minor inconvenience compared with a paralyzing stroke or death.

A review article in the Archives of Internal Medicine in 1998 (1) looked at patients receiving continuous anticoagulant therapy during dental surgery. The primary outcome measure was the presence of postsurgical hemorrhage not controlled by local measures.

Of the 774 patients studied, there were 12 who had a hemorrhage requiring more than local treatment to control the bleeding. In five of these cases, the patient's level of anticoagulation before the procedure exceeded current recommendations. Vitamin K was given to 10 patients, fresh-frozen plasma to four, packed red blood cells to three. No other serious morbidity was reported.

Of 493 patients who stopped anticoagulant use before having dental surgery, 5 experienced severe embolic events. Complications included cerebral thromboembolism, brachial artery embolism, and myocardial infarction. Four of the five cases were fatal. These data are limited because case reports do not establish a cause-and-effect relationship. A similar review article published in JADA (2) revealed similar results.

A study reported in the Journal of Oral and Maxillofacial Surgery in 2003 (3) supports the contention that dental extractions can be performed without modification of oral anticoagulant treatment. Local hemostasis with an absorbable oxidized cellulose mesh, tranexamic acid, and sutures was the more cost efficient of the two methods compared. Autologous fibrin glue was found to have an important role in patients unable to use a mouthwash effectively.

Another review published in the Australian Dental Journal in 2003 (4) stated that an improved understanding of the importance of fibrinolytic mechanisms in the oral cavity has resulted in the development of various local measures to enable these patients to be treated on an outpatient basis. The authors concluded that patients therapeutically anticoagulated with warfarin can be treated on an ambulatory basis, without interruption of their warfarin regimen provided appropriate local measures are used. Additionally, a review article in JADA concluded that the scientific literature does not support routine discontinuation of oral anticoagulation therapy for dental patients (5)

### ***Tranexamic Acid and Epsilon Aminocaproic Acid***

One of the most significant factors for the development of bleeding after oral surgery is the activation of fibrinolysis in the oral cavity. In 1989 a study by Sindet-Pederson et al. (6) demonstrated that maintenance of oral anticoagulant therapy in conjunction with oral surgery does not result in severe bleeding complications in patients receiving a tranexamic acid mouthwash post-operatively.

Tranexamic acid is a competitive inhibitor of plasminogen activation, and at much higher concentrations, a noncompetitive inhibitor of plasmin, i.e., actions similar to aminocaproic acid. Tranexamic acid is about 10 times more potent in vitro than aminocaproic acid. Tranexamic acid binds more strongly than aminocaproic acid to both the strong and weak receptor sites of the plasminogen molecule in a ratio corresponding to the difference in potency between the compounds.

### **Dental Extractions and the Anticoagulated Patient**

The following information discusses how to evaluate and treat the anticoagulated dental patient during extractions. *In all cases, this treatment should be coordinated with the patient's primary care physician.*

#### **Pre-Op Work-Up of The Patient**

##### **1. Thorough Medical History**

Questions to ask include the following:

- How long have you been on anticoagulant medication?
- Have you had problems with previous dental appointments?
- Why are you on anticoagulants?
- What are your most recent laboratory results relative to your anticoagulation or bleeding problem status?

##### **2. Consult Patient's Primary Care Physician**

- Contact the patient's primary physician and ask how brittle the patient is (i.e., how great is the patient's risk of thromboembolism), and what options they recommend.
- Can Warfarin therapy be discontinued for the dental procedure?
- Can the patient be converted to a Low Molecular Weight Heparin (LMWH, i.e. Lovenox) or Low Density Unfractionated Heparin (LDUH) which is preferred in patients with poor renal function? If these are medications with which you have limited or no experience, ask the patient's physician to prescribe the medications and explain their use to the patient.

- Does the patient need to be hospitalized and converted to heparin because he/she is too brittle?
3. Diagnostic Tests (Morning of the procedure, due to rapid changes, don't rely on old values)
- Warfarin Therapy
    - PT – prothrombin time (Normal range 11.5 – 13.5 seconds)
    - PTT – partial thromboplastin time (Normal range 25 to 35 seconds)
    - INR – international normalized ratios –  
(Patient PT)  
INR= (control PT)
  - Recommended INR levels as prophylaxis against thromboembolic events:
    - - Atrial fibrillation 2-3 (2.5)
    - - Deep vein thrombosis (DVTs) 2-3
    - - Hx of Pulmonary embolism 3.5
    - - Metallic cardiac valve 3-3.5
  - Aspirin and other nonsteroidal antiinflammatory agents, and antiplatelet medications such as Plavix
    - Bleeding time
  - Thrombocytopenia
    - Complete Blood Count (CBC) with a differential (which will give platelet count)
    - Bleeding time
4. Preoperative Precautions
- Avoid drugs that may cause drug interaction, such as erythromycin and ketoconazol, which inhibit warfarin metabolism. Also avoid drugs that can prolong bleeding, such as aspirin or other non-steroidal anti-inflammatories.
  - Encourage patient to keep you informed of any drug changes and their use of any OTC medications.
5. Management During Dental Treatment:
- No type of dental treatment should be rendered that has the potential for *severe* bleeding (i.e. extractions, scale/root plane).
    - If bleeding time greater than 10 minutes
    - If platelet count less than 60,000
    - If PTT greater than 45 seconds

- If PT greater than 22 seconds
  - If INR greater than 3.5
- If bleeding parameters are greater than the above, medical coordination is required. For example, the physician should decrease the anticoagulant dose or provide packed platelets or prescribe supplemental vitamin K until bleeding parameters are compatible with dental treatment.
- During dental procedures minimize physical trauma and pack extraction sites that have the potential to bleed with local pressure and other coagulation procedures (e.g. Gelfoam). If gauze is changed, the new gauze needs to be wet so it will not attach to the clot and dislodge it.
- Establish primary closure and/or put pressure on potential/actual bleeding sites.
- Extractions can be performed safely with an INR at 2 (some say 1.5) or below.
- With an INR of 2 – 2.5 (some recommend 3.5), extractions in conjunction with oral antifibrinolytics such as aminocaproic acid or tranexamic acid can be performed. Use 10 ml of a 4.8% aqueous solution to irrigate the socket before suturing. This is followed by a mouthwash of the same solution for 2 minutes, 4 times a day for 1 week. It is also helpful to use a fibrin sponge (Gelfoam). Again, this must be coordinated with the patient's primary care provider.
- A full liquid diet for 24 – 48 hrs, followed by a soft diet for another 5 days is recommended to prevent trauma to the surgical site. Hot drinks or soups should be avoided because increased temperatures promote clot lysis.
- It is important that the patient not be given aspirin or nonsteroidal anti-inflammatory drugs (NSAIDs) for postoperative pain as this will increase bleeding. If patients are taking these, they should be discontinued 7 – 10 days prior to extractions.
- If LMWH is used, PTT ranges should be 1.25 – 2.1 compared with PTT control. LMWH is stopped the day before and restarted the day after surgery. IV heparin is stopped 2–4 hrs before the procedure and restarted after surgery
  - For all patients who were taken off warfarin before surgery, warfarin is restarted in the postoperative period. If needed discuss this with the patient's primary physician. Remember – it takes three days for Warfarin anticoagulation to become effective.

**Postoperative Precautions:**

- If the patient calls from home following treatment, instruct them to apply pressure with gauze or cloth to bleeding site for 10–30 minutes. If bleeding persists, have patient come into office immediately or to a medical emergency room.
- In the event of a severe post-operative bleed, contact the Emergency Room. Fresh Frozen Plasma (FFP) is the management of choice (even though there is the risk of Hepatitis or other blood born diseases). The use of Vitamin K (10 mg subcutaneously or intravenously) requires 12 – 36 hrs before its coagulation action can be seen. More important is the fact that patients with Vitamin K administration become resistant to Warfarin action. This reestablishes prolonged nontherapeutic INR levels and exposes the patient to the risk of embolism .

**References**

- (1) Wahl MJ. Dental surgery in anticoagulated patients. Arch Intern Med 1998; 158:1610-16
- (2) [Wahl MJ](#). Myths of dental surgery in patients receiving anticoagulant therapy. [J Am Dent Assoc](#). 2000 Jan;131(1):77-81.
- (3) Carter G, Goss A, Lloyd J, Tocchetti R. Tranexamic acid mouthwash versus autologous fibrin glue in patients taking warfarin undergoing dental extractions: a randomized prospective clinical study. J Oral Maxillofac Surg. 2003 Dec;61(12):1432-5  
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[http://www.ada.org.au/media/documents/Products\\_Publications/Journal%20Archives/2003%20Archive/June/0306Cart.pdf#search='anticoagulant%20therapy%20and%20dental%20extractions](http://www.ada.org.au/media/documents/Products_Publications/Journal%20Archives/2003%20Archive/June/0306Cart.pdf#search='anticoagulant%20therapy%20and%20dental%20extractions)
- (5) [Jeske AH](#), [Suchko GD](#) Lack of a scientific basis for routine discontinuation of oral anticoagulation therapy before dental treatment. J Am Dent Assoc. 2004 Jan;135(1):28.
- (6) Sindet-Pedersen S, Ramstrom G, Bernvil S, Blomback M. Haemostatic effect of tranexamic acid mouthwash in anticoagulant-treated patients undergoing oral surgery. N Engl J Med 1989;320:840-843
- (7) Additional information on this subject can be found at:  
<http://www.warfarinfo.com/dentalprocedures.htm>

**Guidelines for Pharmacosedation**



## Introduction

Pharmacosedation is a necessary adjunctive procedure for many dental procedures, most often for behavior management and/or surgical procedures. Specific training is required, and these guidelines are not meant to be a substitute for that training. Sedative techniques are subject to JCAHO review and facilities may restrict techniques for a variety of considerations. These guidelines are based on guidelines developed by the ADA and the practitioner is urged to review the most recent revision.

The goals for the management of pharmacosedation in the ambulatory patient are:

- Patient welfare
- Control of patient behavior
- Facilitate and augment the provision of quality care.
- Production of positive psychological response to treatment
- Return to pretreatment level of consciousness by time of discharge

## Definition of Terms

For the purpose of this document the following definitions shall apply:

- *Nitrous Oxide-Oxygen Analgesia*: The relative reduction of fear, anxiety, and pain response through the controlled delivery of nitrous oxide and oxygen through a dental inhalation sedation delivery system.
  - *Anxiolysis (minimal sedation)*: A dissolution or reduction of anxiety through the use of the hypnotic dose of a sedative agent, i.e., light sedation
- Definition (ADA): Anxiolysis – “the diminution or elimination of anxiety”

Definition (JACHO): Minimal Sedation – “A drug-induced state during which patients respond normally to verbal commands. Although cognitive function and coordination may be impaired, ventilatory and cardiovascular functions are unaffected.”

Definition (AAPD): Mild sedation (Level 1) – “decreased anxiety”

- *Conscious Sedation*: A controlled, pharmacologically-induced, minimally depressed level of consciousness that retains the patient's ability to maintain a patent airway independently and continuously, and respond appropriately to physical stimulus and verbal command.

- *Deep Sedation:* A controlled, pharmacologically-induced state of depressed consciousness from which the patient is not easily aroused and which may be accompanied by a partial loss of protective reflexes, including loss of the ability to maintain a patent airway independently and/or respond purposefully to physical stimulation or verbal command.
- *General Anesthesia:* A controlled state of unconsciousness accompanied by a loss of protective reflexes, including the ability to maintain an airway independently and respond purposefully to physical stimulation or verbal command.
- *Must or Shall:* “Must” or “shall” indicate an imperative need and/or duty; essential or indispensable; mandatory.
- *Should:* “Should” indicates the recommended manner of achieving the standard; highly desirable.
- *May or Could:* “May” or “could” indicate freedom or liberty to follow a suggested or reasonable alternative.
- *American Society of Anesthesiology (ASA) Classification (Modified):*
  - Class I. A normally healthy patient with no organic, psychological, biochemical or psychiatric disturbance or disease.
  - Class II. A patient with mild to moderate systemic disturbance or disease.
  - Class III. A patient with severe systemic disturbance or disease.
  - Class IV. A patient with severe and life-threatening systemic disease or disorder.
  - Class V. A moribund patient who is unlikely to survive without the planned procedure.

### General Considerations

- *Applicability:* These guidelines should be considered as minimum guidelines and may be superseded by more stringent local policies and procedures.
- *Privileging:* Each dental program should use a Dental Privileges Request Form. Dentists requesting privileges for Pharmacologic Management must specify each technique for which privileges are requested. Full or limited privileges will be granted or denied on the basis of the requesting dentist's documented training and experience. Documentation of training and experience in the form of an appropriate training certificate or a letter specifying past experience from the requesting dentist's current or immediate past dental supervisor must accompany the Dental Privileges Request Form.

- *Local Anesthesia:* All local anesthetic agents can become cardiac and central nervous system (CNS) depressants when administered in excessive doses. There is a potential interaction between local anesthetic and sedatives used in pediatric dentistry, which can result in, enhanced sedative effects and/or untoward events; therefore, particular attention should be paid to doses used in children. To avoid excessive doses, a maximum recommended dose in mg/kg or mg/lb should be calculated for each patient and recorded prior to administration for all sedatives and local anesthetics used. (Table 1)
- *Candidates:* A preoperative physical assessment should be completed the day of treatment by a qualified practitioner for all patients undergoing sedation at levels deeper than anxiolysis. A medical consult may be appropriate. Patients who are ASA Class I or II may be considered candidates for conscious sedation or deep sedation. Patients in ASA Class III or IV present special problems and require individual consideration and should be treated in a hospital setting. General anesthesia requires consultation with an anesthesiologist, unless the person administering the general anesthesia has been adequately trained and privileged to assess the patient.
- *Responsible Adult:* The pediatric patient should be accompanied to and from the treatment facility by a parent, legal guardian, or other responsible adult who should be required to remain at the treatment facility for the entire treatment period. Adult patients should be accompanied by a responsible adult.

### **Additional Points**

- Pediatric Life Support (PALS) and/or Advanced Cardiac Life Support (ACLS) are strongly encouraged.
- For IV sedation/deep sedation, providers must be able to start and maintain an IV line, provide positive pressure ventilation, and intubate a patient.
- Providers should demonstrate current competence via provision of documentation that they have properly performed the procedure a minimum of 10 times during the past year or continuing education every two years at minimum.

- Any patient given a sedating agent in the clinic should be appropriately monitored by an individual trained and competent in the monitoring of sedated patients. Because there have been reported instances of children receiving a sedating agent, returning to the waiting room to await the onset of sedation, and suffering respiratory depression due to the lack of adequate monitoring, administration of agents with patients returning to the waiting room for onset of sedation is not acceptable in the IHS. No medications for conscious sedation or deeper levels of sedation should be administered outside of the clinical setting.
- Supplemental oxygen is recommended for all sedated patients (not including anxiolysis).

**Table 8: Local Anesthetic Dosages**

Generic Name	Brand Name	Conc. (%)	Max. Rec. Dose (Mg?Kg)	Mg per Carpule
Lidocaine	Xylocaine	2	4.4	36
Mepivacaine	Carbocaine	2	4.4	36
Mepicacaine	Carbocaine	3	4.4	54
Prilocaine	Citanest	4	6.0	72
Bupivacaine	Marcaine	0.5	2.0	9
Septocaine	Articaine	4	7.0	72

### Facilities

- Medical support:* The Dental Supervisor and the Clinical Director may limit the use and type of dental sedation performed based upon the availability of medical support. Utilization of some sedation techniques, e.g., IV sedation techniques, may require the prior notification of a physician present in the facility to assure that adequate medical support is available.
- Staffing:* The staff required to safely conduct a sedation procedure will vary with the technique used.
- Armamentarium:* Basic emergency diagnostic and treatment equipment and an emergency drug kit must be readily available. This should include the following: sphygmomanometer, stethoscope, oxygen source capable of delivering bag and mask ventilation greater than 90% oxygen at 10 liters per minute flow for at least 60 minutes, adequate suction apparatus with tonsillar suction tip, oral and nasal airways of different sizes, and IV kits. The equipment and supplies should be appropriate for both pediatric and adult patients. If narcotic drugs are administered, Naloxone must be available in the emergency drug kit. If Midazolam is administered, flumazanil (reversal agent) must be available. Additionally, strong consideration should be given to having a crash cart with defibrillator available.

- *Nitrous Oxide:* When nitrous oxide is used, the facility should be compliant with the guidelines in the Environmental Health and Safety section (Section VI) of this guide. A flowmeter capable of delivering 100% O<sub>2</sub> must be used, and only flowmeters that require 20% minimum O<sub>2</sub> flow rate are acceptable. Normal operation should be restricted to 50% or less N<sub>2</sub>O.

### Emergency Services

Back-up emergency services should be identified. A protocol outlining necessary procedures for their immediate employment should be developed and operational for each facility. For nonhospital facilities, an emergency assist system should be established with the nearest hospital emergency facility and ready access to ambulance service must be assured.

### Documentation Prior to Treatment

The practitioner must document each sedation procedure in the patient's record. Documentation should include the following:

- *Informed consent:* Each patient, parent, or other responsible individual is required to be informed regarding benefits, risks, and alternatives to sedation and to give consent. The patient record should document that appropriate informed consent was obtained according to the procedures of the facility.
- *Instructions to parents or responsible individual:* The practitioner should provide verbal and written instructions to the parents or responsible individual. Instructions should be explicit and include an explanation of pre- and post-sedation dietary precautions, potential or anticipated postoperative behavior, and limitation of activities.
- *Dietary precautions:* The administration of sedative drugs should be preceded by an evaluation of the patient's food and fluid intake. Intake of food and liquids should be as follows: (a) no milk or solids after midnight prior to scheduled procedure; (b) clear liquids up to 4 hr. before procedure for children ages 6 months to 3 years; (c) clear liquids up to 6 hr. before procedure for children ages 3 to 6 years; and (d) clear liquids up to 8 hr. before procedure for children aged 7 years or greater. No restrictions are necessary for anxiolysis or nitrous oxide-oxygen sedation.
- *Preoperative health evaluation:* Prior to the administration of sedatives, the practitioner should obtain and document information about the patient's current health status as detailed in the following sections concerning the various sedation modalities.

- *Patient immobilization:* If patient immobilization will be required as part of the procedure, specific informed consent, including planned device and duration, should be obtained.
- *Prescriptions:* When prescriptions are used for prescribing drugs, such as minor tranquilizers to be administered orally by a responsible adult preprocedurally outside the treatment facility, a copy or a note describing the content of the prescription should be documented in the patient's record, along with a description of the instructions given to the responsible individual.

### **General Requirements for the Monitoring and Documentation for Oral and Parenteral Conscious Sedation and Deep Sedation**

The patient should be monitored from the time of drug delivery until discharge.

- *Vital signs:* The patient's record should contain documentation of intermittent quantitative monitoring and recording of oxygen saturation (pulse oximetry), heart and respiratory rates, and blood pressure, as recommended for specific sedation techniques. Responsiveness of the patient should be monitored at specific intervals before and during the procedure and until the patient is discharged.
- *Drugs:* The patient's record should document the name, dose and route, site, and time of administration of all drugs administered. The maximum recommended dose per kilogram or pound should be calculated and the actual dose given shall be documented in appropriate units (e.g., fentanyl is administered in microgram doses, not milligrams). The concentrations, flow rate, and duration of administration of oxygen and nitrous oxide should be documented.
- *Patient immobilization:* Patient immobilization devices used and duration should be documented.

The condition of the patient and the time of discharge from the treatment facility should be documented in the record. Documentation should include that appropriate discharge criteria have been met. The record should also identify the responsible adult to whose care the patient was discharged. (Table 2)

#### **Table 2: Recommended Discharge Criteria:**

1. Cardiovascular function is satisfactory and stable.
2. Airway patency is uncompromised and satisfactory.
3. Patient is easily arousable and protective reflexes are intact.
4. State of hydration is adequate.
5. Patient can talk, if applicable.

6. Patient can sit unaided, if applicable.
7. Patient can ambulate with minimal assistance, if applicable.
8. For the very young child or disabled person who is incapable of the usually expected responses, the sedation level of responsiveness or the level as close as possible for that person has been achieved.
9. Responsible individual is available.

### **Sedation Techniques, Specific Criteria**

#### **Anxiolysis**

##### ***Training***

Documentation of training and pharmacology in the form of dental school transcripts or a letter attesting to training from the institution. Where anxiolysis was not taught, training should be at least 16 hours in duration and include supervised administration of anxiolytic sedation in no fewer than five cases.

##### ***Staffing***

No additional staff beyond those needed for the routine dental procedure are required.

##### ***Armamentarium***

No additional armamentarium beyond the normal dental procedure set-up is required.

##### ***Preoperative Evaluation***

Only a review of the dental/medical history form is required.

##### ***Monitoring***

No additional monitoring beyond visual and verbal monitoring is required.

##### ***Documentation***

Documentation should include drug and dose used and its effectiveness.

#### **Nitrous Oxide-Oxygen Sedation**

Nitrous oxide is colorless with a faint sweet smell. It is an effective analgesic/anxiolysis agent causing CNS depression and euphoria, with little effect on the respiratory system. It causes minor depression in cardiac output while peripheral resistance is slightly increased, thereby maintaining blood pressure (advantage when treating patients with cerebrovascular system disorders).

Nitrous oxide is absorbed rapidly, allowing for both rapid onset and recovery (2-3 minutes). It causes minimal impairment of any reflexes, thus protecting the cough and gag reflexes. To be considered anxiolysis, no other anxiolytic, sedative or antihistamine drug may be used concomitantly.

Nitrous oxide has been cited extensively in the literature for more than 150 years as a safe and effective drug.

### ***Training***

Documentation of nitrous oxide training and pharmacology in the form of dental school transcripts or a letter attesting to training from the institution. Where nitrous oxide was not taught, training should be at least 16 hours in duration and include supervised administration of nitrous oxide oxygen sedation in no fewer than five cases. Training in emergency procedures is required. Only providers with appropriate credentials and privileges should be allowed to administer nitrous oxide/oxygen.

Dental assistants training must include basic life support. Individuals involved with nitrous oxide/oxygen should participate in documented periodic review of emergency protocols, drug cart and simulated exercises to assure proper emergency management response.

### ***Staffing***

During administration of nitrous oxide/oxygen, two qualified people must be present to monitor the patient (may be dentist and chair side dental assistant).

### ***Armamentarium***

Only fail safe machines which deliver a minimum of 30% oxygen at all times will be used in the dental clinic.

Equipment must have an appropriate scavenging system.

Equipment must be checked and calibrated regularly according to the practitioners state laws and regulations (this is to include scavenging system).

### ***Preoperative Evaluation***

A review of the dental medical history form is required.

Evaluation of airway patency and respiratory system

Potential contraindications include the following:

- Upper respiratory infection, respiratory diseases, or asthma
- Lobar emphysema



- Possible bowel obstruction
- Patients with severe emotional disturbances or drug-related dependencies
- Chronic Obstructive Pulmonary Disease (COPD)
- Patients with pulmonary fibrosis
- Tuberculosis (TB)
- Pregnancy, first trimester

Medical consultations as needed, including but not limited to:

- Severe obstructive pulmonary disease
- CHF
- Recent tympanic membrane grafts
- Eye surgery

### ***Methodology***

- Select appropriate size nasal hood.
- 100% oxygen for 1 to 2 minutes.
- Nitrous oxide will be titrated to achieve the appropriate effect based on individual patient response.
- Concentration of nitrous oxide may be varied depending on the difficulty of the procedure, but should not exceed 50%.
- Once procedure is completed patient should receive 100% oxygen for 3–5 minutes (avoids diffusion hypoxia).
- Patient must return to pre-treatment responsiveness prior to discharge.

### ***Monitoring***

Only visual and verbal monitoring of the patient for ventilation and level of consciousness throughout the procedure are required. The patients' responsiveness (verbal), color, respiratory rate and rhythm should be observed.

The provider may utilize monitoring equipment (precordial stethoscope, pulse oximeter, blood pressure) as deemed necessary for the care of a particular patient. Pulse oximetry is recommended, but not required.

Patients must be observed by dental personnel until discharged (never should a patient be left alone).

***Documentation***

- Informed consent for nitrous oxide
- Indications for the use of nitrous oxide
- The concentration of nitrous oxide used, flow rate, duration, effectiveness, and duration of oxygen flush
- Patient's condition on release

**Oral Conscious Sedation*****Training***

- At least 40 hours of formal training, along with a proctored period with a specific number of cases being monitored should be a minimum requirement for the administration of oral conscious sedation.
- A written and/or practical exam should also be considered. Persons who have received formal training in a residency or specialty program may not require these guidelines, but a letter from the residency director detailing the scope of training and competency should be required. The provision of the proctored sedation procedures may take place following didactic instruction at the training facility or at the dentist's duty station, if supervision is available by a health professional adequately trained in the conscious sedation technique being taught. Senior clinicians who are currently practicing sedation techniques should demonstrate sufficient experience by providing documentation that they have properly performed the procedure a minimum of ten times during the past year or that they have attended a refresher course in the past year.
- Satisfactory completion of a graduate training program or residency in a recognized dental specialty or ADA-approved General Practice Residency which provides training and experience in the use of sedation, including airway management, risk assessment, physical evaluation, and medical emergency management. As stated above, letter from the residency director detailing the scope of training and competency should be required.
- ACLS and/or PALS are encouraged.
- The practitioner and all treatment facility personnel should participate in periodic reviews of the office's emergency protocol, including simulated exercises to assure proper equipment function and staff interaction.

### ***Staffing***

- The dentist should have at least two properly trained dental personnel present for proper monitoring and support, one to assist in the dental procedure and one to monitor the patient. At least one must be certified in BLS.
- The practitioner responsible for the treatment of the patient and/or the administration of drugs for conscious sedation must be appropriately trained in the use of such drugs and techniques, must provide for appropriate monitoring, and must be capable of managing any reasonably foreseeable complications.
- In addition to the operating practitioner, an individual trained to monitor appropriate physiologic parameters and to assist in any supportive or resuscitation measures required should be present. Both individuals must have training in basic life support, should have specific assignments, and should have current knowledge of the emergency cart (kit) inventory.

### ***Armamentarium***

- The operating facility used for the administration of conscious sedation should have available all facilities and equipment previously recommended. The minimum monitoring equipment for sedation shall be a pulse oximeter. A precordial/pretracheal stethoscope is highly desirable. Electro Cardiogram (ECG) monitoring equipment should be considered but is not required.

### ***Preoperative Evaluation***

- Health history
- Review of systems
- Vital signs, including heart rate, respiratory rate, and blood pressure.
- Risk assessment (ASA guidelines)
- Evaluation of airway patency
- Evaluation of the respiratory and cardiac systems is needed

### ***Monitoring***

Whenever drugs for conscious sedation are administered, the patient should be monitored continuously for responsiveness and airway patency. There should be continuous monitoring of oxygen saturation by pulse oximetry and of heart and respiratory rates. Respiratory rate alone may not be a reliable guide to oxygenation, especially when the rate is hard to determine and respirations are shallow. ECG monitoring is once again encouraged. A precordial/pretracheal stethoscope also may be used for obtaining additional information on heart and respiratory rates and for monitoring airway patency.

Restraining devices should be checked periodically to prevent airway obstruction or chest restriction. The patient's head position should be checked frequently to ensure airway patency. A sedated patient must be constantly observed by a trained individual from the time the sedating agent is administered until discharge from the facility.

### ***Documentation***

- Oxygen saturation and heart and respiratory rates should be recorded intermittently on a time-based record (e.g., every 5 minutes) throughout the procedure and until the patient is discharged.
- After completion of the treatment procedures, vital signs should be recorded at specific intervals. Postoperative monitoring, of blood pressure, heart rate, pulse oximetry, and possibly ECG is prudent. The practitioner shall assess the patient's responsiveness and discharge the patient only when the appropriate discharge criteria have been met.

### **Parenteral Conscious Sedation**

#### ***Training***

The training requirements for parenteral conscious sedation are the same as for oral conscious sedation except that a minimum of 80 hours, rather than 40, are recommended. The potential for a conscious sedation technique to progress to the level of deep sedation, especially with the administration of intravenous drugs, necessitates this higher level of training.

#### ***Staffing***

Staffing requirements are the same as for oral conscious sedation.

#### ***Armamentarium***

Same as for oral conscious sedation, with the addition of IV armamentarium.

#### ***Preoperative Evaluation***

- Health history
- Review of systems
- Vital signs, including heart rate, respiratory rate, and blood pressure.
- Risk assessment (ASA guidelines)
- Evaluation of airway patency
- Evaluation of the respiratory and cardiac systems is needed

***Monitoring***

Same as for oral conscious sedation. Due to the potential for a parenteral conscious sedation procedure to progress to deep sedation, the monitoring standards for deep sedation should be considered.

***Documentation***

Same as for oral conscious sedation.

**Deep Sedation*****Training***

The training requirements for deep sedation are the same as for parenteral conscious sedation.

***Staffing***

- The dentist must have at least two properly trained dental personnel present during any sedation procedure for proper monitoring and support. They should be certified in basic life support.
- The techniques for deep sedation require the following individuals: 1) the treating practitioner who may direct the sedation; 2) a qualified individual to assist with observation and monitoring of the patient and who may administer drugs if appropriately licensed; and 3) other personnel to assist the operator as necessary. The operator and at least one other individual must be currently certified in basic life support.

***Armamentarium***

In addition to the facilities and equipment previously recommended for oral and parenteral conscious sedation, in the operating facility used for the administration of deep sedation, the capability for ECG monitoring, and the availability of a capnograph and a defibrillator are desirable.

***Preoperative Evaluation***

- Health history
- Review of systems
- Vital signs, including heart rate, respiratory rate, and blood pressure.
- Risk assessment (ASA guidelines)
- Evaluation of airway patency
- Evaluation of the respiratory and cardiac systems is needed

### ***Intravenous Access***

Patients receiving deep sedation should have an intravenous line in place prior to the start of the procedure if the patient is cooperative, otherwise, as soon as possible after the procedure has begun. The time to start an IV is before problems arise. It can be very difficult to start an IV on a crashing patient due to cardiovascular collapse and confusion in the operatory.

### ***Monitoring***

- The sedated patient should be continuously monitored by an appropriately trained individual. There should be continuous monitoring of oxygen saturation (by pulse oximetry), heart and respiratory rates, and blood pressure. A pulse oximeter, precordial/pretracheal stethoscope, and blood pressure cuff are minimum monitoring devices; ECG, capnography, and temperature monitoring are desirable, (the AAPD considers capnography to be a standard of care for deep sedation). The patient's head position should be checked frequently to ensure airway patency. A sedated patient must be constantly observed by an appropriately-trained individual.
- After treatment has been completed, the patient must be observed in a suitably-equipped recovery facility. This facility must have functioning suction apparatus and suction catheters of appropriate size, as well as the capacity to deliver greater than 90% oxygen and provide positive pressure ventilation. An individual experienced in recovery care must be in attendance at all times in order to assess and record vital signs, observe the patient, and ensure airway patency. The patient must remain in the recovery facility until cardiovascular and respiratory stability are ensured and appropriate discharge criteria have been met.

### ***Documentation***

- Oxygen saturation, heart and respiratory rates, Carbon Dioxide, and blood pressure should be recorded intermittently on a time-based record (e.g., every 5 minutes).
- After completion of the treatment procedures, vital signs should be recorded at specific intervals. Postoperative monitoring, of blood pressure, heart rate, pulse oximetry, and possibly ECG is prudent. The practitioner shall assess the patient's responsiveness and discharge the patient only when the appropriate discharge criteria have been met.

### ***General Anesthesia***

Policies and procedures for the provision of general anesthesia are the prerogative of the Medical Staff Committee or Anesthesia Department of the facility. The dental practitioner should make himself/herself aware of all applicable provisions. General Anesthesia may be administered by a qualified person on appropriate patients without

medical consultation, in an adequate facility, with provision for recovery, if local P&Ps so permit.

**Table #: Summary Table of Characteristics, Armamentaria, And Monitoring Requirements For Various Levels Of Sedation**

(from the AAPD's "Guideline on the Elective Use of Minimal, Moderate, and Deep Sedation and General Anesthesia for Pediatric Dental Patients," used with permission)

<b>Template of Definitions and Characteristics for Levels of Sedation and General Anesthesia</b>				
	<b>Minimal sedation</b>	<b>Moderate sedation</b>	<b>Deep sedation</b>	<b>General anesthesia</b>
Goal	Decrease or eliminate anxiety; facilitate coping skills	Decrease or eliminate anxiety; facilitate coping skills. Younger patients show age-appropriate behaviors, including crying; older patients demonstrate interactive state.	Eliminate anxiety; coping skills unaffected and overridden. Patient uneasily aroused but may respond to purposeful stimulation	Eliminate sensory and skeletal motor activity; autonomic activity depressed
Patient responsiveness	Subjectively, the patient may sense and/or express less anxiety about the clinical procedure compared to pre-sedation periods. Objectively, the patient may appear calm, less overtly responsive to clinical stimuli, and purposefully interactive with the clinician compared to pre-sedation periods	Subjectively, the patient may sense and/or express less anxiety about the clinical procedure compared to pre-sedation periods. Objectively, the patient may appear less tense, cognizant of, but less overtly responsive to, clinical stimuli, and purposefully interactive with the clinician, compared to pre-sedation periods. The patient, if behaviorally and cognitively cooperative should be able to independently move his/her head and/or mandible, as directed by the clinician and to assist in maintaining optimal airway patency	Subjectively, the patient may sense and/or express limited or no feelings of anxiety associated with the clinical procedure. Objectively, the patient may appear very relaxed, not cognizant of and minimally or nonresponsive to clinical stimuli. And noninteractive with the clinician at any time. The patient would not be able independently to move his/her head and/or mandible to maintain optimal airway patency consistent with the clinical situation. Under these circumstances, the patient requires continuous monitoring of the airway and continual assistance of the clinician (e.g. Head tilt, chin lift procedure)	Unconscious and unresponsive to surgical stimuli.
Physiologic changes	Patient remains stable and within age-appropriate and health status norms for parameters involving hemodynamic, ventilation, and oxygenation functions. No loss	Patient remains stable and within age-appropriate and health status norms for parameters involving hemodynamic, ventilation, and oxygenation functions. No loss of protective reflexes.	Patient remains stable and either minimally or moderately below the patient's age and health status norms for hemodynamic, ventilation, and oxygenation functions. Accompanied by partial or complete loss of protective reflexes.	Partial or complete loss of protective reflexes, including the airway; does not respond purposefully to verbal command or physical



Template of Definitions and Characteristics for Levels of Sedation and General Anesthesia				
	Minimal sedation	Moderate sedation	Deep sedation	General anesthesia
	of protective reflexes.			stimulus.
Personnel needed	2	2	3	3
Monitoring Equipment	Clinical observation unless patient becomes moderately sedated, then appropriate monitoring needed.	BPC, PO, PC or capno	BPC, PO, PC, capno, ECG	BPC, PO, PC, capno, ECG, temp
Monitoring Information and frequency	Skin color, respiratory effort (continual)	HR, RR, BP, SaO <sub>2</sub> , (q 15 min)	HR, RR, BP, SaO <sub>2</sub> , ETCO <sub>2</sub> (q 5 min)	HR, RR, BP, SaO <sub>2</sub> , ETCO <sub>2</sub> temp (q 5 min)
<i>BP=blood pressure; BPC= blood pressure cuff/sphygmomanometer; capno= capnography/end tidal carbon dioxide monitor; EC=electrical conductivity as demonstrated on ECG; ECG=electrocardiography; ETCO<sub>2</sub>= end tidal carbon dioxide; temp=temperature; HR=heart rate; PO=pulse oximetry; PC=precordial/pretracheal stethoscope; RR=respiratory rate; SaO<sub>2</sub>= oxygen saturation</i>				

### Additional Information

Additional information and guidelines for the use of pharmacosedation in the dental clinic can be found at the following sites.

ADA guidelines and statements:

The Use of Conscious Sedation, Deep Sedation and General Anesthesia in Dentistry

<http://www.ada.org/prof/resources/positions/statements/useof.asp>

ADA Statement on Dental Anesthesia

<http://www.ada.org/prof/resources/positions/statements/anes.asp>

Guidelines for the Use of Conscious Sedation, Deep Sedation and General Anesthesia for Dentists

[http://www.ada.org/prof/resources/positions/statements/anesthesia\\_guidelines.pdf](http://www.ada.org/prof/resources/positions/statements/anesthesia_guidelines.pdf)

AAPD guidelines:

- [Appropriate Use of Nitrous Oxide for Pediatric Dental Patients](http://www.aapd.org/media/Policies_Guidelines/G_Nitrous.pdf)  
[http://www.aapd.org/media/Policies\\_Guidelines/G\\_Nitrous.pdf](http://www.aapd.org/media/Policies_Guidelines/G_Nitrous.pdf)
- [Elective Use of Minimal, Moderate, and Deep Sedation and General Anesthesia for Pediatric Dental Patients](http://www.aapd.org/media/Policies_Guidelines/G_Sedation.pdf)  
[http://www.aapd.org/media/Policies\\_Guidelines/G\\_Sedation.pdf](http://www.aapd.org/media/Policies_Guidelines/G_Sedation.pdf)

**ATTACHMENT 1: SAMPLE PRIVILEGES REQUEST FORM FOR  
SEDATION/GENERAL ANESTHESIA**

PRIVILEGE	LEVEL REQUE STED			LEVEL APPRO VED		
	F U L L	L I M I T E D	N O N E	F U L L	L I M I T E D	N O N E
Nitrous Oxide/Oxygen Sedation						
Anxiolysis						
Oral Conscious Sedation						
Oral Deep Sedation						
Parenteral Conscious Sedation						
Parenteral Deep Sedation						
General Anesthesia						

**ATTACHMENT 2: INDICATIONS FOR SEDATION IN THE DENTAL CLINIC**

1. The precooperative and the fearful, anxious, or uncooperative child whose disruptive behavior precludes the safe delivery of quality dental care and whose developing psyche should not be exposed to the potential emotional/psychological liabilities of treatment under duress
2. A patient who has had prior sensitization to, or exhibits an acute anxiety reaction to the professional environment and has resisted reasonable behavior modification techniques
3. A coexisting medical complication presenting either a relative or absolute contraindication to treatment outside a sedation modality (i.e., poorly controlled seizure disorder, severe cerebral palsy, etc.)
4. Patients who are physically, mentally, or sensorily compromised and whose disabilities present management problems in a fully conscious state
5. Patients with severe orofacial trauma or requiring extensive oral surgical treatment
6. The patient with extensive treatment needs who lives in a remote area and has a verified transportation constraint

### **ATTACHMENT 3: INSTRUCTIONS TO PARENTS FOR SEDATION OF A CHILD**

In order to provide the best dental and emotional care for your child, a technique involving one or more sedative drugs will be used.

**In order to make this sedation as safe and effective as possible, we ask that you follow the following instructions.**

1. The child should have nothing to eat or drink for 4 to 6 hours before the appointment time. In addition, the most recent meal should be light and easily digestible.
2. It is important that you inform us of any recent changes in the child's medical history, medications, history of illnesses, hospitalizations, or reaction to any drugs.
3. The child must be accompanied by a parent or guardian for all appointments.
4. No tight clothing should be worn by your child. Short-sleeved pajamas are a good choice.
5. Attend to bowel and urinary needs before the appointment.
6. If your child develops a common cold at any time before the scheduled appointment, please inform us immediately. We may have to postpone the appointment until the cold is over.
7. Please be on time for the appointment. We are setting aside extra time for your child's treatment needs, and this time may be wasted if you show up too late to sedate your child or if you fail to show up.
8. After the appointment, do not allow your child to bite his/her lip, tongue, or cheek before the numbness wears off.
9. After the appointment, your child should be under adult supervision for 12 hours and not be allowed to travel unrestrained in a vehicle or to play near streets, stairways, or other areas where injury could occur.
10. Encourage the child to drink clear, room temperature drinks such as ginger ale or 7-up to help reduce occasional nausea or vomiting.
11. If the child vomits, help him bend over and turn the head to the side to make sure that he does not inhale the vomit.
12. Your child may remain sleepy for several hours after the appointment, and may be irritable as the medicine wears off.

13. If anything unusual should occur, please call us at \_\_\_\_\_.

## **Evaluation And Management Of The Medically Complex Patient**

The safe delivery of dental services to patients with compromising medical conditions can be problematic. As pharmaceuticals and medical therapies improve, more patients with complex medical problems remain healthy enough to seek dental care, yet may require special treatment regimens to make sure dental procedures and recommendations don't adversely affect their medical condition. The following section offers suggestions for the evaluation and dental treatment of such patients. Always remember that from a medico-legal standpoint, the final decision about the provision of dental care rests with the dentist and patient (informed consent).

### **Pretreatment Evaluation**

The goal of the pretreatment evaluation of the medically complex patient is to determine the patient's ability to tolerate the planned dental procedure(s).

The pretreatment evaluation should help the dentist determine the answers to the following questions:

- Does the patient have a diagnosed or undiagnosed medical condition that might complicate dental care?
- Can we proceed with dental treatment in a relatively safe manner?
- Is a pre-treatment medical consultation indicated?

The preoperative evaluation of the patient may require the following:

- Relatively recent history and physical exam
- Laboratory data
- Physician consult
- Patient anxiety evaluation

It is the responsibility of the dentist to obtain and review the patient's medical history and level of anxiety. However, unless the dentist has received residency-level training in physical diagnosis, the physical exam must be done by the patient's medical provider. Laboratory data may be obtained and interpreted by either the dentist or medical provider (or both) depending on the medical condition in question and the dentist's level of training.

### ***Physician Consultation***

- Review your findings and treatment plan with the physician
- Ask for the physician's evaluation of the patient's health
- Ask for the physician's evaluation of the patient's ability to tolerate your planned procedure

- Ask for additional recommendations for the patient's care

In most cases this approach results in no change to the treatment plan; however, the physician's advice and endorsement is obtained in the process.

### ***Anxiety Evaluation***

As with many dental patients in general, medically complex patients may have considerable anxiety about dental treatment and would benefit from an anxiety reduction protocol prior to treatment.

#### **Suggested Anxiety Reduction Protocol**

##### **Before appointment:**

- Hypnotic agent to promote sleep the night before dental treatment
- Sedative agent to decrease anxiety on morning of dental treatment
- Morning appointments
- Minimize waiting room time

##### **During appointment:**

- Non-pharmacologic:
  - Frequent verbal reassurances
  - Distracting conversation
  - No surprises, advise patient of all treatment
  - No unnecessary noises
  - Have instruments out of sight
  - Relaxing background music
- Pharmacologic
  - Local anesthesia
  - Nitrous Oxide
  - Oral anxiolytics

##### **After appointment:**

- Succinct instructions of postoperative care, given both orally and in writing
- Describe expected post operative sequelae
- Effective analgesics
- Further reassurance

- Clinic/dentist contact information if problems occur

### **Complex Medical Conditions**

#### **Diabetes Mellitus**

Diabetes Mellitus (DM) is one of the most common medical conditions that will be encountered in the treatment of AI/AN populations. Approximately 5% of the American population has DM, while the prevalence in some AI/AN populations is estimated to approach 40%.

#### ***Types of DM***

##### **Insulin Dependent DM Type I**

- All forms of diabetes that requires exogenous insulin
- Younger patients, abrupt onset, classic symptoms
- Prone to ketoacidosis
- Antibody to pancreatic islet beta cells often present
- Etiology may be exposure to toxin or virus

##### **Non-Insulin Dependent DM, Type II**

- Some endogenous insulin is present to prevent ketoacidosis
- Middle age, gradual onset, may be asymptomatic
- Gradual decrease in pancreatic beta cell function or resistance of skeletal muscle and hepatic cells to the effects of insulin
- Less aggressive form of disease but 90% of all diabetes

#### ***Insulin Types: Classified by Onset of Action.***

- Fast acting
  - Regular
    - Onset 0.5 – 1 hr
    - Duration 6- 8 hrs
  - Semilente
    - Onset 1 – 3 hrs
    - Duration 16 hrs
- Intermediate acting
  - Isophane Neutral Protamine Hagedorn (NPH)



- Onset 2 – 4 hrs
- Duration 18 – 26 hrs
- Lente
- Onset 2 – 4 hrs
- Duration 18 – 26 hrs
- Long acting
- Protamine zinc
- Onset 4 – 8 hrs
- Duration 28 – 36 hrs
- Ultralente
- Onset 4 – 8 hrs
- Duration 28 – 36 hrs

Initial management is usually fast acting and intermediate insulin in AM and intermediate in PM administered subcutaneously.

### ***DM History***

- Age first diagnosed?
- Type of diabetes?
- Medication being taken?
- If insulin is being taken, what is time interval and amount?
- How often do you check your blood sugar?
- Have you been hospitalized during the past year for problems related to your diabetes?
- Is your diabetes well controlled or does it get out of control at times?

### ***Diagnostic Tests:***

- \*Fasting blood sugar (reflects current control, that day). (> 126 mg/dl)
- \*Random plasma glucose > 200mg/dl with symptoms (polyuria, polydipsia, unexplained weight loss)
- \*2 hour plasma glucose > 2100mg/dl following a 75g glucose load
- Fructosamine test (reflects average control over last 2 – 3 weeks)
- Glycosylated hemoglobin (reflects average control over last 6 – 8 weeks). (>7% = problem) can measure long term hyperglycemia

- Hemoglobin A1c is produced when a red blood cell (RBC) is exposed to hyperglycemia
- 6% – 8% is significant for prolonged hyperglycemia (normal value varies)

\*official diagnostic tests for diabetes

### ***Associated Pathophysiology***

- Hyperglycemia manifested as polyuria, polydipsia, ketoacidosis
- Altered leukocyte function
- Atherosclerosis, microangiopathic changes, leading to nephropathies and retinopathies

### ***Signs of Uncontrolled Diabetes***

- Urine test – 2+ sugar or above
- Abnormal thirst
- Increased urine output
- Abnormal weight loss
- Loss of strength
- Elevated blood glucose levels – > 180
- Ketoacidosis
  - Poorly regulated-glucose levels
  - Increased food intake
  - Occurs with infection, vomiting, diarrhea, post-operative period
  - Very little exercise
- Warm, flushed, dehydrated, acetone breath

Be alert for:

- Periodontal problems
- Candidiasis/Xerostomia
- Poor response to treatment, especially periodontal therapy
- Poor healing
- Slow healing

***Dietary Considerations:***

Balance must exist between caloric intake and utilization of circulating blood glucose. If insulin remains the same, a change in diet will lead to either increase or decrease in blood glucose levels.

***Management of Insulin-Dependent Diabetes Patient***

- Early morning and short appointments
- Anxiety-reduction protocol
- Determine disease severity, method of control, success of control
- Assure that diabetes is well controlled, defer treatment and consult physician if not
- Pretreatment capillary blood glucose level (finger stick sugar)
- Eat a balanced meal (includes fat and protein as well as carbohydrates) within the last two hours before coming to the dental appointment
- Patient should have taken their usual dose of regular insulin but only ½ the dose of NPH
- Advise patients not to resume normal insulin dosage until they are able to return to a normal caloric intake and activity level
- Consult physician concerning modifications of insulin regimen. It's always better to run a little bit sweet.
- If appointment is going to run longer than 2 hrs, food (Power Bar or some other balanced nutritional supplement) should be available.
- Watch for signs of hypoglycemia
  - Mild: hunger, nausea, dizziness, headache, lethargic, < spontaneity of conversation
  - Moderate: diaphoretic, tachycardia, anxiety, confusion
  - Severe: hypotension, unconscious, seizures
- Treat infections aggressively
- Well-controlled diabetic patients do not require prophylactic antibiotic therapy for routine oral surgical procedures, and delayed wound healing should not be anticipated in the rich vascular environment of the oral cavity

***Management of Non-Insulin-Dependent Diabetes Patients***

- Assure diabetes is controlled, diet controlled typically required no modification

- Pre-treatment capillary blood glucose level (finger stick sugar), watch for signs of hypoglycemia
- Schedule early morning and short appointments, use anxiety-reduction protocol
- If patient will have difficulty eating after treatment, skip hypoglycemics for that day. If not then take the usual dose of medication
- Treat infections aggressively
- Well-controlled diabetic patients do not require prophylactic antibiotic therapy for routine oral surgical procedures, and delayed wound healing should not be anticipated in the rich vascular environment of the oral cavity.

### ***Management of The Poorly Controlled DM Patient (Type I Or II) During Oral Surgical Procedures***

- Blood sugars may be high due to chronic and/or acute dental infections
- Poor DM control leads to immunosuppression as indicated above
- Urgent treatment should focus on eliminating acute dental infections as atraumatically as possible
- Antibiotic prophylaxis (AHA recommendations) may be considered for even simple extractions on the poorly controlled DM patient, based on the dentist's judgment
- Pretreatment antibiotics along with a 7-day post-treatment course may be considered even for simple extractions on the poorly controlled DM patient if signs of infection are present (swelling, lymphadenitis, fever, etc.), based on the dentist's judgment
- Pre-treatment medical referral for an insulin dose to bring the blood sugar level down prior to dental care may be considered. In the DM patient with an active infection, however, stable control may be impossible until the source of the infection is removed, so high blood sugars should not be considered an absolute contraindication to oral surgical procedures (especially urgent ones).
- Additional information about the care of patients with diabetes and the use of prophylactic antibiotics can be found on the following Web sites:
- [http://www.aapd.org/media/Policies\\_Guidelines/G\\_AntibioticProphylaxis.pdf](http://www.aapd.org/media/Policies_Guidelines/G_AntibioticProphylaxis.pdf)  
[http://dental.pacific.edu/docs/patientProtocol/Medically\\_Complex.pdf](http://dental.pacific.edu/docs/patientProtocol/Medically_Complex.pdf)

### **Cardiovascular Disease**

- Ischemic heart disease

- CHF
- Cardiac valve abnormalities
- Cardiac dysrhythmias and conduction disturbances
- Arterial hypertension

***Ischemic Heart Disease: (Angina Pectoris)***

- Characterized by impaired delivery of myocardial blood supply and includes coronary artery disease (CAD), angina, and previous MI.
- Progressive narrowing and/or spasm of one or more coronary arteries
- Myocardial blood supply cannot be increased to meet the increased oxygen requirements as the result of an obstruction

**Symptoms:**

- Substernal pain spreading across the chest to the left shoulder, arm and mandible; pressure, squeezing, or burning pain
- Relieved by rest, last only a few minutes
- Relieved by nitroglycerin

**Stable vs. Unstable**

- Stable: Precipitated by exercise, stress, or sustained tachycardia
- Unstable: may occur at rest and is probably precipitated by vasospasm

**Laboratory examination:**

- CXR: enlarged heart indicates < reserve
- EKG: hypertrophy, old infarction, ST and T wave changes

**Management**

- Consult physician if needed
  - Long acting vasodilators – nitroglycerin
  - Beta-adrenergic blockers – propranolol a non-specific beta blocker in conjunction with epinephrine in local anesthetics can cause severe hypotension
  - Calcium channel blocker – nifedipine, diltiazem
- Use anxiety-reduction protocol
- Have nitro tablets readily available. Use nitroglycerin premedication if indicated
- Administer supplemental oxygen

- Ensure profound anesthesia
- Consider nitrous oxide sedation
- Monitor vital signs closely
- Limit amount of epinephrine used
  - Exogenous (limit to 0.04mg = 2.2 carpules 1:100,000), No epi retraction cords
  - Prolonged anesthesia outweighs risk
  - Endogenous: Potentially a much bigger problem.
  - Stress – adrenal medulla can produce 0.28mg of epi/min.
- Avoid topical vasoconstrictors
- Treatment of angina attack
  - Terminated dental treatment
  - Sublingual nitroglycerin
  - Make patient comfortable
  - 100% oxygen
  - Give nitroglycerin again if needed in 5 minutes
  - Activate the EMS

### ***Myocardial Infarction***

#### **Pathology:**

- Ischemia leading to cellular death of myocardium, areas become focus for dysrhythmias
- When chest pain last more than 30 minutes without relief by nitroglycerin
- Heart failure with damage of 30% of left ventricular myocardium death
- First MI, 30% die; reinfarction=70% mortality
- Coronary artery bypass grafting
  - treat same as post MI patient
  - Consult physician if emergency treatment needed prior to six-month waiting period

#### **Management:**

- Consult physician to establish cardiac history and management requests
- Defer treatment for six months after cardiac insult
  - Less than 4 months – 30% mortality

- 4 to 6 months – 15% mortality
- After 6 months – 5% mortality
- Over 6 months – no significant increased risk
- Use anxiety – reduction protocol
- Have nitroglycerin available, use pre-treatment if physician advises
- Administer supplemental oxygen
- Have profound anesthesia, adequate post treatment pain management
- Consider nitrous oxide
- Limit epinephrine use to 0.04mg within 15 minutes in patients with significant disease
- Monitor vital signs and maintain verbal contact

### ***Congestive Heart Failure***

- Diseased myocardium caused by previous MI, ischemic heart disease, uncontrolled hypertension, structural aberrations of the heart, and cardiomyopathy
- Increased end-diastolic pressure
- Pulmonary edema

#### Symptoms

##### Left-sided heart failure

- Dyspnea, orthopnea, paroxysmal nocturnal dyspnea
- Wheezes, pulmonary congestion
- Third heart sounds

##### Right-sided heart failure

- Jugular venous distension
- Peripheral edema, nocturia, ascites

##### Both right and left sides

- Shortness of breath, weight gain
- Fatigue, weakness, anorexia

##### Usual medical management and medications

- Low sodium diets

- Diuretics
- Cardiac glycosides (digoxin)
- May be on nitrates, beta-blockers, Ca channel blockers, and sometimes anticoagulants

#### Treatment risk classification

##### Class I:

- No dyspnea with normal exertion, good risk

##### Class II:

- Mild dyspnea, patient may rest after climbing a flight of stairs. Good risk with no contraindications for treatment.

##### Class III

- Dyspnea or undue fatigue with normal activity
- Patient comfortable at rest only
- Patient is a definite risk. Consultation required
- Short appointments
- Mild sedation best for management

##### Class IV

- Dyspnea, orthopnea
- Fatigue at all times
- Serious risk, emergency treatment only with a physician in attendance
- Supplemental oxygen

#### Questions to ask:

- Do you get chest pains on exertion?
- Can you walk up a flight of stairs without needing to rest to catch your breath or getting chest pains?
- Do you take medications for your congestive heart failure? If so, did you take them today?

#### Management

- Use anxiety-reduction protocol, N2O
  - Avoid tachycardia and increased BP



- Continue present meds. Avoid atropine
- Profound local anesthetic
- Supplemental oxygen - lowered oxygen saturation leads to ischemia which can lead to MI
- Avoid supine position
- May have poor liver and kidney function
- With ejection fraction < 40%, operating room management is required

### ***Cardiac Valve Abnormalities***

This includes stenosis, valvular insufficiency, prolapsed, or incompetent valves. With poor valve closure regurgitation occurs producing turbulent flow and murmurs on auscultation. The most important abnormalities involve the aortic and mitral valves.

Murmurs are described in terms of their presence in the cardiac cycle:

- Diastolic or systolic
- In terms of dynamics:
  - crescendo or decrescendo
- In terms of loudness:
  - I : barely audible with a stethoscope
  - II, III, IV, V
  - VI: audible without the aid of a stethoscope

### ***Aortic Stenosis***

- Usually progressive over a lifetime
- With progressive stenosis and insufficiency comes left ventricular hypertrophy
- Cardiac output compromise results in syncope and hypotension
- Systolic ejection murmur in the aortic region with possible S3 or S4 or aortic ejection click

### ***Mitral Stenosis***

- Could be result of rheumatic fever (symptoms 10 years post fever)
- Increased work by left atrium, resulting in left atrial enlargement, pulmonary hypertension, and right ventricular hypertrophy
- Loud S1, diastolic rumble with concomitant murmur of mitral regurgitation

***Aortic Regurgitation***

- Rheumatic fever is most common etiology
- Usually mitral involvement
- Volume overload of left ventricle because ventricle effects atrial load and regurgitant volume and subsequent diminution of function over time
- May produce pulmonary edema
- Water hammer pulse, diastolic decrescendo murmur

***Mitral Valve Regurgitation***

- Most commonly with rheumatic fever
- Back glow of blood across a closed mitral valve during systole
- Holosystolic murmur
- Left ventricular afterload reduction with long term impairment of contractility

***Mitral Valve Prolapse***

- Very common, up to 1 in 20 individuals, more female
- Systolic click and late systolic murmur
- May or may not have mitral regurgitation

***Prosthetic Heart Valves***

- Two basic designs: mechanical and bio-prosthetic
- High risk for bacterial endocarditis

Questions to ask about murmurs:

- When was it first diagnosed?
- Was it termed functional or organic?
- Did the doctor ever say you needed prophylactic antibiotics prior to dental treatment?
- Did the doctor ever say you didn't need prophylactic antibiotics prior to dental treatment?

***Infectious Endocarditis***

- Pathology: Infection of sterile vegetation on abnormal heart valve
- Turbulent flow leads to loss of endocardium exposing underlying collagen

- Platelets aggregate an collagen and form sterile fibrin-platelet thrombus called vegetation
- Treatment: long-term, high dose IV antibiotics
- Initial recovery – 100%
- Recurrent Subacute Bacterial Endocarditis (SBE) episodes – 60%
- Alpha hemolytic Streptococci main cause

### ***Antibiotic Prophylaxis against Infectious Endocarditis***

Please go the section on the American Heart Association's recommendations for Prophylaxis against Infectious Endocarditis for the most recent risk classifications and recommendations in this chapter of the OHPG.

### ***Cardiovascular Disease Dysrhythmias***

Supraventricular tachycardia:

- Usually in patients > 70 years
- Ventricular rate should be under control
- Patients on digitalis need therapeutic levels
- Often on Coumadin

Ventricular arrhythmias:

- Multiple unifocal premature ventricular contraction (PVC)
- R wave falls on T wave
- Multifocal PVC
- Ventricular tachycardia can rapidly degenerate to ventricular fibrillation

Bradycardias and conduction disturbances:

- First degree heart block
- Wolf –Parkinson-White Syndrome
- Right and left bundle branch block

### **Hypertension**

- Most common condition for which patients receive prescription medication
- Systolic blood pressure (SBP) > 140mm Hg, diastolic blood pressure (DBP) > 90 mm Hg

- Nearly 1 in 3 American adults has high blood pressure
- It can cause:
  - Enlargement of the heart
  - Aneurysms to form in blood vessels (e.g., aorta, brain, legs, intestines, and the artery leading to the spleen)
  - Narrowing of the blood vessels in the kidneys leading to kidney failure
  - Acceleration in “hardening” to the arteries especially in the heart, brain, kidneys, and legs
  - Rupture of blood vessels in the eyes causing vision changes or blindness

Four categories based on presentation and level of aggression needed for treatment

<b>Blood Pressure Category</b>	<b>Systolic (mm Hg)</b>	<b>Diastolic (mm Hg)</b>
Normal	less than 120 and	less than 80
Prehypertension	120 – 139 or	80 – 89
High Stage I	140 – 159 or	90 - 99
High Stage II	160 or higher or	100 or higher

When SBPs and DBPs fall into different categories, the higher category should be used to classify blood pressure level. For example, 160/80 mm Hg would be stage 2 high blood pressure.

There is an exception to the above definition of high blood pressure. A blood pressure of 130/80 mm Hg is considered high blood pressure in people with diabetes and chronic kidney disease.

### ***Treatment***

Pharmacologic therapy (most patients will require two or more antihypertensive agents):

- Diuretics
- Adrenergic – receptor blockers
- Central alpha – 2 agonists
- Postganglionic blockers
- Calcium channel blockers
- ACE inhibitors
- Direct vasodilators

Lifestyle changes

- Weight reduction

- Decreased alcohol reduction
- Dynamic exercise
- Dietary modifications – decrease in sodium and fat

#### Management Considerations:

There are no professionally recognized criteria of when it is safe to proceed. The decision to treat is individualized based on severity of blood pressure, likelihood of coexisting myocardial ischemia, ventricular dysfunction, cerebrovascular and renal complications, and the nature of the procedure.

Antihypertensive drug therapy should be continued.

Elevation of SBP higher than 180 mm Hg or DBP higher than 110 is used as a cutoff by many dental professionals for treatment without medical consultation and referral. If blood pressure is > 200/110, avoid surgery and refer for control of hypertension.

#### Management:

- Identify patient (take blood pressure on all patients). Patients with elevated pressure should be referred to an out patient clinic for initial therapy to reduce pressure prior to dental treatment.
- Take relaxed blood pressure (average of two)
  - Upright position with arms at heart level for 5 mins.
  - Proper-sized cuff (cover 80% of the upper arm)
- Stress and anxiety reduction
  - Doctor – patient relationship
  - Pharmacological (Benzodiazepine, Nitrous Oxide)
  - Short morning appointments
- Avoid sudden changes in chair position, sit patient up slowly at the end of the procedure (orthostatic hypotension)
- Avoid gag reflex
- Monitor vital signs
- Decreases exposure to epinephrine
  - Exogenous (limit to 0.04mg = 2.2 carpules 1:100,000), No epi retraction cords
  - Endogenous epi potentially a much bigger problem. Stress – adrenal medulla can produce 0.28 mg of epi./min.
- Avoid topical vasoconstrictors

**Cerebral Vascular Accident (Stroke)**

- Often anticoagulated, on hypertensive medications
- Defer treatment for six months following stroke
  - Arthrosclerosis of carotid vessels
  - Transient ischemic attacks
- Use anxiety-reduction protocol
- Supplemental oxygen
- Monitor vital signs
- Consider nitrous oxide

Questions to ask patient:

- When did you have your stroke?
- What loss of function occurred?
- Have you recovered some function over time?
- Have you ever had trouble with dental appointments or medical appointments?
- Is there anything I need to know that will make you more comfortable or make it easier for you to deal with the dental appointment?
- What medications are you taking to prevent another stroke?

**Immunosuppressed Patients**

Conditions:

- Decreased white blood cells
- Cyclic neutropenia
- Agranulocytosis
- Decreased antibody synthesis
- Decreased chemotaxis and phagocytosis

Types of immunosuppressed patients:

- Cancer chemotherapy patients
- Patients on immunosuppressive drugs
- Post-transplant, implant patients
- Human Immunodeficiency Virus positive (HIV+)/Acquired Immune Deficiency Syndrome (AIDS)

- Corticosteroid use to suppress severe auto-immune diseases

Questions should be designed to evaluate the severity of the immunosuppression and the reason for it. Questions will vary depending on the reason the patient says they are immunosuppressed.

- Why are you immunosuppressed?
- How long have you been immunosuppressed?
- Have you been hospitalized because of problems resulting from your immunosuppression, i.e. infections?
- Are you taking any prophylactic medication to prevent infections because of your immunosuppression?
- Has your doctor said that any special precautions should be taken during medical or dental treatment to prevent (prophylax against) possible infections?

Diagnostic tests:

- CBC with a differential (especially platelet count, if planning surgery)
- T-suppressor cell count (HIV patients)
- Viral load (HIV patients)

Management during dental treatment:

- Depending on severity of immunosuppressants, laboratory tests, primarily CBC with differential, should be done immediately (within 5 days) of major invasive procedure, i.e. extractions, scaling and root planning, periodontal surgery.
- If white count below 2,000, no elective treatment until white count is restored.
- If platelet count is less than 60,000, no elective treatment. If emergency treatment is needed with the risk of bleeding, then have a physician give the patient a unit of platelets prior to procedure.
- If patient is severely immunosuppressed and infection is present, consider prophylactic antibiotics prior to oral surgical or periodontal surgical procedures.
- Institute aggressive treatment of any dental infection, including antibiotics, incise and drain, and proceed with any necessary endodontic procedure or extraction.
- Aggressively control any periodontal disease with proper cleaning and supplemental medication such as chlorhexidine rinse.

- If there is any question about patient status of being able to deal with the suggested treatment, antibiotic coverage or the first sign of any infection, consult patients physician.
- Prior to organ transplant or when patient is most immunocompetant, consider aggressive dental therapy to remove / resolve any possible dental problems, i.e. needed or expected endodontic procedures. Consider extracting teeth with compromised endodontic prognosis.
- Good oral hygiene.
- Prophylaxis for viral and fungal infections.

Additional information on the treatment of the patient with HIV infection can be found at the following links:

<http://www.ahrq.gov/clinic/epcsums/denthivsum.htm> (Agency for Healthcare Research and Quality's evidence-based information)

[UOP Protocols for the Dental Management of Patients with HIV Disease](#)

### **Renal Problems: End Stage Renal Disease (ESRD)**

Definitions:

- Renal insufficiency—early stage of ESRD, asymptomatic, mild laboratory abnormalities
- Renal failure—decreased ability of the kidney to perform its excretory, endocrine, and metabolic functions beyond compensatory mechanisms
- Uremia—syndrome caused by renal failure, retention of excretory products and interference with endocrine and metabolic functions. GFR <10 – 15ml/min

Common causes of ESRD

- Diabetes
- Hypertension
- Glomerulonephritis
- Polycystic lupus erythematosus
- Amyloidosis
- Nephrolithiasis

Renal dialysis

- Prophylactic antibiotic coverage required due to arterio-venous shunt



- Do procedures the day following dialysis
- Assume patient has hepatitis
- Avoid drugs that depend on renal metabolism
- Avoid nephrotoxic drugs as NSAID
- Use caution and alter dosage form when using drugs eliminated by the kidney (e.g. Penicillin is often reduced to 500mg 2 times per day versus 4 times per day)
- Monitor vital signs
- Look for signs of secondary hyperthyroidism
  - Chronic hypocalcemia
  - Multiple radiolucencies
  - Loss of lamina dura
  - “Ground glass” appearing bone
  - Enamel hypoplasia

#### Oral Complications of Renal Failure/Uremia

- Pallor of mucosa (anemia)
- Decreased salivary flow
  - Xerostomia
  - Parotitis
- Metallic taste
- Ammonia odor I to saliva
- Stomatitis
- Oral ulceration
- Candidiasis

#### Renal transplant or other transplanted organs:

- Adrenosuppressed and immunosuppressed
- Treat infections aggressively
- Consults required on all patients
- Supplemental corticosteroids usually needed
- Monitor blood pressure
- Assume hepatitis

- Watch for cyclosporine A-induced gingival hyperplasia. Emphasize excellent oral hygiene

#### Management During Dental Treatment:

- Do not use drugs toxic to the kidney, e.g., instead of Ibuprofen use acetaminophen for pain management
- Use caution and alter dosage form when using drugs eliminated by the kidney
- If patient is on renal dialysis, dental treatment should be done on the day following dialysis
- If patient has kidney transplant, see considerations under immunosuppression protocol

#### Be alert for:

- Drug toxicity because of accumulation
- Poor healing and oral ulcerations

#### Preventative/Precautions:

- No special dental precautions needed
- Patient should be counseled as to potential toxicity problems from certain prescriptions and OTC drugs, plus alcohol

### **Hepatic Disorders**

#### Suspect liver disease with:

- Chronic alcohol or substance abuse
- History of hepatitis

#### Hepatic liver function effects:

- Vitamin K-dependent coagulation factors (II, VII, IX, X) often depressed
- PT, PTT required prior to surgery
- Thrombocytopenia often present, platelet count and Ivy bleeding time
- Increased Serum glutamic oxaloacetic transaminase (SGOT), Lactate dehydrogenase (LDH), alkaline phosphatase, globulins
- Decreased total protein, albumin

#### Questions to ask:

- How long have you had a liver problem?

- What type of liver problem is it and how was it caused?
- Do you feel unwell relative to the liver problem?
- Have you noticed any problems such as bleeding, difficulty in metabolizing / digesting food, or increased or decreased sensitivity to medication, from the liver problem?
- Do you ever get jaundice (do the whites of your eyes or your skin turn or look tallow)?
- Have you ever needed to be hospitalized because of your liver problem?

Management during dental treatment:

- If bleeding problems, follow bleeding problem protocol.
- If unable to metabolize drugs, avoid using drugs metabolized in the liver such as erythromycin and ketoconazole. Minimize local anesthetics.
- If patient having problem with drug interactions, avoid drugs with high potential for drug interaction used in dentistry, i.e. erythromycin and ketoconazole.
- Avoid drugs with potential for liver toxicity i.e. acetaminophen, Tylenol, and any other over-the-counter / non prescription drug.

Be alert for:

- Easy bleeding
- Yellow tint to skin, oral mucosa, and the whites of the eye.
- Poor healing
- Oral ulcers

Preventative/precautions:

- Good oral hygiene to minimize oral hygiene problems
- Avoidance of drugs that are toxic to the liver i.e. acetaminophen, alcohol

### ***Hepatitis***

Questions to ask:

- What type of hepatitis do you have?
- Are you actively infected at this time?
- Have you had any signs or symptoms of your hepatitis?
- Have you had any change in your liver function tests?
- Have you taken any medication specifically to treat your hepatitis?

- If you had hepatitis B, do you know your hepatitis antigen status?

Since all patients are treated as though they are infectious and universal precautions are applied, no special precautions are necessary when treating a patient actively infected with the hepatitis virus. If patient is having liver problems secondary to hepatitis, then review liver protocol.

### Hepatitis A Virus (HAV)

#### Etiology

- Ingestion of contaminated shellfish
- Exposure to others with HAV
- Oral – fecal route

#### Treatment:

- Supportive
- New vaccine
- No dentistry in acute phase

### Hepatitis B Virus (HBV)

#### Transmission:

- Direct percutaneous inoculation
- Indirect percutaneous infection, cut, abrasion
- Absorption of infected serum or plasma
- Infected secretions

#### Incidence:

- General population 5%
- General dentists 13%
- Oral and maxillofacial surgeons 27%
- Others: hemodialysis patients and technicians hemophiliacs, blood
- Bank workers, male homosexuals and bisexuals, IV drug abusers, institutionalized patients, friends of hepatitis patients
- Carrier state
  - 10% of infections become carriers
  - Treat as though all are carriers

Lab tests for hepatitis antigens and antibodies should be run. If patient has active hepatitis, then liver function should be run or request physician provide information as to liver function and coagulation status.

**Dental Management:**

- Active disease – *no treatment*
- Past history, treat as possible carrier
- Carrier: consult with physician as to current status of disease and planned treatment
- Standard Precautions

**Endocrine Disorders**

***Adrenal Insufficiency***

Inability to increase endogenous corticosteroids (Addison's disease)

**Symptoms:**

- Weakness, weight loss, fatigue,
- Hyperpigmentation, hypotension, anorexia

**Cause:**

- Autoimmune destruction of adrenals, neoplasms, TB
- Secondary adrenal insufficiency – chronic steroid therapy

**Glucocorticoids (Cortisol):**

- Controlled by adrenocorticotropin hormone (ACTH) from the pituitary
- Cyclic activity: High: 2am – 8am; Low: 6pm – 8pm
- Increased activity with the stress response
- Cortisol inhibits ACTH
- Stress leads to release of ACTH
  - Hypothalamus responds to stress
  - Releases corticotropic releasing hormone (CRH), half life 30 secs
  - CRH > ACTH release, half life 10 min.
- ACTH stimulates release of cortisol – half life 2-3 hours
  - Synthesized from cholesterol
  - 80% bound to plasma proteins

- 20 – 30% is metabolically active

### ***Dental Management***

- Use anxiety-reduction protocol
- Monitor vital signs
- Instruct patient to double dose of steroids the morning of surgery up to 200mg. If taking greater than 100mg, then give only an additional 100mg
- If on alternate day steroids, do surgery on day steroids are taken
- If patient has had 20 mg of steroid for more than 2 weeks in the past 2 weeks, but is not currently taking steroids, then give 40mg hydrocortisone prior to surgery
- Not needed for most simple extractions

Stress leads to release of ACTH. Hypothalamus responds to stress.

### ***Adrenal Crisis***

Signs and symptoms

- Peripheral vascular collapse
- Hypotensive, syncopal, nauseated, feverish, dehydration, hypoglycemia, hyperkalemia

Management:

- Administer IV fluids (D5NS)
- Administer hydrocortisone 100mg IV or equivalent
- Transport to emergency room (ER)

### ***Hyperthyroidism***

Clinical manifestations

- Fine hair, hyperpigmentation, excessive sweating, tachycardia, weight loss, palpitations, emotional lability, exophthalmos, hyper-reflexia
- Thyrotoxic crisis – major stress in an undiagnosed patient
  - Mild – restlessness, nausea, cramps
  - Moderate – fever, diaphoresis, tachycardia
  - Severe – stuporous, hypotensive, death

Dental management:

- Anxiety reduction protocol

- Limit epinephrine use
- Thyroid storm
  - Supportive care
  - Supplemental oxygen, ABCs
  - Transport to ER

### **Hematologic Problems**

- Therapeutic anticoagulation
  - Warfarin (see information on treatment of the anticoagulated patient, in this chapter of the OHPG), heparin
  - ASA, ticlopidine, clopidogrel, anagrelide, dipyridimole
  - Prosthetic heart valves
  - Thrombogenic cardiovascular problems
  - Myocardial infarction
  - Stroke, high risk
  - Hemodialysis patients
  - *Please see the section in this chapter on the treatment of the anticoagulated patient for details on patient management*
- Hereditary coagulopathies
  - Hemophilia A, B, C, von Willebrand's dz
- Platelet disorders
  - Platelet count < 100,000 mm<sup>3</sup>
- Liver disease
- Majority noted in patient's medical history
- Consult with patients hematologist
- Symptoms – nose bleeds, bruising, hematuria, spontaneous bleeding
- Factor replacement sometimes needed in Hemophilia A, B, C, or von Willebrand's disease

### ***Hereditary Coagulopathies***

- Hemophilia A – plasma thromboplastinogen (VIII) PTT
- Hemophilia B – Plasma thromboplastin component (IX) PTT
- Hemophilia C – Plasma thromboplastin antecedent (IX) PTT
- Von Willebrand – deficiency of all 3 components of Factor VIII, bleeding time

## Management of Dental Patients

- Obtain PT, PTT, platelet count, liver panel, and hepatitis screen
- Use sutures and well places packs
- Monitor wound for two hours after any surgeries
- Instruct patient not to dislodge clot and what to do if bleeding restarts
- Amicar prevents breakdown of clot
- Desmopressin (DDAVP) = Factor VIII and von Willebrand Factor stimulant

### Questions to Ask:

- How long have you had a bleeding problem or, depending on the situation, how long have you been on anticoagulant medication?
- Describe your bleeding problem.
- Have you had problems with previous dental appointments?
- What is the cause of your bleeding problem or why are you on anticoagulants?
- Are your anticoagulants or bleeding problems due to low platelets?
- What are your most recent laboratory results relative to your anticoagulation or bleeding problem status?

### Diagnostic tests:

#### General

- PT - prothrombin time
- PTT - Partial thromboplastin time
- INR - international normalized ratios

#### Aspirin (ASA) and other non-steroidal anti-inflammatory agents

- Bleeding time

#### Thrombocytopenia

- CBC with a differential (which will give platelet count)
- Bleeding time

### Management During Dental Treatment:



- No type of dental treatment should be rendered that has the potential for severe bleeding (i.e. extractions, scale/root plane).
  - If bleeding time is greater than 10 minutes
  - If platelet count less than 60,000
  - If PTT is greater than 45 seconds
  - If PT is greater than 22 seconds
  - If INR is greater than 3.5
  - *See section on the management of anticoagulated patients*

Medical coordination and consultation is always a good idea with patients on anticoagulants.

If hemophilic, have the patient's medical provider administer proper replacement factors and run necessary test to insure patient is within safe parameters.

During dental procedures minimize physical trauma and pack extraction sites that have the potential to bleed with local pressures and other coagulation procedures, i.e. Gelfoam. Obtain primary closure on any surgical sites, if possible.

Be alert for:

- Easy or prolonged bleeding with minimal trauma (i.e. probing, wedge placed between teeth for amalgam matrix)
- Easy bruising / multiple bruises

Preventive/precautions:

- Assure the patient is aware of necessary laboratory test that should be done close to the time of dental treatment (within a week, or closer if they have had previous problems). Some bleeding parameters can change quickly.
- Avoid drugs that may cause drug interaction, such as erythromycin and ketoconazol, which inhibit warfarin metabolism. Also avoid drugs that can prolong bleeding, such as aspirin or other nonsteroidal antiinflammatories.
- Encourage patient to keep you informed of any drug changes and their use of any other-the-counter medications.
- If patient calls from home following treatment, instruct them to apply pressure with gauze or cloth to bleeding site for 10 – 30 minutes. If bleeding persists, have patient come into office immediately or to a medical emergency room.

Additional information on the management of hematologic problems can be found at: <http://www.dent.ohio->

[state.edu/postdocgd/MedComp/Medcomp09hematology.pdf#search='anticoagulant%20therapy%20and%20dental%20extractions'](http://state.edu/postdocgd/MedComp/Medcomp09hematology.pdf#search='anticoagulant%20therapy%20and%20dental%20extractions')

## Liver Disease

- Sever cirrhosis from any cause
- Drugs and toxins (esp. ethanol/alcohol (ETOH))
- Viral hepatitis
- Carcinomas – primary or metastatic
- Will have elevated PT, PTT, and decreased platelets depending on severity of disease

### Questions to ask:

- How long have you had a liver problem?
- What type of liver problem is it and how was it caused?
- Do you feel unwell relative to the liver problem?
- Have you noticed any problems such as bleeding, difficulty in metabolizing / digesting food, or increased or decreased sensitivity to medication, from the liver problem?
- Do you ever get jaundice (do the whites of your eyes or your skin turn or look yellow)?
- Have you ever needed to be hospitalized because of your liver problem?

### Diagnostic Tests:

- SMAC20 (specifically SGOT, Alanine Aminotransferase (AST), Aspartate Aminotransferase(ALT))
- PT and PTT
- INR

### Management During Dental Treatment

- If bleeding problems, follow bleeding problem protocol.
- If unable to metabolize drugs, avoid using drugs metabolized in the liver such as erythromycin and ketoconazole. Minimize local anesthetics.
- If patient having problem with drug interactions, avoid drugs with high potential for drug interaction used in dentistry i.e. erythromycin and ketoconazole.
- Avoid drugs with potential for liver toxicity i.e. acetaminophen, Tylenol, and any other OTC/nonprescription drug.

Be alert for:

- Easy bleeding
- Yellow tint to skin, oral mucosa, and the whites of the eye.
- Poor healing
- Oral ulcers

Preventative/precautions:

- Good oral hygiene to minimize oral hygiene problems
- Avoidance of drugs that are toxic to the liver i.e. acetaminophen, ETOH

## **Pulmonary Problems**

### ***Asthma (Pathophysiology)***

- Bronchoconstriction
- Hypertrophy of mucous glands
- Edema of the bronchial walls
- Increased mucous production
- Mast cells – release mediation substances
- Histamine – acute bronchospasm
- Leukotrienes slow reaction smooth muscle-stimulating substance (SRS) potent bronchoconstrictor
- Prostaglandin E (PGE) – hypertrophy of glands and increase viscosity of secretions

Determine the severity of wheezing and dyspnea

- What causes attacks?
- How severe are they?
- What medications are used?
- How effective are the medications?
- Have you been to the emergency room for or have you been hospitalized for your asthma?

Medications:

- Beta – agonist
  - Beta 2 aerosols

- Epinephrine
- Steroids
  - Aerosols
  - Oral
- Theophylline

Dental management:

- Defer oral surgery procedures if uncontrolled Upper Respiratory Infection
- Listen with stethoscope for wheezing
- Use anxiety-reduction protocol
- Consider nitrous oxide
- Inquire about steroid usage
- Have bronchodilator handy

***COPD***

- Long term exposure to irritants – tobacco
  - Chronic bronchitis, emphysema
  - Cystic fibrosis
- Loss of elastic properties of airways
- Dyspnea with mild to moderate exercise
- Chronic cough with large amount of secretions

Dental Management:

- Assure that pulmonary function is adequate
- Listen to breath sounds.
- Use anxiety-reduction protocol.
- Avoid placing patient in supine position.
- Consult physician prior to giving patient oxygen. Oxygen therapy almost inevitable causes CO<sub>2</sub> retention in these patients.
- Give steroid supplements if needed.
- Keep bronchodilator close at hand.
- Closely monitor respirations.
- Avoid sedatives and narcotics.

## Seizure Disorder

Questions to ask:

- What type of seizure and do you have
- What stimulates a seizure and do you have an aura prior to the seizure?
- What is the cause of your seizures? (i.e. head injury, born with problem)
- How frequently and when (time of day) do they usually occur?
- What type of medications are you taking to control the seizures?
- Does the medication work?
- Do you take the medication regularly or do you discontinued it at times? If you did discontinue, was it your decision or your doctor's and what happened?

Management:

- Use anxiety-reduction protocol
- No further precautions needed if well controlled
- If patient is unclear about types of seizure or medications, and seizures are poorly controlled, then medical consultation for the above information will be needed.

## Gastrointestinal Disease

- Exacerbated by stress, poor oral intake, medications and some foods
- Defer elective surgical procedures if unstable
- Signs and symptoms
  - Epigastric distress
    - Pain to epigastrium, back or shoulder
  - Anemia and occult blood in stool

## Ulcers

- Hyper-secretion of hydrochloric acid
  - Helicobacter pylori can be found in the stomach of approximately 99% of patients with duodenal ulcers and 70 – 80% of those with gastric ulcers.
  - Avoid aspirin, NSAIDs

Management:

- Diet and antacids
  - Cimetidine or ranitidine, H2 antagonists
  - H.pylori requires Antibiotic treatment, consult a physician

### **Osteonecrosis of the Jaw (ONJ)**

#### **Risk factors:**

- Radiotherapy to the head and neck
- Periodontal disease
- Dental procedures involving bone surgery
- Trauma from poor fitting dentures
- Underlying malignancy
- Chemotherapy
- Corticosteroids
- Systemic or regional infections
- Medications (i.e. Bisphosphonates)

#### **Bisphosphonates and ONJ:**

- ONJ can occur spontaneously, but is more commonly associated with dental procedures that traumatize bone. (i.e. extraction)
- Older age (over 65 years), concomitant use of estrogen or oral glucocorticoid use for chronic conditions, periodontitis and prolonged use of bisphosphonates have been associated with an increased risk for bisphosphonate-associated osteonecrosis.
- Although recommendations for the dental management of patients taking IV bisphosphonates have been developed, no specific guidelines exist for management of patients taking oral bisphosphonates.
- The risk of developing bisphosphonate-associated ONJ appears to be very low, and is estimated to occur in approximately 0.7 per 100,000 person-years exposure to Alendronate (Fosamax) (C. Arsvær, oral communication, March 2006). Other nitrogen containing oral bisphosphonates are expected to have a similar risk profile. There is a higher incidence of ONJ with IV bisphosphonate use.
- Typical clinical presentation of bisphosphonate-associated ONJ includes pain, soft-tissue swelling and infection, loosening of teeth, draining, and exposed bone. Symptoms may occur spontaneously in the bone: or, more commonly, at the site of previous tooth extraction.

#### **Management recommendations:**

- Centered on prevention.
- Patient should receive a dental examination prior to initiating radiotherapy or bisphosphonate therapy and, if possible, should complete any necessary major dental procedures (i.e., tooth extraction, osteointegration of implants) prior to initiating radiotherapy or bisphosphonate therapy.
- Patients should receive regular dental visits during radiotherapy or bisphosphonate therapy.
- Patients should be encourage to practice good oral hygiene and minimize possible jaw trauma through use of soft linings/minimizing sharp edges on dentures and ensuring that prosthodontics fit and do not have sharp edges where possible.
- If possible, patients should avoid dental surgery during treatment with bisphosphonates or after radiotherapy.

The ADA's statements on ONJ can be found at:

<http://www.ada.org/prof/resources/topics/osteonecrosis.asp>

## **Pregnancy**

Questions to Ask:

- What month of pregnancy are you in?
- Have there been any complications?
- Have you had complications with prior pregnancies?

### ***Management of The Pregnant Patient During Dental Treatment***

Pregnancy by itself is not a reason to defer routine dental care and necessary treatment for oral health problems.

- First trimester diagnosis and treatment, including needed dental x-rays, can be undertaken safely, using the FDA recommendations, to diagnose disease processes that need immediate treatment.
- Needed treatment can be provided throughout pregnancy; however, the time period between the 14th and 20th week is ideal.
- First trimester of pregnancy
  - If dental treatment rendered, use minimum medications or trauma
  - Educate patient about the value of good oral hygiene
- Second trimester and first half of third trimester:
  - This is the ideal time for all dental treatment necessary or desired during the pregnancy

- Minimize drug use including OTC drug use
- Emphasize proper periodontal care to minimize adverse pregnancy outcome
- Last half of third trimester
  - If dental treatment rendered, use minimum medications or trauma
  - If treatment required, be alert for supine hypotensive syndrome (allow the patient to turn on her side)

Be alert for:

- Periodontal problems. Besides the patient's own risk of bone loss, severe periodontal disease has been associated with low birth weight preterm babies. Good periodontal health is paramount to minimizing this risk.
- Pyogenic granulomas (pregnancy gingivitis)
- Minimize drug use. Even though there is little risk with most drugs, spontaneous abortions can occur and concerns about drugs used during dental procedures should not enter into concerns about why a spontaneous abortion occurred.

Preventative/precautions:

- Good home care.
- Emphasize good nutrition. Adequate protein, folic acid supplements, and to eliminate alcohol, tobacco, and other drug use.

Possibly the most comprehensive discussion about the provision of oral healthcare during pregnancy is contained in the New York State *Practice Guidelines on Oral Healthcare during Pregnancy and Early Childhood*. Pages 31 through 39 of these guidelines relate specifically to the provision of clinical dental care. The Guidelines can be found at: <http://www.health.state.ny.us/publications/0824.pdf>. It is recommended that all dentists review these guidelines.

Additional information about the provision of dental care during pregnancy can be found at the following Web sites:

[www.nysdental.org/img/pdf\\_files/JrnlJ04Gajendra.pdf](http://www.nysdental.org/img/pdf_files/JrnlJ04Gajendra.pdf)

[www.kdheks.gov/ohi/kanellis/kanellis\\_part\\_b.pdf](http://www.kdheks.gov/ohi/kanellis/kanellis_part_b.pdf)

According to the ADA Council on Scientific affairs (JADA September 2006, Page 1305), Dental radiographs may be prescribed for pregnant patients with strict adherence to the FDA selection criteria guidelines:

[http://www.ada.org/prof/resources/topics/topics\\_radiography\\_examinations.pdf](http://www.ada.org/prof/resources/topics/topics_radiography_examinations.pdf).



## Herbal Medication Use

- 1997 – 12% of the population used herbal medications (390% increase from 1990). This percentage is certainly higher.
- 70% of patients failed to disclose herbal medication used during routine preoperative assessment (Kaye 2000)
  - Reason: Belief that doctors are not knowledgeable
    - Doctors are prejudiced about their use
    - Fear of admitting use of unconventional therapies
    - Not considered to be medications
    - Not considered to be part of medical care
    - Therefore, we must question patients carefully
- 1 in 5 patients is unable to identify the preparation they are taking – bring herbal medications to appointment
- Can cause serious harm
  - Reports to FDA, Jan. 1993 – Oct. 1998
    - 2621 adverse events
    - 101 deaths

### *Eight Commonly Use Herbal Medications*

- Echinacea
  - Uses
    - Prophylaxis and treatment of viral, bacterial and fungal infections of the upper respiratory tract
    - Internal stimulation of the immune system
    - Stimulating phagocytosis
    - Increasing cellular respiratory activity
    - Increasing the mobility of leukocytes
    - Topical wound healing
  - Side or toxic effects
    - Repeated daily dose (8 weeks) may suppress immune response
    - Possible hepatotoxicity
    - Allergic reactions
  - Avoid
    - Patients requiring immunosuppression (transplant)
    - Asthma

- Preexisting liver dysfunction
- Ephedra (ma huang)
  - Uses
    - Weight loss
    - Increase energy
    - Treat asthma and bronchitis
    - Contains Ephedrine, pseudoephedrine, etc, which are noncatecholamine sympathomimetic agents
    - Increases blood pressure
    - Increases heart rate
  - Toxic or side effects
    - Fatal cardiac (MI) and CNS (stroke) complications
    - Long-term use depletes endogenous catecholamines
    - Monoamine oxidase (MAO) inhibitors = hyperpyrexia and hypertension
  - Avoid
    - patients with hypertension or risk of stroke
    - long-term use
    - patients on MAO inhibitors
  - Discontinue 24 hours before any dental treatment
- Garlic
  - Uses
    - Modify risk of developing atherosclerosis
    - Lower serum lipid and cholesterol levels
    - Reduce blood pressure and thrombus formation
  - Actions:
    - Inhibits platelet aggregation
  - Side effects
    - Prolonged bleeding
  - Avoid
    - Use with other platelet inhibitors
  - Discontinue seven days prior to treatment
- Ginkgo biloba
  - Uses
    - Positive effects on cerebral blood flow, cerebral insufficiency, and memory, may improve cognitive performance in Alzheimer disease

- Flavonoids – free radical scavengers
  - Terpenes – inhibit platelet activating factor (asthma and circulatory disorders)
- Side effects:
  - Prolonged bleeding
  - Headache, dizziness, heart palpitations, and gastrointestinal and dermatological reactions
- Discontinue 36 hours prior to treatment
- Ginseng (root)
  - Uses
    - Lower cholesterol and blood sugar
    - Increased strength, endurance and mental acuity
  - Side effects
    - Hypoglycemia
    - Inhibit platelet aggregation
    - Decrease in warfarin anticoagulation
  - Avoid
    - Diabetics
    - Patients on warfarin or at risk for bleeding
  - Discontinue seven days prior to treatment
- Kava
  - Uses
    - Anxiolysis
    - Sedation
    - Antiepileptic
  - Side effects
    - Increase sedative effects of anesthetics
    - Tolerance, potential for addiction and withdrawal
  - Discontinue 24 hours prior to treatment
- St. John's Wort
  - Avoid patients on the following medications
    - Cyclosporine
    - Alfentanil
    - Midazolam
    - Lidocaine
    - Calcium channel blockers
    - Warfarin

- Discontinue five days prior to treatment
- Valerian
  - Uses
    - Sedative, insomnia, in virtually all herbal sleep aids
  - Actions
    - Acts at the GABA receptor
  - Side effects
    - Additive to sedative medication (Versed)
    - Patients can become dependent
    - Acute benzodiazepine withdrawal
  - Discontinue slowly (taper) prior to treatment

### **Additional Resources**

The University of the Pacific School of Dentistry has compiled the following guidelines for the treatment of patients with HIV and with complex medical conditions:

[Protocols for the Dental Management Of Medically Complex Patients](#)

[UOP Protocols for the Dental Management of Patients with HIV Disease](#)

### **IHS Dental Data System**

The IHS Dental Data System provides information that is essential at all levels of program management. Local program managers need data on the extent of access to care of the service population, the breakdown of services by level of care and age group, and the level of clinical production of various providers and the dental program as a whole in order to manage their programs effectively. Area Dental Consultants need the same type of data for all programs under their purview to enable them to establish Area guidelines and to serve as one basis for evaluating programs in the area. IHS Headquarters needs data for the IHS as a whole in order to manage the overall IHS Dental Program and to advocate on a national level for the oral health needs of AI/ANs.

The RPMS is an automated data system that provides data for all disciplines in I/T/U health programs. The Dental Data System (DDS) software is the dental component of the RPMS and has been designed to meet common data processing needs of facility-based dental program operations, as well as those of central management. The DDS captures the minimum data requirements for direct care and contract care programs and includes data extraction and transmission routines for central processing. Various additional data entry/edit and retrieval options are available which may be tailored to the needs of the local site.

If the DDS is operating as part of the IHS Patient Care Component (PCC) software, the dental visit data entered into the DDS options automatically generate a patient encounter

in the PCC. This is important for third-party billing and administrative reasons, but it also generates information in the Patient Health Summary of the PCC which is of value to any type of care provider. The PCC Health Summaries, Disease Problem Registers, and Surveillance functions each can be of significant value to dental and other care providers for patient treatment and tracking of individuals or target groups. For example, registers can be created for people with diabetes, disabilities, high risk pregnancies, unmet needs, and any other health problems (including dental) which clinicians wish to track for treatment, follow-up, or evaluation purposes. The PCC health surveillance module enables providers to receive computer-generated reminders for primary care procedures.

The DDS software contains numerous reports which meet common information needs. The software also provides tools to generate customized reports for special local information requirements. The quarterly and annual Basic Measures Reports (BMRs) automatically provides a set of clinic workload data summaries for all programs using the RPMS/DDS software. The BMR creates permanent retrospective reports for observing local program trends over time. Also, the IHS National Data Warehouse provides Area Dental Consultants and Headquarters staff with summary data for multiple dental programs. These data can be sorted in various ways by means of Excel spreadsheets to meet individual needs.

A complete description of the installation, use, and features of the IHS Dental Software is available in the printed *IHS Dental Software User Manual*. Additionally, the software itself contains extensive on-line help.

### **Community-Based Data**

In addition to the collection of data for clinic-based dental services the RPMS/DDS software provides for the collection of community-based data by means of the following three modules:

- **Water Fluoridation Module**  
Allows for the entry and retrieval of water fluoridation data, including baseline fluoride levels, sampling frequency, compliance, and percent of population served by compliant water systems
- **Community-Based Activity Reporting System (CBARS)**  
Allows for the entry and retrieval of data on HP/DP activities (including time spent on these activities) and descriptive data on the recipient population
- **P.L. 94-437 Oral Health Objectives Monitoring Module**  
Allows for the entry and retrieval of data that enable local dental programs to monitor trends in specific measures of oral health status among dental patients

## **Chapter 6, Environmental Health and Safety**

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### **Infection Control in the Dental Clinic**

Infection Control in the dental clinic is a constantly-evolving field in which new guidelines and recommendations are published almost every year. Because of this ever-changing “state of the art,” this revision of the OHPG will not provide specific guidelines and recommendations because they would go out of date more quickly than the IHS could update them. Rather, this section will provide a brief summary of the current recommendations from the CDC and will provide links to internet websites where the most up-to-date information should always be available. The next section of this chapter provides samples of fill-in-the-blank Infection Control Policies/Exposure Control Plans to aid in the development of facility-specific policies and procedures.

In December 2003, the CDC published “Guidelines for Infection Control in Dental Health-Care Settings — 2003” in Mortality and Morbidity Weekly Report (MMWR). These new recommendations superseded the recommendations previously published in 1993. A copy of the recommendations can be downloaded from the CDC Web site at <http://www.cdc.gov/oralhealth/infectioncontrol/guidelines/index.htm> in either MicroSoft Word® or PDF format. Every dental facility should have a hard copy of the recommendations on site for reference.

The major recommendations are copied below directly from the MMWR for quick reference. Please refer to the complete document for more details and the list of references used by the CDC.

An Infection Control Program Assessment tool is included in Chapter 7 of this manual.

## **Recommendations**

Each recommendation is categorized on the basis of existing scientific data, theoretical rationale, and applicability. Rankings are based on the system used by CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC) to categorize recommendations:

**Category IA.** Strongly recommended for implementation and strongly supported by well-designed experimental, clinical, or epidemiologic studies.

**Category IB.** Strongly recommended for implementation and supported by experimental, clinical, or epidemiologic studies and a strong theoretical rationale.

**Category IC.** Required for implementation as mandated by federal or state regulation or standard. When Category IC is used, a second rating can be included to provide the basis of existing scientific data, theoretical rationale, and applicability. Because of state differences, the reader should not assume that the absence of a Category IC implies the absence of state regulations.

**Category II.** Suggested for implementation and supported by suggestive clinical or epidemiologic studies or a theoretical rationale.

**Unresolved issue.** No recommendation. Insufficient evidence or no consensus regarding efficacy exists.

## **I. Personnel Health Elements Of An Infection-Control Program**

### **A. General Recommendations**

1. Develop a written health program for Dental Healthcare Personnel (DHCP) that includes policies, procedures, and guidelines for education and training; immunizations; exposure prevention and postexposure management; medical conditions, work-related (WR) illness, and associated work restrictions; contact dermatitis and latex hypersensitivity; and maintenance of records, data management, and confidentiality (Category IB).
2. Establish referral arrangements with qualified health-care professionals to ensure prompt and appropriate provision of preventive services, occupationally related medical services, and postexposure management with medical follow-up (Category IB, Category IC).

**B. Education and Training**

1. Provide DHCP (1) on initial employment, (2) when new tasks or procedures affect the employee's occupational exposure, and (3) at a minimum, annually, with education and training regarding occupational exposure to potentially infectious agents and infection-control procedures/protocols appropriate for and specific to their assigned duties (Category IB, Category IC).
2. Provide educational information appropriate in content and vocabulary to the educational level, literacy, and language of DHCP (Category IB, Category IC).

**C. Immunization Programs**

1. Develop a written comprehensive policy regarding immunizing DHCP, including a list of all required and recommended immunizations (Category IB).
2. Refer DHCP to a prearranged qualified healthcare professional or to their own health-care professional to receive all appropriate immunizations based on the latest recommendations as well as their medical history and risk for occupational exposure (Category IB).

**D. Exposure Prevention and Postexposure Management**

1. Develop a comprehensive postexposure management and medical follow-up program (Category IB, Category IC).
  - a. Include policies and procedures for prompt reporting, evaluation, counseling, treatment, and medical follow-up of occupational exposures.
  - b. Establish mechanisms for referral to a qualified health-care professional for medical evaluation and follow-up.
  - c. Conduct a baseline tuberculin skin test (TST), preferably by using a two-step test, for all DHCP who might have contact with persons with suspected or confirmed infectious TB, regardless of the risk classification of the setting (Category IB).

**E. Medical Conditions, WR Illness, and Work Restrictions**

1. Develop and have readily available to all DHCP comprehensive written policies regarding work restriction and exclusion that include a statement of authority defining who can implement such policies (Category IB).



2. Develop policies for work restriction and exclusion that encourage DHCP to seek appropriate preventive and curative care and report their illnesses, medical conditions, or treatments that can render them more susceptible to opportunistic infection or exposures; do not penalize DHCP with loss of wages, benefits, or job status (Category IB).
3. Develop policies and procedures for evaluation, diagnosis, and management of DHCP with suspected or known occupational contact dermatitis (Category IB).
4. Seek definitive diagnosis by a qualified health-care professional for any DHCP with suspected latex allergy to carefully determine its specific etiology and appropriate treatment as well as work restrictions and accommodations (Category IB).

#### **F. Records Maintenance, Data Management, and Confidentiality**

1. Establish and maintain confidential medical records (e.g., immunization records and documentation of tests received as a result of occupational exposure) for all DHCP (Category IB, Category IC).
2. Ensure that the practice complies with all applicable federal, state, and local laws regarding medical recordkeeping and confidentiality (Category IC).

### **IX. Preventing Transmission Of Bloodborne Pathogens**

#### **A. HBV Vaccination**

1. Offer the HBV vaccination series to all DHCP with potential occupational exposure to blood or other potentially infectious material (Category IA, Category IC).
2. Always follow U.S. Public Health Service/CDC recommendations for hepatitis B vaccination, serologic testing, follow-up, and booster dosing (Category IA, Category IC).
3. Test DHCP for anti-HBs 1–2 months after completion of the three-dose vaccination series (Category IA, Category IC).
4. DHCP should complete a second three-dose vaccine series or be evaluated to determine if they are HBsAg-positive if no antibody response occurs to the primary vaccine series (Category IA, Category IC).
5. Retest for anti-HBs at the completion of the second vaccine series. If no response to the second three-dose series occurs, nonresponders should be tested for HBsAg (Category IC).

6. Counsel nonresponders to vaccination who are HBsAg-negative regarding their susceptibility to HBV infection and precautions to take (Category IA, Category IC).
7. Provide employees appropriate education regarding the risks of HBV transmission and the availability of the vaccine. Employees who decline the vaccination should sign a declination form to be kept on file with the employer (Category IC).

## **B. Preventing Exposures to Blood and Other Potentially Infectious Material (OPIM)**

1. General recommendations
  - a. Use standard precautions (OSHA's bloodborne pathogen standard retains the term universal precautions) for all patient encounters (Category IA, Category IC).
  - b. Consider sharp items (e.g., needles, scalers, burs, lab knives, and wires) that are contaminated with patient blood and saliva as potentially infective and establish engineering controls and work practices to prevent injuries (Category IB, Category IC).
  - c. Implement a written, comprehensive program designed to minimize and manage DHCP exposures to blood and body fluids (Category IB, Category IC).
2. Engineering and work-practice controls
  - a. Identify, evaluate, and select devices with engineered safety features at least annually and as they become available on the market (e.g., safer anesthetic syringes, blunt suture needle, retractable scalpel, or needleless IV systems) (Category IC).
  - b. Place used disposable syringes and needles, scalpel blades, and other sharp items in appropriate puncture-resistant containers located as close as feasible to the area in which the items are used (Category IA, Category IC).
  - c. Do not recap used needles by using both hands or any other technique that involves directing the point of a needle toward any part of the body. Do not bend, break, or remove needles before disposal (Category IA, Category IC).
  - d. Use either a one-handed scoop technique or a mechanical device designed for holding the needle cap when recapping needles (e.g., between multiple injections and before removing from a nondisposable aspirating syringe) (Category IA, Category IC).
3. Postexposure management and prophylaxis

- a. Follow CDC recommendations after percutaneous, mucous membrane, or nonintact skin exposure to blood or other potentially infectious material (Category IA, Category IC).

## **X. Hand Hygiene**

### **A. General Considerations**

1. Perform hand hygiene with either a nonantimicrobial or antimicrobial soap and water when hands are visibly dirty or contaminated with blood or other potentially infectious material. If hands are not visibly soiled, an alcohol-based hand rub can also be used. Follow the manufacturer's instructions (Category IA).
2. Indications for hand hygiene include
  - a. When hands are visibly soiled (Category IA, Category IC)
  - b. After barehanded touching of inanimate objects likely to be contaminated by blood, saliva, or respiratory secretions (Category IA, Category IC)
  - c. Before and after treating each patient (Category IB)
  - d. Before donning gloves (Category IB)
  - e. Immediately after removing gloves (Category IB, Category IC)
3. For oral surgical procedures, perform surgical hand antisepsis before donning sterile surgeon's gloves. Follow the manufacturer's instructions by using either an antimicrobial soap and water, or soap and water followed by drying hands and application of an alcohol-based surgical hand-scrub product with persistent activity (Category IB).
4. Store liquid hand-care products in either disposable closed containers or closed containers that can be washed and dried before refilling. Do not add soap or lotion to (i.e., top off) a partially empty dispenser (Category IA).

### **B. Special Considerations for Hand Hygiene and Glove Use**

1. Use hand lotions to prevent skin dryness associated with handwashing (Category IA).
2. Consider the compatibility of lotion and antiseptic products and the effect of petroleum or other oil emollients on the integrity of gloves during product selection and glove use (Category IB).
3. Keep fingernails short with smooth, filed edges to allow thorough cleaning and prevent glove tears (Category II).

4. Do not wear artificial fingernails or extenders when having direct contact with patients at high risk (e.g., those in intensive care units or operating rooms) (Category IA).
5. Use of artificial fingernails is usually not recommended (Category II).
6. Do not wear hand or nail jewelry if it makes donning gloves more difficult or compromises the fit and integrity of the glove (Category II).

## **XI. Personal Protective Equipment (PPE)**

### **A. Masks, Protective Eyewear, and Face Shields**

1. Wear a surgical mask and eye protection with solid side shields or a face shield to protect mucous membranes of the eyes, nose, and mouth during procedures likely to generate splashing or spattering of blood or other body fluids (Category IB, Category IC).
2. Change masks between patients or during patient treatment if the mask becomes wet (Category IB).
3. Clean with soap and water, or if visibly soiled, clean and disinfect reusable facial protective equipment (e.g., clinician and patient protective eyewear or face shields) between patients (Category II).

### **B. Protective Clothing**

1. Wear protective clothing (e.g., reusable or disposable gown, laboratory coat, or uniform) that covers personal clothing and skin (e.g., forearms) likely to be soiled with blood, saliva, or Other Potentially Infectious Materials (OPIM) (Category IB, Category IC).
2. Change protective clothing if visibly soiled; change immediately or as soon as feasible if penetrated by blood or other potentially infectious fluids (Category IB, Category IC).
3. Remove barrier protection, including gloves, mask, eyewear, and gown before departing work area (e.g., dental patient care, instrument processing, or laboratory areas) (Category IC).

### **C. Gloves**

1. Wear medical gloves when a potential exists for contacting blood, saliva, OPIM, or mucous membranes (Category IB, Category IC).
2. Wear a new pair of medical gloves for each patient, remove them promptly after use, and wash hands immediately to avoid transfer of microorganisms to other patients or environments (Category IB).

3. Remove gloves that are torn, cut, or punctured as soon as feasible and wash hands before regloving (Category IB, Category IC).
4. Do not wash surgeon's or patient examination gloves before use or wash, disinfect, or sterilize gloves for reuse (Category IB, Category IC).
5. Ensure that appropriate gloves in the correct size are readily accessible (Category IC).
6. Use appropriate gloves (e.g., puncture- and chemical-resistant utility gloves) when cleaning instruments and performing housekeeping tasks involving contact with blood or OPIM (Category IB, Category IC).
7. Consult with glove manufacturers regarding the chemical compatibility of glove material and dental materials used (Category II).

#### **D. Sterile Surgeon's Gloves and Double Gloving During Oral Surgical Procedures**

1. Wear sterile surgeon's gloves when performing oral surgical procedures (Category IB).
2. No recommendation is offered regarding the effectiveness of wearing two pairs of gloves to prevent disease transmission during oral surgical procedures. The majority of studies among Healthcare Personnel (HCP) and DHCP have demonstrated a lower frequency of inner glove perforation and visible blood on the surgeon's hands when double gloves are worn; however, the effectiveness of wearing two pairs of gloves in preventing disease transmission has not been demonstrated (unresolved issue).

## **XII. Contact Dermatitis And Latex Hypersensitivity**

### **A. General Recommendations**

1. Educate DHCP regarding the signs, symptoms, and diagnoses of skin reactions associated with frequent hand hygiene and glove use (Category IB).
2. Screen all patients for latex allergy (e.g., take health history and refer for medical consultation when latex allergy is suspected) (Category IB)
3. Ensure a latex-safe environment for patients and DHCP with latex allergy (Category IB).
4. Have emergency treatment kits with latex-free products available at all times (Category II).

## **XIII. Sterilization And Disinfection Of Patient-Care Items**

### **A. General Recommendations**

1. Use only FDA-cleared medical devices for sterilization and follow the manufacturer's instructions for correct use (Category IB).
2. Clean and heat-sterilize critical dental instruments before each use (Category IA).
3. Clean and heat-sterilize semicritical items before each use (Category IB).
4. Allow packages to dry in the sterilizer before they are handled to avoid contamination (Category IB).
5. Use of heat-stable semicritical alternatives is encouraged (Category IB).
6. Reprocess heat-sensitive critical and semi-critical instruments by using FDA-cleared sterilant/high-level disinfectants or an FDA-cleared low-temperature sterilization method (e.g., ethylene oxide). Follow manufacturer's instructions for use of chemical sterilants/high-level disinfectants (Category IB).
7. Single-use disposable instruments are acceptable alternatives if they are used only once and disposed of correctly (Category IB, Category IC).
8. Do not use liquid chemical sterilants/high-level disinfectants for environmental surface disinfection or as holding solutions (Category IB, Category IC).
9. Ensure that noncritical patient-care items are barrier-protected or cleaned, or if visibly soiled, cleaned and disinfected after each use with an EPA-registered hospital disinfectant. If visibly contaminated with blood, use an EPA-registered hospital disinfectant with a tuberculocidal claim (i.e., intermediate level) (Category IB).
10. Inform DHCP of all OSHA guidelines for exposure to chemical agents used for disinfection and sterilization. Using this report, identify areas and tasks that have potential for exposure (Category IC).

### **B. Instrument Processing Area**

1. Designate a central processing area. Divide the instrument processing area, physically or, at a minimum, spatially, into distinct areas for (1) receiving, cleaning, and decontamination; (2) preparation and packaging; (3) sterilization; and (4) storage. Do not store instruments in an area where contaminated instruments are held or cleaned (Category II).
2. Train DHCP to employ work practices that prevent contamination of clean areas (Category II).

### **C. Receiving, Cleaning, and Decontamination Work Area**

1. Minimize handling of loose contaminated instruments during transport to the instrument processing area. Use work-practice controls (e.g., carry instruments in a covered container) to minimize exposure potential (Category II). Clean all visible blood and other contamination from dental instruments and devices before sterilization or disinfection procedures (Category IA).
2. Use automated cleaning equipment (e.g., ultrasonic cleaner or washer-disinfector) to remove debris to improve cleaning effectiveness and decrease worker exposure to blood (Category IB).
3. Use work-practice controls that minimize contact with sharp instruments if manual cleaning is necessary (e.g., long-handled brush) (Category IC).
4. Wear puncture- and chemical-resistant/heavy-duty utility gloves for instrument cleaning and decontamination procedures (Category IB).
5. Wear appropriate PPE (e.g., mask, protective eyewear, and gown) when splashing or spraying is anticipated during cleaning (Category IC).

### **D. Preparation and Packaging**

1. Use an internal chemical indicator in each package. If the internal indicator cannot be seen from outside the package, also use an external indicator (Category II).
2. Use a container system or wrapping compatible with the type of sterilization process used and that has received FDA clearance (Category IB).
3. Before sterilization of critical and semicritical instruments, inspect instruments for cleanliness, then wrap or place them in containers designed to maintain sterility during storage (e.g., cassettes and organizing trays) (Category IA).

### **E. Sterilization of Unwrapped Instruments**

1. Clean and dry instruments before the unwrapped sterilization cycle (Category I).
2. Use mechanical and chemical indicators for each unwrapped sterilization cycle (i.e., place an internal chemical indicator among the instruments or items to be sterilized) (Category IB).
3. Allow unwrapped instruments to dry and cool in the sterilizer before they are handled to avoid contamination and thermal injury (Category II).

4. Semicritical instruments that will be used immediately or within a short time can be sterilized unwrapped on a tray or in a container system, provided that the instruments are handled aseptically during removal from the sterilizer and transport to the point of use (Category II).
5. Critical instruments intended for immediate reuse can be sterilized unwrapped if the instruments are maintained sterile during removal from the sterilizer and transport to the point of use (e.g., transported in a sterile covered container) (Category IB).
6. Do not sterilize implantable devices unwrapped (Category IB).
7. Do not store critical instruments unwrapped (Category IB).

#### **F. Sterilization Monitoring**

1. Use mechanical, chemical, and biological monitors according to the manufacturer's instructions to ensure the effectiveness of the sterilization process (Category IB).
2. Monitor each load with mechanical (e.g., time, temperature, and pressure) and chemical indicators (Category II).
3. Place a chemical indicator on the inside of each package. If the internal indicator is not visible from the outside, also place an exterior chemical indicator on the package (Category II).
4. Place items/packages correctly and loosely into the sterilizer so as not to impede penetration of the sterilant (Category IB).
5. Do not use instrument packs if mechanical or chemical indicators indicate inadequate processing (Category IB).
6. Monitor sterilizers at least weekly by using a biological indicator with a matching control (i.e., biological indicator and control from same lot number) (Category IB).
7. Use a biological indicator for every sterilizer load that contains an implantable device. Verify results before using the implantable device, whenever possible (Category IB).
8. The following are recommended in the case of a positive spore test:
  - a. Remove the sterilizer from service and review sterilization procedures (e.g., work practices and use of mechanical and chemical indicators) to determine whether operator error could be responsible (Category II).



- b. Retest the sterilizer by using biological, mechanical, and chemical indicators after correcting any identified procedural problems (Category II).
  - c. If the repeat spore test is negative, and mechanical and chemical indicators are within normal limits, put the sterilizer back in service (Category II).
9. The following are recommended if the repeat spore test is positive:
- a. Do not use the sterilizer until it has been inspected or repaired or the exact reason for the positive test has been determined (Category II).
  - b. Recall, to the extent possible, and reprocess all items processed since the last negative spore test (Category II).
  - c. Before placing the sterilizer back in service, rechallenge the sterilizer with biological indicator tests in three consecutive empty chamber sterilization cycles after the cause of the sterilizer failure has been determined and corrected (Category II).
10. Maintain sterilization records (i.e., mechanical, chemical, and biological) in compliance with state and local regulations (Category IB).

#### **G. Storage Area for Sterilized Items and Clean Dental Supplies**

- 1. Implement practices on the basis of date- or event-related shelf-life for storage of wrapped, sterilized instruments and devices (Category IB).
- 2. Even for event-related packaging, at a minimum, place the date of sterilization, and if multiple sterilizers are used in the facility, the sterilizer used, on the outside of the packaging material to facilitate the retrieval of processed items in the event of a sterilization failure (Category IB).
- 3. Examine wrapped packages of sterilized instruments before opening them to ensure the barrier wrap has not been compromised during storage (Category II).
- 4. Reclean, repack, and resterilize any instrument package that has been compromised (Category II).
- 5. Store sterile items and dental supplies in covered or closed cabinets, if possible (Category II).

### **XIV. Environmental Infection Control**

#### **A. General Recommendations**

- 1. Follow the manufacturers' instructions for correct use of cleaning and EPA-registered hospital disinfecting products (Category IB, Category IC).

2. Do not use liquid chemical sterilants/high-level disinfectants for disinfection of environmental surfaces (clinical contact or housekeeping) (Category IB, Category IC).
3. Use PPE, as appropriate, when cleaning and disinfecting environmental surfaces. Such equipment might include gloves (e.g., puncture- and chemical-resistant utility), protective clothing (e.g., gown, jacket, or lab coat), and protective eyewear/face shield, and mask (Category IC).

### **B. Clinical Contact Surfaces**

1. Use surface barriers to protect clinical contact surfaces, particularly those that are difficult to clean (e.g., switches on dental chairs) and change surface barriers between patients (Category II).
2. Clean and disinfect clinical contact surfaces that are not barrier-protected, by using an EPA-registered hospital disinfectant with a low- (i.e., HIV and HBV label claims) to intermediate-level (i.e., tuberculocidal claim) activity after each patient. Use an intermediate-level disinfectant if visibly contaminated with blood (Category IB).

### **C. Housekeeping Surfaces**

1. Clean housekeeping surfaces (e.g., floors, walls, and sinks) with a detergent and water or an EPA-registered hospital disinfectant/detergent on a routine basis, depending on the nature of the surface and type and degree of contamination, and as appropriate, based on the location in the facility, and when visibly soiled (Category IB).
2. Clean mops and cloths after use and allow to dry before reuse; or use single-use, disposable mop heads or cloths (Category II).
3. Prepare fresh cleaning or EPA-registered disinfecting solutions daily and as instructed by the manufacturer. (Category II).
4. Clean walls, blinds, and window curtains in patient-care areas when they are visibly dusty or soiled (Category II).

### **D. Spills of Blood and Body Substances**

Clean spills of blood or OPIM and decontaminate surface with an EPA-registered hospital disinfectant with low- (i.e., HBV and HIV label claims) to intermediate-level (i.e., tuberculocidal claim) activity, depending on size of spill and surface porosity (Category IB, Category IC).

### **E. Carpet and Cloth Furnishings**

Avoid using carpeting and cloth-upholstered furnishings in dental operatories, laboratories, and instrument processing areas (Category II).

## **F. Regulated Medical Waste**

1. General Recommendations
  - a. Develop a medical waste management program. Disposal of regulated medical waste must follow federal, state, and local regulations (Category IC).
  - b. Ensure that DHCP who handle and dispose of regulated medical waste are trained in appropriate handling and disposal methods and informed of the possible health and safety hazards (Category IC).
2. Management of Regulated Medical Waste in Dental Healthcare Facilities
  - a. Use a color-coded or labeled container that prevents leakage (e.g., biohazard bag) to contain nonsharp regulated medical waste (Category IC).
  - b. Place sharp items (e.g., needles, scalpel blades, orthodontic bands, broken metal instruments, and burs) in an appropriate sharps container (e.g., puncture resistant, color-coded, and leakproof). Close container immediately before removal or replacement to prevent spillage or protrusion of contents during handling, storage, transport, or shipping (Category IC).
  - c. Pour blood, suctioned fluids or other liquid waste carefully into a drain connected to a sanitary sewer system, if local sewage discharge requirements are met and the state has declared this an acceptable method of disposal. Wear appropriate PPE while performing this task (Category IC).

## **XV. Dental Unit Waterlines, Biofilm, And Water Quality**

### **A. General Recommendations**

1. Use water that meets EPA regulatory standards for drinking water (i.e.,  $\leq 500$  CFU/mL of heterotrophic water bacteria) for routine dental treatment output water (Category IB, Category IC).
2. Consult with the dental unit manufacturer for appropriate methods and equipment to maintain the recommended quality of dental water (Category II).
3. Follow recommendations for monitoring water quality provided by the manufacturer of the unit or waterline treatment product (Category II).

4. Discharge water and air for a minimum of 20–30 seconds after each patient, from any device connected to the dental water system that enters the patient's mouth (e.g., handpieces, ultrasonic scalers, and air/water syringes) (Category II).
5. Consult with the dental unit manufacturer on the need for periodic maintenance of antiretraction mechanisms (Category IB).

### **B. Boil-Water Advisories**

1. The following apply while a boil-water advisory is in effect:
  - a. Do not deliver water from the public water system to the patient through the dental operative unit, ultrasonic scaler, or other dental equipment that uses the public water system (Category IB, Category IC).
  - b. Do not use water from the public water system for dental treatment, patient rinsing, or handwashing (Category IB, Category IC).
  - c. For handwashing, use antimicrobial-containing products that do not require water for use (e.g., alcohol-based hand rubs). If hands are visibly contaminated, use bottled water, if available, and soap for handwashing or an antiseptic towelette (Category IB, Category IC).
2. The following apply when the boil-water advisory is cancelled:
  - a. Follow guidance given by the local water utility regarding adequate flushing of waterlines. If no guidance is provided, flush dental waterlines and faucets for 1–5 minutes before using for patient care (Category IC).
  - b. Disinfect dental waterlines as recommended by the dental unit manufacturer (Category II).

## **XVI. Special Considerations**

### **A. Dental Handpieces and Other Devices Attached to Air and Waterlines**

1. Clean and heat-sterilize handpieces and other intraoral instruments that can be removed from the air and waterlines of dental units between patients (Category IB, Category IC).
2. Follow the manufacturer's instructions for cleaning, lubrication, and sterilization of handpieces and other intraoral instruments that can be removed from the air and waterlines of dental units (Category IB).

3. Do not surface-disinfect, use liquid chemical sterilants, or ethylene oxide on handpieces and other intraoral instruments that can be removed from the air and waterlines of dental units (Category IC).
4. Do not advise patients to close their lips tightly around the tip of the saliva ejector to evacuate oral fluids (Category II).

### **B. Dental Radiology**

1. Wear gloves when exposing radiographs and handling contaminated film packets. Use other PPE (e.g., protective eyewear, mask, and gown) as appropriate if spattering of blood or other body fluids is likely (Category IA, Category IC).
2. Use heat-tolerant or disposable intraoral devices whenever possible (e.g., film-holding and positioning devices). Clean and heat-sterilize heat-tolerant devices between patients. At a minimum, high-level disinfect semicritical heat-sensitive devices, according to manufacturer's instructions (Category IB).
3. Transport and handle exposed radiographs in an aseptic manner to prevent contamination of developing equipment (Category II).
4. The following apply for digital radiography sensors:
  - a. Use FDA-cleared barriers (Category IB).
  - b. Clean and heat-sterilize, or high-level disinfect, between patients, barrier-protected semicritical items. If the item cannot tolerate these procedures then, at a minimum, protect with an FDA-cleared barrier and clean and disinfect with an EPA-registered hospital disinfectant with intermediate-level (i.e., tuberculocidal claim) activity, between patients. Consult with the manufacturer for methods of disinfection and sterilization of digital radiology sensors and for protection of associated computer hardware (Category IB).

### **C. Aseptic Technique for Parenteral Medications**

1. Do not administer medication from a syringe to multiple patients, even if the needle on the syringe is changed (Category IA).
2. Use single-dose vials for parenteral medications when possible (Category II).
3. Do not combine the leftover contents of single-use vials for later use (Category IA).
4. The following apply if multidose vials are used:

- a. Cleanse the access diaphragm with 70% alcohol before inserting a device into the vial (Category IA).
  - b. Use a sterile device to access a multiple-dose vial and avoid touching the access diaphragm. Both the needle and syringe used to access the multidose vial should be sterile. Do not reuse a syringe even if the needle is changed (Category IA).
  - c. Keep multidose vials away from the immediate patient treatment area to prevent inadvertent contamination by spray or spatter (Category II).
  - d. Discard the multidose vial if sterility is compromised (Category IA).
5. Use fluid infusion and administration sets (i.e., IV bags, tubings and connections) for one patient only and dispose of appropriately (Category IB).

#### **D. Single-Use (Disposable) Devices**

Use single-use devices for one patient only and dispose of them appropriately (Category IC).

#### **E. Preprocedural Mouth Rinses**

No recommendation is offered regarding use of preprocedural antimicrobial mouth rinses to prevent clinical infections among DHCP or patients. Although studies have demonstrated that a preprocedural antimicrobial rinse (e.g., chlorhexidine gluconate, essential oils, or povidone-iodine) can reduce the level of oral microorganisms in aerosols and spatter generated during routine dental procedures and can decrease the number of microorganisms introduced in the patient's bloodstream during invasive dental procedures, the scientific evidence is inconclusive that using these rinses prevents clinical infections among DHCP or patients (see discussion, Preprocedural Mouth Rinses) (Unresolved issue).

#### **F. Oral Surgical Procedures**

1. The following apply when performing oral surgical procedures:
  - a. Perform surgical hand antisepsis by using an antimicrobial product (e.g., antimicrobial soap and water, or soap and water followed by alcohol-based hand scrub with persistent activity) before donning sterile surgeon's gloves (Category IB).
  - b. Use sterile surgeon's gloves (Category IB).
  - c. Use sterile saline or sterile water as a coolant/irrigant when performing oral surgical procedures. Use devices specifically designed for delivering sterile irrigating fluids (e.g., bulb syringe, single-use disposable products, and sterilizable tubing) (Category IB).

### **G. Handling of Biopsy Specimens**

1. During transport, place biopsy specimens in a sturdy, leakproof container labeled with the biohazard symbol (Category IC).
2. If a biopsy specimen container is visibly contaminated, clean and disinfect the outside of a container or place it in an impervious bag labeled with the biohazard symbol, (Category IC).

### **H. Handling of Extracted Teeth**

1. Dispose of extracted teeth as regulated medical waste unless returned to the patient (Category IC).
2. Do not dispose of extracted teeth containing amalgam in regulated medical waste intended for incineration (Category II).
3. Clean and place extracted teeth in a leakproof container, labeled with a biohazard symbol, and maintain hydration for transport to educational institutions or a dental laboratory (Category IC).
4. Heat-sterilize teeth that do not contain amalgam before they are used for educational purposes (Category IB).

### **I. Dental Laboratory**

1. Use PPE when handling items received in the laboratory until they have been decontaminated (Category IA, Category IC).
2. Before they are handled in the laboratory, clean, disinfect, and rinse all dental prostheses and prosthodontic materials (e.g., impressions, bite registrations, occlusal rims, and extracted teeth) by using an EPA-registered hospital disinfectant having at least an intermediate-level (i.e., tuberculocidal claim) activity (Category IB).
3. Consult with manufacturers regarding the stability of specific materials (e.g., impression materials) relative to disinfection procedures (Category II).
4. Include specific information regarding disinfection techniques used (e.g., solution used and duration), when laboratory cases are sent off-site and on their return (Category II).
5. Clean and heat-sterilize heat-tolerant items used in the mouth (e.g., metal impression trays and face-bow forks) (Category IB).

6. Follow manufacturers' instructions for cleaning and sterilizing or disinfecting items that become contaminated but do not normally contact the patient (e.g., burs, polishing points, rag wheels, articulators, case pans, and lathes). If manufacturer instructions are unavailable, clean and heat-sterilize heat-tolerant items or clean and disinfect with an EPA-registered hospital disinfectant with low- (HIV, HBV effectiveness claim) to intermediate-level (tuberculocidal claim) activity, depending on the degree of contamination (Category II).

#### **J. Laser/Electrosurgery Plumes/Surgical Smoke**

1. No recommendation is offered regarding practices to reduce DHCP exposure to laser plumes/surgical smoke when using lasers in dental practice. Practices to reduce HCP exposure to laser plumes/surgical smoke have been suggested, including use of
  - a. Standard precautions (e.g., high-filtration surgical masks and possibly full face shields);
  - b. Central room suction units with in-line filters to collect particulate matter from minimal plumes; and
  - c. Dedicated mechanical smoke exhaust systems with a high-efficiency filter to remove substantial amounts of laser-plume particles. The effect of the exposure (e.g., disease transmission or adverse respiratory effects) on DHCP from dental applications of lasers has not been adequately evaluated (see previous discussion, Laser/Electrosurgery Plumes or Surgical Smoke) (Unresolved issue).

#### **K. Mycobacterium tuberculosis**

1. General Recommendations
  - a. Educate all DHCP regarding the recognition of signs, symptoms, and transmission of TB (Category IB).
  - b. Conduct a baseline TST, preferably by using a two-step test, for all DHCP who might have contact with persons with suspected or confirmed active TB, regardless of the risk classification of the setting (Category IB).
  - c. Assess each patient for a history of TB as well as symptoms indicative of TB and document on the medical history form (Category IB).
  - d. Follow CDC recommendations for (1) developing, maintaining, and implementing a written TB infection-control plan; (2) managing a patient with suspected or active TB; (3) completing a community risk-assessment to guide employee TSTs and follow-up; and (4) managing DHCP with TB disease (Category IB).



2. The following apply for patients known or suspected to have active TB:

- a. Evaluate the patient away from other patients and DHCP. When not being evaluated, the patient should wear a surgical mask or be instructed to cover mouth and nose when coughing or sneezing (Category IB).
- b. Defer elective dental treatment until the patient is noninfectious (Category IB).
- c. Refer patients requiring urgent dental treatment to a previously identified facility with TB engineering controls and a respiratory protection program (Category IB).

**L. Creutzfeldt-Jakob Disease (CJD) and Other Prion Diseases**

No recommendation is offered regarding use of special precautions in addition to standard precautions when treating known CJD or vCJD patients. Potential infectivity of oral tissues in CJD or vCJD patients is an unresolved issue. Scientific data indicate the risk, if any, of sporadic CJD transmission during dental and oral surgical procedures is low to nil. Until additional information exists regarding the transmissibility of CJD or vCJD during dental procedures, special precautions in addition to standard precautions might be indicated when treating known CJD or vCJD patients; a list of such precautions is provided for consideration without recommendation (see CJD and Other Prion Diseases) (unresolved issue).

**M. Program Evaluation**

Establish routine evaluation of the infection-control program, including evaluation of performance indicators, at an established frequency (Category II).

**Disinfectants And Sterilants**

CDC recommendations on the choice and use of disinfectants and sterilants are excerpted below. Please refer to the CDC Web site at <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5217a2.htm> or the MMWR Appendix A for the complete text.

The choice of specific cleaning or disinfecting agents is largely a matter of judgment, guided by product label claims and instructions and government regulations. A single liquid chemical germicide might not satisfy all disinfection requirements in a given dental practice or facility. Realistic use of liquid chemical germicides depends on consideration of multiple factors, including the degree of microbial killing required; the nature and composition of the surface, item, or device to be treated; and the cost, safety, and ease of use of the available agents. Selecting one appropriate product with a higher degree of potency to cover all situations might be more convenient.

In the United States, liquid chemical germicides (disinfectants) are regulated by EPA and FDA. In health-care settings, EPA regulates disinfectants that are used on environmental surfaces (housekeeping and clinical contact surfaces), and FDA regulates liquid chemical sterilants/high-level disinfectants (e.g., glutaraldehyde, hydrogen peroxide, and peracetic acid) used on critical and semicritical patient-care devices. Disinfectants intended for use on clinical contact surfaces (e.g., light handles, radiographic-ray heads, or drawer knobs) or housekeeping surfaces (e.g., floors, walls, or sinks) are regulated in interstate commerce by the Antimicrobials Division, Office of Pesticide Programs, EPA.

EPA requires manufacturers to test formulations by using accepted methods for microbicidal activity, stability, and toxicity to animals and humans. Manufacturers submit these data to EPA with proposed labeling. If EPA concludes a product may be used without causing unreasonable adverse effects, the product and its labeling are given an EPA registration number, and the manufacturer may then sell and distribute the product in the United States.. The following statement appears on all EPA-registered product labels under the Directions for Use heading: "It is a violation of federal law to use this product inconsistent with its labeling." This means that DHCP must follow the safety precautions and use directions on the labeling of each registered product. Not following the specified dilution, contact time, method of application, or any other condition of use is considered misuse of the product.

Potency against *Mycobacterium tuberculosis* has been recognized as a substantial benchmark or potency. However, the tuberculocidal claim is used only as a benchmark to measure germicidal potency. Tuberculosis is not transmitted via environmental surfaces but rather by the airborne route. Accordingly, use of such products on environmental surfaces plays no role in preventing the spread of tuberculosis. However, because mycobacteria have among the highest intrinsic levels of resistance among the vegetative bacteria, viruses, and fungi, any germicide with a tuberculocidal claim on the label is considered capable of inactivating a broad spectrum of pathogens, including such less-resistant organisms as bloodborne pathogens (e.g., HBV, Hepatitis C Virus (HCV), and HIV). It is this broad-spectrum capability, rather than the product's specific potency against mycobacteria, that is the basis for protocols and regulations dictating use of tuberculocidal chemicals for surface disinfection.

EPA also lists disinfectant products according to their labeled use against these organisms of interest as follows:

- List B. Tuberculocide products effective against *Mycobacterium* species
- List C. Products effective against human HIV-1 virus
- List D. Products effective against human HIV-1 virus and HBV
- List E. Products effective against *Mycobacterium* species, human HIV-1 virus, and HBV
- List F. Products effective against HCV

## **Immunizations Recommended for HCP**

The facility's Exposure Control Plan should contain a list of the recommended immunizations for dental healthcare workers. Appendix B of the MMWR contains the list of immunizations recommended by the CDC, along with dose schedules, indications, major precautions, and special considerations for each. This list can also be accessed at <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5217a3.htm>.

## **Methods for Sterilizing and Disinfecting Patient-Care Items and Environmental Surfaces**

CDC recommendations for disinfection and sterilization are contained in Appendix C of the MMWR and can also be obtained at <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5217a4.htm>.

Due to potential health risks associated with exposure to glutaraldehyde vapors, including:

- Dermatitis—allergic reaction to the skin
- Rhinitis and conjunctivitis - symptoms typical of hay fever
- Asthma—constriction of the airways

It is recommended that disinfectants using this chemical not be used in the dental clinic.

## **Infection-Control Internet Resources**

CDC Advisory Committee on Immunization Practices

<http://www.cdc.gov/nip/ACIP/default.htm>

ADA <http://www.ada.org> (home page)

<http://www.ada.org/prof/resources/topics/icontrol/index.asp> (ADA infection control resources)

<http://www.ada.org/prof/resources/positions/statements/lines.asp> (ADA Statement on Dental Unit Waterlines)

Association for Professionals in Infection Control and Epidemiology, Inc.

<http://www.apic.org>

CDC, Division of Healthcare Quality Promotion

<http://www.cdc.gov/ncidod/dhqp/index.html>

CDC, Division of Oral Health, Infection Control

<http://www.cdc.gov/OralHealth/infectioncontrol/index.htm>

CDC Slide Presentation in PowerPoint format on Infection Control for Dental Offices

<http://www.cdc.gov/OralHealth/infectioncontrol/guidelines/ppt.htm>

CDC, Morbidity and Mortality Weekly Report <http://www.cdc.gov/mmwr>

CDC, NIOSH <http://www.cdc.gov/niosh/homepage.html>

CDC Recommends, Prevention Guidelines System

<http://www.phppo.cdc.gov/cdcRecommends/AdvSearchV.asp>

EPA, Antimicrobial Chemicals <http://www.epa.gov/oppad001/chemregindex.htm>

FDA <http://www.fda.gov>

Immunization Action Coalition <http://www.immunize.org/acip>

National Clinicians Post Exposure Prophylaxis Hotline

<http://www.ucsf.edu/hivcntr/PEpline/>

This Web site provides the most up-to-date information on post-exposure prophylaxis protocols and is available on the web or by toll-free phone (1-888-448-4911) 24 hours a day.

OSHA, Dentistry, Bloodborne Pathogens

<http://www.osha.gov/SLTC/dentistry/index.html>

<http://www.osha.gov/SLTC/bloodbornepathogens/index.html>

Organization for Safety and Asepsis Procedures (OSAP) <http://www.osap.org>

Society for Healthcare Epidemiology of America, Inc.(SHEA), Position Papers

[http://www.shea-online.org/publications/she\\_position\\_papers.cfm](http://www.shea-online.org/publications/she_position_papers.cfm)

US Air Force Dental Evaluation and Consultation Service (DECS)

<https://decs.nhgl.med.navy.mil/> (home page)

<https://decs.nhgl.med.navy.mil/infcontrol.htm> (Infection Control section)

**Updated U.S. Public Health Service Guidelines for the Management of Occupational Exposures to HIV and Recommendations for Postexposure Prophylaxis (2005)**

<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5409a1.htm>

### **Dental Infection Control Policy/Exposure Control Plan Templates**

This is a template for an Infection Control policy that may be used for a dental clinic. It is based on the latest CDC recommendations for dental infection control. Each section in the policy and checklist corresponds to the CDC recommendations.

(See <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5217a1.htm> for the entire recommendation.)

This template *cannot* be used as presented. It *must* be adapted to your facility. Many of the policies can be used “as is”. Those sections are in normal font. Some sections must be adapted to each facility. Those sections are italicized. Some italicized sections may be deleted if the topic does not apply to your setting. Some words in boldface only need a facility or clinic name inserted.

Included at the end of each section is a category that designates the strength of the recommendations. The categories are listed in the first section. These category designations help to substantiate your policies. It is not a mandate that you follow the CDC recommendations. However these recommendations have been well-researched and are evidence based. Therefore if you do follow them, you are within the scope of current dental professional recommendations.

The P&P format at the beginning of each section is a sample only. You may substitute your own policy format and numbering system.

Another example of a Dental Exposure Control Policy Template can be found on the Web site of the DECS at <https://decs.nhgl.med.navy.mil/3QTR04/incontrolfactsheet9.htm> for the fact sheet, and at <https://decs.nhgl.med.navy.mil/3QTR04/sampleecp.doc> for the sample exposure control plan.

If the dental clinic is part of a larger medical facility or hospital, it will be covered under the facility’s Exposure Control Plan. In such a case, always coordinate dental clinic policies and procedures with the Infection Control Program of the larger facility to ensure that there are no conflicts.

## Infection Control Templates

### Introduction

### Personnel Elements of an Infection Control Program

### Preventing Transmission of Bloodborne Pathogens

### Hand Hygiene

### PPE

### Contact Dermatitis and Latex Sensitivity

### Sterilization and Disinfection of Patient-Care Items

### Environmental Infection Control

### Dental Waterlines, Biofilm and Water Quality

### Special Considerations

### Program Evaluation

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Dental Department  
Policy & Procedure Statement

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**Subject:** Dental Infection Control

**Effective Date:**

**Supersedes:**

**P&P Number:** Introduction

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**Purpose:**

To establish policies and procedures to protect dental personnel from WR exposures to infectious diseases and to protect dental patients from exposures to infectious diseases resulting from dental treatment.

**Authority:**

1. Centers for Disease Control and Prevention. Guidelines for Infection Control in Dental Health-Care settings-2003. MMWR 2003;52 (No. RR-17)
2. <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5217a1.htm>
3. **(Handpiece manufacturer name)** Recommendation for maintenance and sterilization of high-speed and low-speed handpieces
4. Atest manufacturer's instructions
5. **(Facility Name)** Infection control policies relating to ambulatory patient care
6. **(Facility Name)** Safety policies relating to infection control
7. **(Facility Name)** Personnel policies relating to infection control
8. HIPAA act of 1998

**Procedure:**

1. Policies are numbered as Infection Control/ Dental (IC/D).
2. All policies in the Dental Infection Control Policy Guide are consistent with manufacturer's recommendations, CDC, **IHS (if applicable)**, and **(Facility Name)** recommendations and regulations.
3. Authority for all policies can be located in one of the above listed sources

4. Whenever possible, policies will defer to **(Facility name)** wide policies. Specific questions should be directed to the **(Facility Name)** Safety Officer, the **(Facility Name)** Infection Control Officer, Medical Records Chief (HIPPA regulations), or other appropriate authorities at **(Facility Name)**.
5. When updating policies and procedures, current authoritative sources should be referenced and if possible, copied and placed in this guide as a reference.
6. Guide should be updated annually or as soon as new recommendations become available
7. Copies of the Dental Infection Control Policy Guide will be maintained at **(Facility(ies) Name(s))**
8. Periodic quality assurance studies will be conducted to ensure compliance with this guide. Lack of compliance or changes in procedures will be discussed at dental staff meetings. The Chief- Dental Services will approve changes to the guide prior to implementation
9. Recommendations may be classified by the following categories:

**Category IA.** Strongly recommended for implementation and strongly supported by well-designed experimental, clinical, or epidemiologic studies.

**Category IB.** Strongly recommended for implementation and supported by experimental, clinical, or epidemiologic studies and a strong theoretical rationale.

**Category IC.** Required for implementation as mandated by federal or state regulation or standard. When IC is used, a second rating can be included to provide the basis of existing scientific data, theoretical rationale, and applicability. Because of state differences, the reader should not assume that the absence of an IC implies the absence of state regulations.

**Category II.** Suggested for implementation and supported by suggestive clinical or epidemiologic studies or a theoretical rationale.



## Dental Department Policy & Procedure Statement

**Subject:** Personnel Health Elements of  
an Infection Control Program

**Effective Date:**

**Supersedes:**

**P&P Number:**

### **Purpose:**

To establish guidelines for education and training in infection control, immunizations, exposure and post exposure management, medical conditions, work related illness, contact dermatitis and latex hypersensitivity, maintenance of records, data management, and confidentiality

### **Procedure:**

#### **A. General Recommendations**

- 1. Develop a written health program for DHCP that includes policies, procedures, and guidelines for education and training; immunizations; exposure prevention and postexposure management; medical conditions, WR illness, and associated work restrictions; contact dermatitis and latex hypersensitivity; and maintenance of records, data management, and confidentiality (Category IB).*
- 2. Establish referral arrangements with qualified health-care professionals to ensure prompt and appropriate provision of preventive services, occupationally related medical services, and postexposure management with medical follow-up (Category IB, Category IC).*

#### **B. Education and Training**

- 1. Provide DHCP 1) on initial employment, 2) when new tasks or procedures affect the employee's occupational exposure, and 3) at a minimum, annually, with education and training regarding occupational exposure to potentially infectious agents and infection-control procedures/protocols appropriate for and specific to their assigned duties (Category IB, Category IC).*
- 2. Provide educational information appropriate in content and vocabulary to the educational level, literacy, and language of DHCP (Category IB, Category IC).*

#### **C. Immunization Programs**

- 1. Develop a written comprehensive policy regarding immunizing DHCP, including a list of all required and recommended immunizations*

*(Category IB).*

*2. Refer DHCP to a prearranged qualified health-care professional or to their own health-care professional to receive all appropriate immunizations based on the latest recommendations as well as their medical history and risk for occupational exposure (Category IB).*

#### **D. Exposure Prevention and Postexposure Management**

*1. Develop a comprehensive postexposure management and medical follow-up program (Category IB, Category IC).*

*a. Include policies and procedures for prompt reporting, evaluation, counseling, treatment, and medical follow-up of occupational exposures.*

*b. Establish mechanisms for referral to a qualified health-care professional for medical evaluation and follow-up.*

*c. Conduct a baseline TST, preferably by using a two-step test, for all DHCP who might have contact with persons with suspected or confirmed infectious TB, regardless of the risk classification of the setting (Category IB).*

#### **E. Medical Conditions, WR Illness, and Work Restrictions**

*1. Develop and have readily available to all DHCP comprehensive written policies regarding work restriction and exclusion that include a statement of authority defining who can implement such policies (Category IB).*

*2. Develop policies for work restriction and exclusion that encourage DHCP to seek appropriate preventive and curative care and report their illnesses, medical conditions, or treatments that can render them more susceptible to opportunistic infection or exposures; do not penalize DHCP with loss of wages, benefits, or job status (Category IB).*

*3. Develop policies and procedures for evaluation, diagnosis, and management of DHCP with suspected or known occupational contact dermatitis (Category IB).*

*4. Seek definitive diagnosis by a qualified health-care professional for any DHCP with suspected latex allergy to carefully determine its specific etiology and appropriate treatment as well as work restrictions and accommodations (IB).*

#### **F. Records Maintenance, Data Management, and Confidentiality**

*1. Establish and maintain confidential medical records (e.g., immunization records and documentation of tests received as a result of occupational exposure) for all DHCP (Category IB, Category IC).*

*2. Ensure that the practice complies with all applicable federal, state, and local laws regarding medical recordkeeping and confidentiality (Category IC).*

## Dental Department Policy & Procedure Statement

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**Subject:** Preventing Transmission of**Effective Date:**

Bloodborne Pathogens

**Supersedes:**

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**P&P Number:**

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**Purpose:**

To establish a policy to protect personnel from bloodborne pathogens and to prevent transmission of bloodborne pathogens

**Procedure:****A. HBV Vaccination**

1. Offer the HBV vaccination series to all DHCP with potential occupational exposure to blood or other potentially infectious material (Category IA, Category IC).
2. Always follow U.S. Public Health Service/CDC recommendations for hepatitis B vaccination, serologic testing, follow-up, and booster dosing (Category IA, Category IC).
3. Test DHCP for anti-HBs 1--2 months after completion of the 3-dose vaccination series (Category IA, Category IC).
4. DHCP should complete a second 3-dose vaccine series or be evaluated to determine if they are HBsAg-positive if no antibody response occurs to the primary vaccine series (Category IA, Category IC).
5. Retest for anti-HBs at the completion of the second vaccine series. If no response to the second three-dose series occurs, nonresponders should be tested for HBsAg (Category IC).
6. Counsel nonresponders to vaccination who are HBsAg-negative regarding their susceptibility to HBV infection and precautions to take (Category IA, Category IC).
7. Provide employees appropriate education regarding the risks of HBV transmission and the availability of the vaccine. Employees who decline the vaccination should sign a declination form to be kept on file with the employer (Category IC).

**B. Preventing Exposures to Blood and OPIM**

1. General recommendations
  - a. Use standard precautions (OSHA's bloodborne pathogen standard retains the term universal precautions) for all patient encounters (Category IA, Category IC).

- b. Consider sharp items (e.g., needles, scalers, burs, lab knives, and wires) that are contaminated with patient blood and saliva as potentially infective and establish engineering controls and work practices to prevent injuries (Category IB, Category IC).
  - c. *Implement a written, comprehensive program designed to minimize and manage DHCP exposures to blood and body fluids (Category IB, Category IC).*
2. Engineering and work-practice controls
- a. Identify, evaluate, and select devices with engineered safety features at least annually and as they become available on the market (e.g., safer anesthetic syringes, blunt suture needle, retractable scalpel, or needle less IV systems) (Category IC).
  - b. Place used disposable syringes and needles, scalpel blades, and other sharp items in appropriate puncture-resistant containers located as close as feasible to the area in which the items are used (Category IA, Category IC).
  - c. Do not recap used needles by using both hands or any other technique that involves directing the point of a needle toward any part of the body. Do not bend, break, or remove needles before disposal (Category IA, Category IC).
  - d. Use either a one-handed scoop technique or a mechanical device designed for holding the needle cap when recapping needles (e.g., between multiple injections and before removing from a nondisposable aspirating syringe) (Category IA, Category IC).
3. Postexposure management and prophylaxis
- a. Follow CDC recommendations after percutaneous, mucous membrane, or nonintact skin exposure to blood or other potentially infectious material (Category IA, Category IC).

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**Dental Department  
Policy & Procedure Statement**

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**Subject:** Hand Hygiene**Effective Date:****Supersedes:****P&P Number:**

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**Purpose:**

To establish a policy for protecting dental health workers and dental patients through exposure to infectious materials

**Procedure:****A. General Considerations**

1. Perform hand hygiene with either a nonantimicrobial or antimicrobial soap and water when hands are visibly dirty or contaminated with blood or other potentially infectious material. If hands are not visibly soiled, an alcohol-based hand rub can also be used. Follow the manufacturer's instructions (Category 1A)
2. Indications for hand hygiene include
  - a. When hands are visibly soiled
  - b. After barehanded touching of inanimate objects likely to be contaminated by blood, saliva, or respiratory secretions (Category IA, Category IC)
  - c. Before and after treating each patient (Category IB)
  - d. Before donning gloves (Category IB)
  - e. Immediately after removing gloves (Category IB, Category IC)
3. For oral surgical procedures, perform surgical hand antisepsis before donning sterile surgeon's gloves. Follow the manufacturer's instructions by using either an antimicrobial soap and water, or soap and water followed by drying hands and application of an alcohol-based surgical hand-scrub product with persistent activity (Category IB)
4. Store liquid hand-care products in either disposable closed containers or closed containers that can be washed and dried before refilling. Do not add soap or lotion to (i.e., top off) a partially empty dispenser.

**B. Special Considerations for Hand Hygiene and Glove Use**

1. Use hand lotions to prevent skin dryness associated with handwashing (Category IA)
2. Consider the compatibility of lotion and antiseptic products and the effect of petroleum or other oil emollients on the integrity of gloves during product selection and glove use (Category IB)
3. Keep fingernails short with smooth, filed edges to allow thorough cleaning and prevent glove tears (Category II)
4. Do not wear artificial fingernails or extenders when having direct contact with patients at high risk (e.g., those in intensive care units or operating rooms) Category (IA)
5. Use of artificial fingernails is usually not recommended (Category II)
6. Do not wear hand or nail jewelry if it makes donning gloves more difficult or compromises the fit and integrity of the glove (Category II)

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**Dental Department  
Policy & Procedure Statement**

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**Subject:** PPE**Effective Date:****Supercedes:****P&P Number:**

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**Purpose:**

To establish procedures for employees to obtain and use personal protective equipment for performing assigned duties

**A. Masks, Protective Eyewear, and Face Shields**

1. Wear a surgical mask and eye protection with solid side shields or a face shield to protect mucous membranes of the eyes, nose, and mouth during procedures likely to generate splashing or spattering of blood or other body fluids (Category IB, Category IC).
2. Change masks between patients or during patient treatment if the mask becomes wet (Category IB).
3. Clean with soap and water, or if visibly soiled, clean and disinfect reusable facial protective equipment (e.g., clinician and patient protective eyewear or face shields) between patients (Category II).

**B. Protective Clothing**

1. Wear protective clothing (e.g., reusable or disposable gown, laboratory coat, or uniform) that covers personal clothing and skin (e.g., forearms) likely to be soiled with blood, saliva, or OPIM (Category IB, Category IC).
2. Change protective clothing if visibly soiled; change immediately or as soon as feasible if penetrated by blood or other potentially infectious fluids (Category IB, Category IC).
3. Remove barrier protection, including gloves, mask, eyewear, and gown before departing work area (e.g., dental patient care, instrument processing, or laboratory areas) (Category IC).

**C. Gloves**

1. Wear medical gloves when a potential exists for contacting blood, saliva, OPIM, or mucous membranes (Category IB, Category IC).

2. Wear a new pair of medical gloves for each patient, remove them promptly after use, and wash hands immediately to avoid transfer of microorganisms to other patients or environments (Category IB)
3. Remove gloves that are torn, cut, or punctured as soon as feasible and wash hands before regloving (Category IB, Category IC)
4. Do not wash surgeon's or patient examination gloves before use or wash, disinfect, or sterilize gloves for reuse (Category IB, Category IC)
5. Ensure that appropriate gloves in the correct size are readily accessible (Category IC)
6. Use appropriate gloves (e.g., puncture- and chemical-resistant utility gloves) when cleaning instruments and performing housekeeping tasks involving contact with blood or OPIM (Category IB, Category IC)
7. Consult with glove manufacturers regarding the chemical compatibility of glove material and dental materials used (Category II)

#### **D. Sterile Surgeon's Gloves and Double Gloving During Oral Surgical Procedures**

1. Wear sterile surgeon's gloves when performing oral surgical procedures (Category IB).
2. *No recommendation is offered regarding the effectiveness of wearing two pairs of gloves to prevent disease transmission during oral surgical procedures. The majority of studies among HCP and DHCP have demonstrated a lower frequency of inner glove perforation and visible blood on the surgeon's hands when double gloves are worn; however, the effectiveness of wearing two pairs of gloves in preventing disease transmission has not been demonstrated (Unresolved issue).*

#### **E. PPE Provided**

1. **(Facility name)** will provide suitable gowns, eye protection, masks, gloves, hair covers, and shoe covers needed to provide dental treatment.

#### **F. Protection for Patients**

1. Patients will be provided safety glasses to be worn throughout dental treatment.
2. When the introduction of minimal contaminants would compromise dental treatment, additional protection such as towel draped over the patient may be used.



Dental Department  
Policy & Procedure Statement

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**Subject:** Contact Dermatitis and Latex Sensitivity**Effective Date:****Supercedes:****P&P Number:**

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**Purpose:**

To establish procedures for detecting allergic contact dermatitis and providing dental treatment to patients contact dermatitis

**Procedure:**

1. Educate DHCP regarding the signs, symptoms, and diagnoses of skin reactions associated with frequent hand hygiene and glove use (Category IB)
2. Screen all patients for latex allergy (e.g., take health history and refer for medical consultation when latex allergy is suspected) (Category IB)
3. Ensure a latex-safe environment for patients and DHCP with latex allergy (Category IB)
4. Have emergency treatment kits with latex-free products available at all times (Category II)

**Dental Department  
Policy & Procedure Statement**

**Subject:** Sterilization and Disinfection of Patient-Care Items**Effective Date:****Supersedes:****P&P Number:****Purpose:**

To establish procedures of disinfection and sterilization of patient-care items used during dental treatment.

**Definition:****Infection Control Categories of Patient-Care Instruments**

Category	Definition	Dental Instrument or Item
Critical	Penetrates soft tissues, contacts bone, enters into or contacts the blood stream or other normally sterile tissue.	Surgical instruments, periodontal scalers, scalpel blades, surgical dental burs
Semicritical	Contacts mucous membranes or nonintact skin; will not penetrate soft tissue, contact bone, enter into or contact the bloodstream or other normally sterile tissue.	Dental mouth mirror, amalgam condenser, reusable dental impression trays, dental handpieces
Noncritical	Contacts intact skin	Radiograph head/cone, blood pressure cuff, facebow

CDC, 2003, p. 20

## Levels of Sterilization and Disinfection

Sterilization (autoclave)- used for heat-tolerant critical and semi-critical patient care items

High-level disinfection- liquid immersion

Intermediate-level disinfection–Liquid contact- EPA registered hospital disinfectant with label claim of tuberculocidal activity (Chlorine containing products–1:100 dilution (1/4 cup of 5.25% household chlorine bleach to 1 gallon of water)

Alternative products may be biocide or Lysol-IC for surfaces that may be damaged by bleach products

Low level disinfection- liquid contact- EPA registered disinfectant with no claim of tuberculocidal activity (soap and water, alcohol)

CDC, 2003, p. 66

### A. General Recommendations

1. Use only FDA-cleared medical devices for sterilization and follow the manufacturer's instructions for correct use (Category IB).
2. Clean and heat-sterilize critical dental instruments before each use (Category IA).
3. Clean and heat-sterilize semicritical items before each use (Category IB).
4. Allow packages to dry in the sterilizer before they are handled to avoid contamination (Category IB).
5. Use of heat-stable semicritical alternatives is encouraged (Category IB).
6. Reprocess heat-sensitive critical and semi-critical instruments by using FDA-cleared sterilant/high-level disinfectants or an FDA-cleared low-temperature sterilization method (e.g., ethylene oxide). Follow manufacturer's instructions for use of chemical sterilants/high-level disinfectants (Category IB).
7. Single-use disposable instruments are acceptable alternatives if they are used only once and disposed of correctly (Category IB, Category IC).
8. Do not use liquid chemical sterilants/high-level disinfectants for environmental surface disinfection or as holding solutions (Category IB, Category IC).

9. Ensure that if visibly contaminated with blood, use an EPA-registered hospital disinfectant with a tuberculocidal claim (i.e., intermediate level) (Category IB).
10. Inform DHCP of all OSHA guidelines for exposure to chemical agents used for disinfection and sterilization. Using this report, identify areas and tasks that have potential for exposure (Category IC).

## **B. Instrument Processing Area**

1. Designate a central processing area. Divide the instrument processing area, physically or, at a minimum, spatially, into distinct areas for (1) receiving, cleaning, and decontamination; (2) preparation and packaging; (3) sterilization; and (4) storage. Do not store instruments in an area where contaminated instruments are held or cleaned (Category II).
2. Train DHCP to employ work practices that prevent contamination of clean areas (Category II).

## **C. Receiving, Cleaning, and Decontamination Work Area**

1. Minimize handling of loose contaminated instruments during transport to the instrument processing area. Use work-practice controls (e.g., carry instruments in a covered container) to minimize exposure potential (Category II). Clean all visible blood and other contamination from dental instruments and devices before sterilization or disinfection procedures (Category IA).
2. Use automated cleaning equipment (e.g., ultrasonic cleaner or washer-disinfector) to remove debris to improve cleaning effectiveness and decrease worker exposure to blood (Category IB).
3. Use work-practice controls that minimize contact with sharp instruments if manual cleaning is necessary (e.g., long-handled brush) (Category IC).
4. Wear puncture- and chemical-resistant/heavy-duty utility gloves for instrument cleaning and decontamination procedures (Category IB).
5. Wear appropriate PPE (e.g., mask, protective eyewear, and gown) when splashing or spraying is anticipated during cleaning (Category IC).

## **D. Preparation and Packaging**

1. Use an internal chemical indicator in each package. If the internal indicator cannot be seen from outside the package, also use an external indicator (II).

2. Use a container system or wrapping compatible with the type of sterilization process used and that has received FDA clearance (Category IB).
3. 3. Before sterilization of critical and semicritical instruments, inspect instruments for cleanliness, then wrap or place them in containers designed to maintain sterility during storage (e.g., cassettes and organizing trays) (Category IA).

### **E. Sterilization of Unwrapped Instruments**

1. Clean and dry instruments before the unwrapped sterilization cycle (Category IB).
2. Use mechanical and chemical indicators for each unwrapped sterilization cycle (i.e., place an internal chemical indicator among the instruments or items to be sterilized) (Category IB).
3. Allow unwrapped instruments to dry and cool in the sterilizer before they are handled to avoid contamination and thermal injury (Category II).
4. Semicritical instruments that will be used immediately or within a short time can be sterilized unwrapped on a tray or in a container system, provided that the instruments are handled aseptically during removal from the sterilizer and transport to the point of use (Category II).
5. Critical instruments intended for immediate reuse can be sterilized unwrapped if the instruments are maintained sterile during removal from the sterilizer and transport to the point of use (e.g., transported in a sterile covered container) (Category IB).
6. Do not sterilize implantable devices unwrapped (Category IB).
7. Do not store critical instruments unwrapped (Category IB).

### **F. Sterilization Monitoring**

1. Use mechanical, chemical, and biological monitors according to the manufacturer's instructions to ensure the effectiveness of the sterilization process (Category IB).
2. Monitor each load with mechanical (e.g., time, temperature, and pressure) and chemical indicators (Category II).
3. Place a chemical indicator on the inside of each package. If the internal indicator is not visible from the outside, also place an exterior chemical indicator on the package (Category II).

4. Place items/packages correctly and loosely into the sterilizer so as not to impede penetration of the sterilant (Category IB).
5. Do not use instrument packs if mechanical or chemical indicators indicate inadequate processing (Category IB).
6. Monitor sterilizers at least weekly by using a biological indicator with a matching control (i.e., biological indicator and control from same lot number) (Category IB).
7. Use a biological indicator for every sterilizer load that contains an implantable device. Verify results before using the implantable device, whenever possible (Category IB).
8. The following are recommended in the case of a positive spore test:
  - a. Remove the sterilizer from service and review sterilization procedures (e.g., work practices and use of mechanical and chemical indicators) to determine whether operator error could be responsible (Category II).
  - b. Retest the sterilizer by using biological, mechanical, and chemical indicators after correcting any identified procedural problems (Category II).
  - c. If the repeat spore test is negative, and mechanical and chemical indicators are within normal limits, put the sterilizer back in service (Category II).
9. The following are recommended if the repeat spore test is positive:
  - a. Do not use the sterilizer until it has been inspected or repaired or the exact reason for the positive test has been determined (Category II)
  - b. Recall, to the extent possible, and reprocess all items processed since the last negative spore test (Category II)
  - c. Before placing the sterilizer back in service, rechallenge the sterilizer with biological indicator tests in three consecutive empty chamber sterilization cycles after the cause of the sterilizer failure has been determined and corrected (Category II)
10. Maintain sterilization records (i.e., mechanical, chemical, and biological) in compliance with state and local regulations (Category IB).

### **G. Storage Area for Sterilized Items and Clean Dental Supplies**

1. Implement practices on the basis of date- or event-related shelf-life for storage of wrapped, sterilized instruments and devices (Category IB).

2. Even for event-related packaging, at a minimum, place the date of sterilization, and if multiple sterilizers are used in the facility, the sterilizer used, on the outside of the packaging material to facilitate the retrieval of processed items in the event of a sterilization failure (Category IB).
3. Examine wrapped packages of sterilized instruments before opening them to ensure the barrier wrap has not been compromised during storage (Category II).
4. Reclean, repack, and resterilize any instrument package that has been compromised (Category II).
5. Store sterile items and dental supplies in covered or closed cabinets, if possible (Category II).

## Dental Department Policy & Procedure Statement

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**Subject:** Environmental Infection Control**Effective Date:****Supercedes:**

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**P&P Number:**

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**Purpose:**

To establish procedures for environmental infection control consistent with CDC recommendations.

**Procedure:****A. General Recommendations**

1. Follow the manufacturers' instructions for correct use of cleaning and EPA-registered hospital disinfecting products (Category IB, Category IC).
2. Do not use liquid chemical sterilants/high-level disinfectants for disinfection of environmental surfaces (clinical contact or housekeeping) (Category IB, Category IC).
3. Use PPE, as appropriate, when cleaning and disinfecting environmental surfaces. Such equipment might include gloves (e.g., puncture- and chemical-resistant utility), protective clothing (e.g., gown, jacket, or lab coat), and protective eyewear/face shield, and mask (Category IC).

**B. Clinical Contact Surfaces**

1. Use surface barriers to protect clinical contact surfaces, particularly those that are difficult to clean (e.g., switches on dental chairs) and change surface barriers between patients (Category II).
2. Clean and disinfect clinical contact surfaces that are not barrier-protected, by using an EPA-registered hospital disinfectant with a low- (i.e., HIV and HBV label claims) to intermediate-level (i.e., tuberculocidal claim) activity after each patient. Use an intermediate-level disinfectant if visibly contaminated with blood (Category IB).

**C. Housekeeping Surfaces**



1. Clean housekeeping surfaces (e.g., floors, walls, and sinks) with a detergent and water or an EPA-registered hospital disinfectant/detergent on a routine basis, depending on the nature of the surface and type and degree of contamination, and as appropriate, based on the location in the facility, and when visibly soiled (Category IB)
2. Clean mops and cloths after use and allow to dry before reuse; or use single-use, disposable mop heads or cloths (Category II)
3. Prepare fresh cleaning or EPA-registered disinfecting solutions daily and as instructed by the manufacturer (Category II)
4. Clean walls, blinds, and window curtains in patient-care areas when they are visibly dusty or soiled (Category II)

#### **D. Spills of Blood and Body Substances**

1. Clean spills of blood or OPIM and decontaminate surface with an EPA-registered hospital disinfectant with low- (i.e., HBV and HIV label claims) to intermediate-level (i.e., tuberculocidal claim) activity, depending on size of spill and surface porosity (Category IB, Category IC).

#### **E. Carpet and Cloth Furnishings**

1. Avoid using carpeting and cloth-upholstered furnishings in dental operatories, laboratories, and instrument processing areas (Category II).

#### **F. Regulated Medical Waste**

1. General Recommendations
  - a. Develop a medical waste management program. Disposal of regulated medical waste must follow federal, state, and local regulations (Category IC).
  - b. Ensure that DHCP who handle and dispose of regulated medical waste are trained in appropriate handling and disposal methods and informed of the possible health and safety hazards (Category IC).
2. Management of Regulated Medical Waste in Dental Health-Care Facilities
  - a. Use a color-coded or labeled container that prevents leakage (e.g., biohazard bag) to contain nonsharp regulated medical waste (Category IC).

- b. Place sharp items (e.g., needles, scalpel blades, orthodontic bands, broken metal instruments, and burs) in an appropriate sharps container (e.g., puncture resistant, color-coded, and leakproof). Close container immediately before removal or replacement to prevent spillage or protrusion of contents during handling, storage, transport, or shipping (Category IC).
- c. Pour blood, suctioned fluids or other liquid waste carefully into a drain connected to a sanitary sewer system, if local sewage discharge requirements are met and the state has declared this an acceptable method of disposal. Wear appropriate PPE while performing this task (Category IC).

Dental Department  
Policy & Procedure Statement

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**Subject:** Dental Waterlines**Effective Date:**

Biofilm

**Supersedes:**

Water Quality

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**P&P Number:**

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**Purpose:**

To establish procedures to disinfect waterlines to prevent biofilm and protect water quality used during dental procedures

**Procedure:****A. General Recommendations**

1. Use water that meets EPA regulatory standards for drinking water (i.e.,  $\leq 500$  CFU/mL of heterotrophic water bacteria) for routine dental treatment output water (Category IB, Category IC)
2. *Consult with the dental unit manufacturer for appropriate methods and equipment to maintain the recommended quality of dental water (Category II)*
3. *Follow recommendations for monitoring water quality provided by the manufacturer of the unit or waterline treatment product (Category II)*
4. Discharge water and air for a minimum of 20–30 seconds after each patient, from any device connected to the dental water system that enters the patient's mouth (e.g., handpieces, ultrasonic scalers, and air/water syringes) (Category II)
5. *Consult with the dental unit manufacturer on the need for periodic maintenance of antiretraction mechanisms (Category IB)*

**B. Boil-Water Advisories**

1. The following apply while a boil-water advisory is in effect:
  - a. Do not deliver water from the public water system to the patient through the dental operative unit, ultrasonic scaler, or other dental equipment that uses the public water system (Category IB, Category IC).

- b. Do not use water from the public water system for dental treatment, patient rinsing, or handwashing (Category IB, Category IC).
  - c. For handwashing, use antimicrobial-containing products that do not require water for use (e.g., alcohol-based hand rubs). If hands are visibly contaminated, use bottled water, if available, and soap for handwashing or an antiseptic towelette (Category IB, Category IC).
2. The following apply when the boil-water advisory is cancelled:
- a. Follow guidance given by the local water utility regarding adequate flushing of waterlines. If no guidance is provided, flush dental waterlines and faucets for 1–5 minutes before using for patient care (Category IC).
  - b. Disinfect dental waterlines as recommended by the dental unit manufacturer (Category II).

## Dental Department Policy & Procedure Statement

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**Subject:** Special Considerations**Effective Date:****Supersedes:**

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**P&P Number:**

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**Purpose:**

To establish aseptic procedures for other dental office procedure and special considerations

**Procedure:****A. Dental Handpieces and Other Devices Attached to Air and Waterlines**

1. Clean and heat-sterilize handpieces and other intraoral instruments that can be removed from the air and waterlines of dental units between patients (Category IB, Category IC)
2. Follow the manufacturer's instructions for cleaning, lubrication, and sterilization of handpieces and other intraoral instruments that can be removed from the air and waterlines of dental units (Category IB)
3. Do not surface-disinfect, use liquid chemical sterilants, or ethylene oxide on handpieces and other intraoral instruments that can be removed from the air and waterlines of dental units (Category IC)
4. Do not advise patients to close their lips tightly around the tip of the saliva ejector to evacuate oral fluids (Category II)

**B. Dental Radiology**

1. Wear gloves when exposing radiographs and handling contaminated film packets. Use other PPE (e.g., protective eyewear, mask, and gown) as appropriate if spattering of blood or other body fluids is likely (Category IA, Category IC).
2. Use heat-tolerant or disposable intraoral devices whenever possible (e.g., film-holding and positioning devices). Clean and heat-sterilize heat-tolerant devices between patients. At a minimum, high-level disinfect semicritical heat-sensitive devices, according to manufacturer's instructions (Category IB).
3. Transport and handle exposed radiographs in an aseptic manner to prevent contamination of developing equipment (Category II).

4. The following apply for digital radiography sensors:
  - a. Use FDA-cleared barriers (Category IB).
  - b. Clean and heat-sterilize, or high-level disinfect, between patients, barrier-protected semicritical items. If the item cannot tolerate these procedures then, at a minimum, protect with an FDA-cleared barrier and clean and disinfect with an EPA-registered hospital disinfectant with intermediate-level (i.e., tuberculocidal claim) activity, between patients. Consult with the manufacturer for methods of disinfection and sterilization of digital radiology sensors and for protection of associated computer hardware (Category IB).

### **C. Aseptic Technique for Parenteral Medications**

1. Do not administer medication from a syringe to multiple patients, even if the needle on the syringe is changed (Category IA).
2. Use single-dose vials for parenteral medications when possible (Category II).
3. Do not combine the leftover contents of single-use vials for later use (Category IA).
4. The following apply if multidose vials are used:
  - a. Cleanse the access diaphragm with 70% alcohol before inserting a device into the vial (Category IA)
  - b. Use a sterile device to access a multiple-dose vial and avoid touching the access diaphragm. Both the needle and syringe used to access the multidose vial should be sterile. Do not reuse a syringe even if the needle is changed (Category IA)
  - c. Keep multidose vials away from the immediate patient treatment area to prevent inadvertent contamination by spray or spatter (Category II)
  - d. Discard the multidose vial if sterility is compromised (Category IA)
5. Use fluid infusion and administration sets (i.e., IV bags, tubings and connections) for one patient only and dispose of appropriately (Category IB).

### **D. Single-Use (Disposable) Devices**

1. Use single-use devices for one patient only and dispose of them appropriately (Category IC)

### **E. Preprocedural Mouth Rinses**

1. *No recommendation is offered regarding use of preprocedural antimicrobial mouth rinses to prevent clinical infections among DHCP or patients. Although studies have demonstrated that a preprocedural antimicrobial rinse (e.g., chlorhexidine gluconate, essential oils, or povidone-iodine) can reduce the level of oral microorganisms in aerosols and spatter generated during routine dental procedures and can decrease the number of microorganisms introduced in the patient's bloodstream during invasive dental procedures, the scientific evidence is inconclusive that using these rinses prevents clinical infections among DHCP or patients (see discussion, Preprocedural Mouth Rinses) (Unresolved issue).*

## **F. Oral Surgical Procedures**

1. The following apply when performing oral surgical procedures:
  - a. Perform surgical hand antisepsis by using an antimicrobial product (e.g., antimicrobial soap and water, or soap and water followed by alcohol-based hand scrub with persistent activity) before donning sterile surgeon's gloves (Category IB).
  - b. Use sterile surgeon's gloves (Category IB).
  - c. Use sterile saline or sterile water as a coolant/irrigant when performing oral surgical procedures. Use devices specifically designed for delivering sterile irrigating fluids (e.g., bulb syringe, single-use disposable products, and sterilizable tubing) (Category IB).

## **G. Handling of Biopsy Specimens**

1. During transport, place biopsy specimens in a sturdy, leakproof container labeled with the biohazard symbol (Category IC).
2. If a biopsy specimen container is visibly contaminated, clean and disinfect the outside of a container or place it in an impervious bag labeled with the biohazard symbol, (Category IC).

## **H. Handling of Extracted Teeth**

1. *Dispose of extracted teeth as regulated medical waste unless returned to the patient (Category IC).*
2. Do not dispose of extracted teeth containing amalgam in regulated medical waste intended for incineration (Category II).
3. Clean and place extracted teeth in a leakproof container, labeled with a biohazard symbol, and maintain hydration for transport to educational institutions or a dental laboratory (Category IC).

4. Heat-sterilize teeth that do not contain amalgam before they are used for educational purposes (Category IB).

## **I. Dental Laboratory**

1. Use PPE when handling items received in the laboratory until they have been decontaminated (Category IA, Category IC)
2. Before they are handled in the laboratory, clean, disinfect, and rinse all dental prostheses and prosthodontic materials (e.g., impressions, bite registrations, occlusal rims, and extracted teeth) by using an EPA-registered hospital disinfectant having at least an intermediate-level (i.e., tuberculocidal claim) activity (Category IB).
3. Consult with manufacturers regarding the stability of specific materials (e.g., impression materials) relative to disinfection procedures (Category II).
4. Include specific information regarding disinfection techniques used (e.g., solution used and duration), when laboratory cases are sent off-site and on their return (Category II).
5. Clean and heat-sterilize heat-tolerant items used in the mouth (e.g., metal impression trays and face-bow forks) (Category IB).
6. Follow manufacturers' instructions for cleaning and sterilizing or disinfecting items that become contaminated but do not normally contact the patient (e.g., burs, polishing points, rag wheels, articulators, case pans, and lathes). If manufacturer instructions are unavailable, clean and heat-sterilize heat-tolerant items or clean and disinfect with an EPA-registered hospital disinfectant with low- (HIV, HBV effectiveness claim) to intermediate-level (tuberculocidal claim) activity, depending on the degree of contamination (Category II).

## **J. Laser/Electrosurgery Plumes/Surgical Smoke**

1. No recommendation is offered regarding practices to reduce DHCP exposure to laser plumes/surgical smoke when using lasers in dental practice. Practices to reduce HCP exposure to laser plumes/surgical smoke have been suggested, including use of (a) standard precautions (e.g., high-filtration surgical masks and possibly full face shields) (437); (b) central room suction units with in-line filters to collect particulate matter from minimal plumes; and c) dedicated mechanical smoke exhaust systems with a high-efficiency filter to remove substantial amounts of laser-plume particles. The effect of the exposure (e.g., disease transmission or adverse respiratory effects) on DHCP from dental applications of lasers has not



been adequately evaluated (see previous discussion, Laser/Electrosurgery Plumes or Surgical Smoke) (Unresolved issue).

## **K. Mycobacterium Tuberculosis**

1. General Recommendations
  - a. Educate all DHCP regarding the recognition of signs, symptoms, and transmission of TB (Category IB).
  - b. Conduct a baseline TST, preferably by using a two-step test, for all DHCP who might have contact with persons with suspected or confirmed active TB, regardless of the risk classification of the setting (Category IB).
  - c. Assess each patient for a history of TB as well as symptoms indicative of TB and document on the medical history form (Category IB).
  - d. Follow CDC recommendations for (1) developing, maintaining, and implementing a written TB infection-control plan; (2) managing a patient with suspected or active TB; (3) completing a community risk-assessment to guide employee TSTs and follow-up; and (4) managing DHCP with TB disease (Category IB).
2. The following apply for patients known or suspected to have active TB:
  - a. Evaluate the patient away from other patients and DHCP. When not being evaluated, the patient should wear a surgical mask or be instructed to cover mouth and nose when coughing or sneezing (Category IB).
  - b. Defer elective dental treatment until the patient is noninfectious (Category IB).
  - c. Refer patients requiring urgent dental treatment to a previously identified facility with TB engineering controls and a respiratory protection program (Category IB).

## **L. Creutzfeldt-Jakob Disease (CJD) and Other Prion Diseases**

1. No recommendation is offered regarding use of special precautions in addition to standard precautions when treating known CJD or vCJD patients. Potential infectivity of oral tissues in CJD or vCJD patients is an unresolved issue. Scientific data indicate the risk, if any, of sporadic CJD transmission during dental and oral surgical procedures is low to nil. Until additional information exists regarding the transmissibility of CJD or vCJD during dental procedures, special precautions in addition to standard precautions might be indicated when treating known CJD or vCJD patients; a list of such precautions is provided for consideration without

recommendation (see Creutzfeldt-Jakob Disease and Other Prion Diseases) (Unresolved issue).

## Dental Department Policy & Procedure Statement

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**Subject:** Infection Control Program Evaluation**Effective Date:****Supersedes:**

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**P&P Number:**

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**Purpose:**

To monitor quality infection control program to ensure compliance with service unit infection control policies

**Procedure:**

1. Establish routine evaluation of the infection-control program, including evaluation of performance indicators, at an established frequency (Category II).

Monitoring Tool is Included in Chapter 7 of the OHPG

**Latex Hypersensitivity****Background.***Latex Sensitivity*

Latex sensitivity is becoming a significant problem for patients and healthcare workers. In the past two decades infection control concerns have led to a large increase in the use of latex gloves and other latex products among healthcare workers. This has not been without some side effects. The elevated incidence of latex hypersensitivity and dermal problems among healthcare workers has been directly linked to an increase to latex product usage.

*Sources of Natural Rubber Latex*

Latex products are manufactured from the milky fluid of the rubber tree, *Hevea brasiliensis*. Several chemicals are added to this fluid during the processing and manufacturing of commercial latex. Some of the proteins in latex can cause a range of mild to severe allergic reactions. There are no current methods to measure and consistently identify the allergy-causing proteins (allergens). The chemicals added during processing may also cause skin rashes associated with latex allergy. Several types of synthetic rubber are also referred to as “latex”, but these do not release the proteins that cause the allergic reactions.

A wide variety of products contain latex: medical supplies, personal protective equipment, and numerous household objects. Most people who encounter latex products

only through their general use in life have no health problems from the use of these products. Healthcare workers who repeatedly use latex products are more susceptible to developing some kind of hypersensitivity to latex. The following are common examples of latex containing products:

Emergency Medical Equipment:

- Blood pressure cuffs
- Stethoscopes
- Disposable gloves
- Tourniquets
- Intravenous tubing
- Syringes
- Electrode pads

PPE:

- Gloves
- Surgical masks
- Goggles
- Respirators
- Rubber aprons

Office Supplies:

- Rubber bands
- Erasers

Hospital Supplies:

- Anesthetic mask
- Catheters
- Wound drains
- Injection ports
- Rubber tops of vials
- Dental dams

Household Objects:

- Automobile tires

- Motorcycle and bicycle handgrips
- Carpeting, swimming goggles
- Shoe soles
- Expandable fabrics (waistbands)
- Hot water bottles
- Condoms
- Balloons
- Pacifiers

*How prevalent is latex allergy?*

The prevalence of latex allergy has been studied by several methods:

- Questionnaires to assess reaction to latex gloves
- Medical histories of reactions to latex containing products
- Skin test
- Test for latex antibodies in a worker's blood

Reports about the prevalence of latex allergy vary greatly, mostly due to the different levels of exposure and methods for measuring latex sensitization or allergy. The scientific literature indicates that from 1% to 6% of the general population and about 8% to 12% of regularly exposed healthcare workers are sensitized to latex allergy (*Kelly et al. 1996; Katelaris et al. 1996; Liss et al. 1997; Ownby et al. 1996; Sussman and Beezhold 1995*).

Several reasons may exist for the large number of latex allergies recently reported in workers (*Truscott 1995*):

- Workers rely increasingly on latex gloves to prevent transmission of infectious agents.
- Since 1992, the OSHA has required employers to provide gloves and other protective measures for their employees (*29 CFR 1910.1030, Blood Borne Pathogens*).
- Some manufacturers may produce more allergenic gloves because of changes in raw materials, processing, or manufacturing procedures to meet the increased demand for latex gloves (*Hunt et al. 1995*). Variations might be present between lots produced by same manufacturer.
- Physicians are more familiar with latex allergy and have improved methods for diagnosing.

Workers in the healthcare industry (physicians, nurses, dentist, technicians, etc.) are at risk of developing latex allergy because they use latex gloves frequently.

### *Levels and routes of exposure*

Studies of other allergy-causing substances provide evidence that the higher the overall exposure in the population, the greater the likelihood that more individuals will be sensitized (*Venables and Chan-Yeung 1997*). The amount of latex exposure needed to produce sensitization or an allergic reaction is unknown; however, reductions in exposure to latex proteins have been reported to be associated with decreased sensitization and symptoms (*Tarlo et al. 1994; Hunt et al. 1996*).

The proteins responsible for latex allergies have been shown to fasten to powder that is used on some latex gloves. When powdered gloves are worn, more latex protein reaches the skin. Also, when gloves are changed, latex protein/powder particles get into the air, where they can be inhaled and contact other body membranes (*Heilman et al. 1994*). In contrast, work areas using only powder-free gloves show low levels or undetected amounts of allergens (*Tarlo 1994; Swanson et al. 1994*).

When employees wear latex gloves during episodes of hand dermatitis, the risk that the skin exposed to the latex proteins will develop an allergic response to latex is increased. A skin rash may be the first sign of allergic reaction to latex; more serious reactions could occur with each subsequent exposure to the latex protein (*Kelly et al. 1996*).

### *Who else is at risk?*

Other persons at high risk of sensitization include the following broad categories:

- Persons with cumulatively prolonged exposure to latex. Examples include those who have undergone repeated surgeries, particularly early in life:
  - Myelomeningocele (spina bifida)
  - Urogenital abnormalities

Prevalence of latex allergy among these people may be greater than 60%.

- Persons with history of atopy
- Persons with history of food allergy, especially:
  - Banana
  - Avocado
  - Passion fruit
  - Chestnut
  - Kiwi fruit
  - Melon
  - Tomato
  - Celery

## Latex-Associated Allergies And Conditions

### *Irritant Contact Dermatitis:*

Often mistaken for an allergic response, irritant contact dermatitis is manifested as a sharp, defined reaction confined to the area of glove contact. Caused by insufficient hand rinsing or drying, glove powder, exposure to disinfectants or contact with preservatives such as formaldehyde, this condition stems from direct physical or chemical injury to skin cells, rather than an immunologic response. Because of the occlusal barrier, extended glove use deprives the skin of air and leaves cells fragile and susceptible to injury. Improper handwashing techniques coupled with the warm, moist environment that gloving provides, allows excessive bacterial multiplication, which can cause irritation. Glove powder, added by the manufacturer to prevent sticking and to facilitate glove donning, can initiate or exacerbate irritant reactions.

Refining the handwashing technique (washing, rinsing, and drying) may resolve irritant contact dermatitis, although refraining from gloving; and thereby refraining from direct patient care, until the condition resolves is recommended.

### *Delayed (Type IV) Hypersensitivity:*

Type IV allergy, also referred to as delayed hypersensitivity, is triggered by contact with sensitizing chemicals, including the accelerators and preservatives employed in the glove manufacturing process. In hypersensitive individuals, delayed reactions develop within four to 72 hours of exposure and peak in 24 to 48 hours. Often mistaken for irritant contact dermatitis, this chronic, slow forming reaction manifests as dry, cracked, pruritic skin with inflammation and blistering in the acute phase. Frequently, it appears first on the back of the hands and between the fingers, where the skin is thin. When subsequent exposure to allergen(s) is avoided, the condition may resolve within four to 30 days. If exposure continues, however, chronic, slower-to-resolve conditions may result.

### *Immediate (Type I) Hypersensitivity:*

An immunologic response triggered by the proteins in natural rubber latex (NRL), Type I (immediate) latex allergy manifests within minutes of dermal or mucosal contact with latex. Reactions are more acute and, in some cases, may require emergency medical procedures. Early symptoms include itching and tingling at the contact site, and may be followed by hives. In other cases, respiratory symptoms such as runny nose, sneezing, itchy eyes, scratchy throat, and asthma may result; further systemic involvement may include facial swelling, conjunctivitis, nausea, abdominal cramps, bronchospasm, hypotension, and tachycardia. In extreme cases, exposure to NRL can bring anaphylaxis and death.

Although recognized as less severe than Type I allergy, both irritant and Type IV allergic contact dermatitis compromise the integrity of the skin. By allowing sensitizing NRL proteins access to the body via skin breaks, the risk of progression to Type I allergy may

be dramatically increased. Therefore, either condition should be fully resolved before glove use is resumed.

Because there are currently no means to correlate the degree of exposure with the severity of the allergic reaction (i.e., mild versus severe), Type I latex-allergic individuals should avoid all contact with latex.

### **Recommendations**

- The use of latex gloves and rubber dams should be discontinued.
- Identify all latex containing products in the dental clinic. Be aware that latex may be found in unlikely places such as the rubber stoppers and membranes in anesthetic carpules.
- Contact vendors for latex product substitutes.
- A clean, closed operatory should be used whenever a latex-sensitive patient is treated to help reduce the exposure to airborne latex particles. All surfaces in the operatory must be wiped to minimize airborne latex particles. These surfaces should be covered to prevent further contamination.
- Treatment of a known latex-allergic patient should be performed first thing in the morning. This will allow for reduced exposure of the patient to airborne latex particles. It also allows the dental team to set up appropriately.
- The dental team should be ready to provide emergent treatment in the event of an immediate (Type I) hypersensitive reaction, including the management and treatment of an anaphylactic episode.
- A complete medical history must be evaluated. Medical history forms should be revised to include questions about latex allergies and food allergies.
- All employees must be educated in the signs and symptoms of latex sensitivity.
- All employees must immediately report signs or symptoms of allergic reactions to latex to their supervisor. Supervisors must in turn have the employee seek medical attention, per the local Employee Health Program, for evaluation and treatment.
- If the incident is job related, the employee must fill out the appropriate forms on the *WebCident* intranet Web site.



- Under the Americans with Disabilities Act, if an employee is determined to be latex allergic, the employer, must provide for reasonable accommodation for the affected employee, such as providing a latex powder-free environment or providing for special assignments or retraining.

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Association of Operating Room Nurses. Standards, Recommended Practices, and Guidelines. Copyright 2000. Editor: Deb Reno. AORN Inc., 2170 South Parker Road, Suite 300, Denver, CO 80231-5711 (800) 755-2676.

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### Additional Resources

#### Alternative Resources Catalog

1-800-618-3129

1-412-486-4476

American Academy of Endodontists  
211 East Chicago Avenue, Suite 1100  
Chicago, IL 60611-2691

- Position paper to the membership: Natural Rubber Latex Allergy  
<http://www.aae.org/NR/ronlyres/FE9A6996-BD3F-4495-A13E-6CDDE2A836DE/0/Latexmember.pdf>
- Natural Rubber Latex Allergy: Patient Fact Sheet  
<http://www.aae.org/NR/ronlyres/0DD8A80E-7F3D-4A97-97A2-1B9519D335E2/0/Latexpatient.pdf>

American Latex Allergy Association: A.L.E.R.T., Inc.  
P.O. Box 13930  
Milwaukee, WI 53213-0930  
Toll-Free: 1-888-97ALERT (972-5378)  
Fax: 1-414-677-2808  
<http://www.latexallergyresources.org/>

- Latex Free Dental Product List
- Latex Free Crash Cart List
- Latex Free Hospital Product List
- Allergic Cross-Reactivity of Latex and Foods

Sources for latex allergy information and non-latex gloves:  
<http://www.latex-allergy.org>

Johnson & Johnson – Medical  
“The Rational Approach to Latex Allergy” by Terri Goodman, PhD(c), RN  
Distributed by:

- ProForma      Order number 9906-B
- 501 Duncan Road
- Arlington, TX 76011
- 800-658-5650

Latex Allergy Information Service  
1-860-482-6869  
Office of Occupational Safety and Health (00s1)

Department of Veteran Affairs  
810 Vermont Avenue, NW  
Washington, DC 20420

- Latex Policy, VA Directive 7701, "Latex Sensitivity/Allergy"  
<http://www1.va.gov/vasafety/page.cfm?pg=242>
- Latex Allergy Prevention  
<http://www1.va.gov/vasafety/page.cfm?pg=114>

## NIOSH

- Latex Allergy Prevention  
<http://www.cdc.gov/niosh/98-113.html> and  
<http://www.cdc.gov/niosh/topics/latex/>

Spina Bifida American Association  
4590 MacArthur Blvd., NW, Suite 250  
Washington, DC 20007-3285  
Toll-Free: 1-800-621-3141  
Fax: 1-202-944-3295

- <http://www.sbaa.org/>
- [http://www.sbaa.org/site/PageServer?pagename=fs\\_latex](http://www.sbaa.org/site/PageServer?pagename=fs_latex)

Journal of Contemporary Dental Practice, "Adverse Reactions to Latex Products: Preventive and Therapeutic Strategies"

- <http://www.thejcdp.com/issue025/huber/01huber.htm>

## Ergonomics Recommendations for Dental Programs

Much of the information contained in this document has been excerpted directly from the public domain NIOSH publication *Elements Of Ergonomics Programs: A Primer on Workplace Evaluations of Musculoskeletal Disorders* (<http://www.cdc.gov/niosh/97-117pd.html>). This publication can be downloaded from the NIOSH Web site in PDF format for more complete information. The two public domain NIOSH surveys of musculoskeletal disorders in IHS dental personnel, HETA 98-0032-2795 and HETA 99-0106-2838, were also excerpted in the preparation of this document. Copies can be obtained from NIOSH.

## Background And Definitions

Ergonomics is the science of fitting workplace conditions and job demands to the capabilities of the working population. The successful application of ergonomics assures high productivity, avoidance of illnesses and injuries, and increased satisfaction among workers. Unsuccessful application, on the other hand, can lead to WR musculoskeletal disorders (MSDs). The term WR MSDs refers to musculoskeletal disorders to which the

work environment contributes significantly or to musculoskeletal disorders that are made worse or longer lasting by work conditions or workplace risk factors. Common examples of such workplace risk factors include jobs requiring repetitive, forceful or prolonged exertions of the hands; frequent or heavy lifting, pushing or pulling, or carrying of heavy objects; and prolonged awkward postures. The level of risk depends on the intensity, frequency and duration of the exposure to these conditions.

Ergonomics are a potentially regulated health and safety issue, and WR MSDs are an important problem in the workplace for several reasons:

- According to the Bureau of Labor Statistics in 1995, WR MSDs are among the most prevalent lost-time injuries and illnesses in almost every industry
- WR MSDs involving the back are among the most costly occupational problems
- WR MSDs may cause significant pain and suffering among afflicted workers
- WR MSDs can decrease productivity and the quality of work

### **Scientific Findings**

Numerous studies have attempted to estimate the prevalence of WR MSDs in dentistry. Most such studies have been cross-sectional in design, lacking control groups. Additionally, cross-sectional studies cannot account for the temporal pattern of events, and cannot therefore demonstrate true cause and effect. Given these potential shortcomings, and the fact that all of the findings have not been consistent, however, a review of the literature suggests that dental personnel, including dentists, dental hygienists, and dental assistants may be prone to WR MSDs involving the neck, shoulder, wrist, elbow, hand, and lower back. A brief review of the literature concerning work-related MSDs in dentistry is included in Appendix I.

### **WR MSDs in IHS Dental Personnel**

In 1998, NIOSH collaborated with the Phoenix Area to conduct a Health Hazard Evaluation (HHE) on several IHS dental clinics in Arizona. Their findings were reported in HETA Report #98-0032- 2795, copies of which can be obtained on the NIOSH Web site at <http://www.cdc.gov/niosh/hhe/reports/pdfs/1998-0032-2795.pdf>.

This study included interviews with dental employees and photographs and videotapes of workers doing their jobs.

NIOSH found that 48% of workers had WR neck disorders, 42% had WR back disorders, and 37% had WR shoulder disorders. Dental assistants had a significantly greater prevalence of WR neck disorders than dentists. These percentages fall within the ranges reported among dentists in other studies (see Appendix).

The most significant risk factors for dentists were static loading of the neck and static loading and awkward positions of the hands. The greatest risk factors for dental assistants were twisting and turning of the back, extended reaches of the arms to access instruments, prolonged static postures, forceful exertions using dental instruments, and carving fillings.

Among other factors, the WR MSDs were associated with working in older dental clinics (with rear delivery systems) and with malfunctioning dental equipment. In 1999, NIOSH and the IHS collaborated to conduct another study of WR MSDs in IHS dental personnel, this time sending a questionnaire to all dental employees working in IHS federally operated programs at the time of the survey. Sixty-nine percent of the employees completed and returned the survey. The full report of the survey can be obtained by calling NIOSH and requesting HETA report 99-0106-2838 or by downloading the PDF at <http://www.cdc.gov/niosh/hhe/reports/pdfs/1999-0106-2838.pdf>

For dentists, there was a statically significant incidence of neck MSDs related to an increased frequency of indirect viewing of the patient's mouth and to poor to fair dental chair comfort. Increased reporting of hand WR MSDs by dentists was related to extracting 10 or more teeth per week and to rating the lighting as fair or poor. The risk of back WR MSDs for dentists was statistically related to fair or poor dental chair comfort and to sitting in the 9 or 10 o'clock position as opposed to the 11 or 12 o'clock position relative to the patient. Shoulder WR MSDs for dentists were related to not always having a direct view of the patient's mouth and to the time spent working at the same location, based on spending greater than five years at the same location.

For dental assistants/hygienists, neck WR MSDs were related to not having a fiber-optic handpiece, to fair or poor dental chair comfort, and to the years spent working at the same clinic.

The risk of neck WR MSDs in dental assistants/hygienists decreased with an increase in the number of patients treated per day. For dental assistants/hygienists, hand WR MSDs were related to spending more years working at the same location. For dental assistants/hygienists, increased back WR MSDs were statistically significantly associated with locating the handpiece behind the patient rather than locating the handpiece in front of the patient and to spending more years working at the same location. Shoulder WR MSDs for dental assistants/hygienists were related to having an instrument tray on the left side of the patient versus in front of the patient.

## **Ergonomic Risk Factors in Dentistry**

### **Neck and Shoulder**

A comprehensive review of published studies, conducted by the Hazard Evaluations and Technical Assistance Branch NIOSH, found that repetitive neck movements and continuous arm and hand movements affecting the neck and shoulder demonstrate significant associations with neck musculoskeletal disorders. Researchers have also found

a strong relationship between neck musculoskeletal disorders and high levels of static contraction, prolonged static loads, and extreme working postures involving neck and shoulder muscles.

Dental personnel are required to adopt non-neutral postures for many of the clinical tasks they perform. These postures frequently require prolonged static contraction of the trunk and scapulothoracic and scapulohumeral musculature, combined with repetitive contraction of muscles in the wrist, hand, and fingers during fine motor control work. Dentists, for example, most commonly use a combination of a flexed and right-side flexion position of the neck with a head-down position, often combined with shoulder abduction or flexion. Dental personnel assume these positions for the following reasons:

- To coordinate the relative positions between dentist and assistant
- To obtain optimal view of teeth within the patient's mouth
- To provide a comfortable position for the patient
- To maneuver complex equipment and reach for instruments

Much dental work requires high precision, and the muscles used in sustaining such activity are at risk of becoming fatigued and causing discomfort. Stability maintained through static muscle loading in the shoulder for prolonged periods could lead to fatigue and discomfort. Prolonged contraction of the upper trapezium during upper extremity stabilization (without armrests) can cause compression of adjacent blood vessels and nerves making the upper extremity susceptible to temporary ischemia.

### **Wrist and Hand**

Dental work has also been associated with hand and wrist problems. Carpal Tunnel syndrome (CTS) has been associated with both repetitive work and forceful work. CTS is defined as symptomatic compression of the median nerve within the carpal tunnel, which is the space between the transverse carpal ligament on the palmar aspect of the wrist and the carpal bones on the dorsal aspect of the wrist. Symptoms of carpal tunnel compression can appear from any activity causing prolonged increased (passive or active) pressure in the carpal canal. There is evidence of an association between CTS and highly repetitive work, alone or in combination with other factors. Evidence also indicates an association between forceful work and CTS, but the amount and type of repetitive movement performed during dental work has not been accurately quantified by most studies.

### **Low Back Pain**

Low-back discomfort has been associated with dental work in numerous studies. Shugars *et al.* found that good (neutral) posture correlated negatively with back pain; and generally, dentists who sat 80% to 100% of the day reported more frequent lower-back pain than those that do not sit as often.<sup>1</sup> Static work in the sitting posture requiring spinal flexion and rotation has been associated with increased risk of low back pain. Sitting

increases loads on soft-tissue structures of the lumbar spine and discs. Additionally, extensor muscle activity in the lumbar spine area in the unsupported sitting posture is greater than in standing. Back discomfort experienced by dental workers was shown to increase over the working day.

### **Psychosocial Factors and WR MSDs in Dentistry**

Numerous studies have looked at stress levels in dentistry. Identified stressors include the psychological demands of doing meticulous surgery with little or no rest or diversion and time pressures. Dentists with WR MSDs showed a significant tendency to be more dissatisfied at work and to be more burdened by anxiety, experiencing poorer psychosomatic health and feeling less confident with their futures. Ergonomics requires understanding of both the physical and the psychological aspects of the workplace. From the review of literature, it is evident that ergonomics plays a significant role in the health of dental professionals. The musculoskeletal and stress-related disorders associated with dentistry seem to be interrelated. Literature about WR MSDs and psychosocial disorders associated with dentistry is plentiful. However, ergonomic solutions for dental practitioners are under-reported in the literature. Furthermore, the few ergonomic solutions that have been provided have not been adequately evaluated or validated.

### **Ergonomic Interventions in Dentistry: Current State of the Art**

Dentists usually work seated on a low stool, and the assistant, also seated, provides chairside assistance; this is commonly called four-handed dentistry. Instruments and equipment are placed within close reach of the dentist and the assistant. The patterns of floor area design have evolved on an empirical basis for each functional area and for flow in occupants' movements. The aim of ergonomic intervention should be to achieve optimum access, visibility, comfort, and control at all times of treatment. Many ergonomists have urged an evaluation of the dental workspace and process to improve not only health, but also productivity.

### **What Should Dental Programs Assess to Help Prevent WR MSDs in Their Employees?**

A great deal of ergonomic research has been conducted to identify workplace factors that contribute to the development of musculoskeletal disorders. According to the scientific literature, the following are recognized as important risk factors for MSDs, especially when occurring at high levels and in combination. In general, knowledge of the relationships between risk factors and the level of risk is still incomplete. Also, individuals vary in their capacity to adjust to the same job demands. Some may be more affected than others.

### **Awkward Postures**

Body postures determine which joints and muscles are used in an activity and the amount of force or stresses that are generated or tolerated. For example, more stress is placed on the spinal discs when lifting, lowering, or handling objects with the back bent or twisted



compared with when the back is straight. Manipulative or other tasks requiring repeated or sustained bending or twisting of the wrists, knees, hips, or shoulders also imposed increased stresses on these joints. Activities requiring frequent or prolonged work over shoulder height can be particularly stressful.

### **Forceful Exertions**

Tasks that require forceful exertions place higher loads on the muscles, tendons, ligaments, and joints. Increasing force means increasing body demands such as greater muscle exertion along with other physiological changes necessary to sustain an increased effort. Prolonged or recurrent experiences of this type can give rise to not only feelings of fatigue but may also lead to musculoskeletal problems when there is inadequate time for rest or recovery. Force requirements may increase with:

- Use of an awkward posture
- The speeding up of movements
- Increased slipperiness of the objects handled (requiring increased grip force)
- Use of the index finger and thumb to forcefully grip an object (i.e., a pinch grip compared with gripping the object with your whole hand)
- Use of small or narrow tool handles that lessen grip capacity

Many of these risk factors are present in the practice of dentistry.

### **Repetitive Motions**

If motions are repeated frequently (e.g., every few seconds) and for prolonged periods such as an 8-hour shift, fatigue and muscle-tendon strain can accumulate. Tendons and muscles can often recover from the effects of stretching or forceful exertions if sufficient time is allowed between exertions. Effects of repetitive motions from performing the same work activities are increased when awkward postures and forceful exertions are involved. Repetitive actions as a risk factor can also depend on the body area and specific act being performed.

### **Duration**

Duration refers to the amount of time a person is continually exposed to a risk factor. Job tasks that require use of the same muscles or motions for long durations increase the likelihood of both localized and general fatigue. In general, the longer the period of continuous work (e.g., tasks requiring sustained muscle contraction), the longer the recovery or rest time required.

## Contact Stresses

Repeated or continuous contact with hard or sharp objects such as nonrounded desk edges or unpadded, narrow tool handles may create pressure over one area of the body (e.g., the forearm or sides of the fingers) that can inhibit nerve function and blood flow.

## Vibration

Exposure to local vibration occurs when a specific part of the body comes in contact with a vibrating object, such as a power hand tool. More detailed information concerning the above parameters can be found on the State of Washington's Department of Labor and Industries Ergonomics Web site at <http://www.lni.wa.gov/wisha/ergo/>

### How Should These Assessments be Made?

Screening jobs for risk factors may involve the following:

- Walk-through observational surveys of the work facilities to detect risk factors
- Interviews with workers and supervisors to obtain the above information and other data not apparent in walk-through observations, such as time and work load pressures, length of rest breaks, etc.
- Use of checklists for scoring job features against a list of risk factors (an example of such a checklist is available for download from the US Army's ergonomics Web site at <http://chppm-www.apgea.army.mil/ergopgm/publications.aspx>).

Of the above three methods, the checklist procedure provides the most formal and orderly procedure for screening jobs. Numerous versions of checklists exist in ergonomics manuals. When persons familiar with the job task gather checklist data, the quality of the data is generally better. Checklist procedures are also typically used in more complete job analyses.

While screening tools such as checklists have been widely and successfully used in many ergonomics programs, most have not been scientifically validated. Combining checklist observations with symptoms data offers a means of overcoming uncertainty. Integrating efforts to identify risk factors for musculoskeletal disorders with efforts to identify common safety hazards such as slips and trips should be considered. Jobs with risk factors for MSDs also may have safety hazards (such as the risk of sharps injuries from burs in handpieces mounted in rear delivery systems). The US Army's Ergonomics Program Web site contains information on and links to checklists and other tools. The site can be found at: <http://chppm-www.apgea.army.mil/ergopgm/default.aspx>

## Performing Job Analyses

Job analysis breaks a job into its various elements or actions, describes them, measures and quantifies risk factors inherent in the elements, and identifies conditions contributing to the risk factors. Persons with considerable experience and training in these areas usually conduct these job analyses. While most job analyses have common approaches, no standard protocol exists for conducting a job analysis to assess ergonomic hazards. Most job analyses have several common steps. A complete description of the job is obtained. Employees are often interviewed in order to determine if the way the job is done changes over time. During the job analysis, the job is divided into a number of discrete tasks. Each task is then studied to determine the specific risk factors that occur during the task. Sometimes each risk factor is evaluated in terms of its magnitude, the number of times it occurs during the task, and how long the risk factor lasts each time it occurs.

The tasks of most jobs can be described in terms of (1) the tools, equipment, and materials used to perform the job, (2) the workstation layout and physical environment, and (3) the task demands and organizational climate in which the work is performed. Job screening as described above, provides some of these data. More definitive procedures for collecting information on these components can include the following:

- Observing the workers performing the tasks in order to furnish time-activity analysis and job or task cycle data; videotaping the workers is typically done for this purpose.
- Still photos of work postures, workstation layouts, tools, etc., to illustrate the job
- Workstation measurements (e.g., work surface height, reach distances)
- Measuring tool handle sizes, weighing tools and parts, and measuring tool vibration and part dimensions
- Biomechanical calculations (e.g., muscle force required to accomplish a task or the pressure put on a spinal disc based on the weight of a load lifted, pulled, or pushed)
- Physiological measures (e.g., oxygen consumption, heart rate)
- Special questionnaires, interviews, and subjective rating procedures to determine the amount of perceived exertion and the psychological factors influencing work performance.

## What Training Can be Provided to Dental Personnel, And What Should The Training Include?

Training is recognized as an essential element for any effective safety and health program. For ergonomics, the overall goal of training is to enable managers, supervisors, and employees to identify aspects of job tasks that may increase a worker's risk of

developing work-related MSDs, recognize the signs and symptoms of the disorders, and participate in the development of strategies to control or prevent them. Training employees ensures that they are well informed about the hazards so they can actively participate in identifying and controlling exposures. Common forms of ergonomics training are noted below, along with their objectives. Employers may opt to have outside experts conduct these tasks. If so, the outside instructors should first become familiar with local operations and relevant policies and practices before starting to train. Tailoring the instruction to address specific concerns and interests of the worker groups can enhance learning.

### **Ergonomics Awareness Training**

The objectives for ergonomics awareness training are as follows:

- Recognize workplace risk factors for MSDs and understand general methods for controlling them.
- Identify the signs and symptoms of musculoskeletal disorders that may result from exposure to such risk factors, and be familiar with the organization's healthcare procedures.
- Know the process the employer is using to address and control risk factors, the employee's role in the process, and ways employees can actively participate.
- Know the procedures for reporting risk factor and musculoskeletal disorders, including the names of designated persons who should receive the reports

### **Training Resources**

Materials for offering awareness training to the workforce are available, including videotapes and pamphlets from NIOSH and others. The ADA offers one of their seminar courses on dental clinic ergonomics. Persons or groups assigned to or expected to play a key role in ergonomic hazard control work will require added instruction in problem identification, job analyses, and problem-solving techniques. Some fact sheets and other training tools are available on the previously mentioned Washington State and US Army Web sites. Additionally, the IHS has an Ergonomics workgroup that is currently developing training programs and policy documents. The IHS ergonomics Web page can be found at the following address:

<http://www.ihs.gov/NonMedicalPrograms/IEH/index.cfm?module=ergo>

### **What Direct Measures Can Managers Of Indian Health Dental Programs Take Now To Protect Personnel From WR MSDs?**

1. When equipment needs to be replaced, when budget allows, or whenever clinic renovations are made, dental programs should replace older, rear-delivery equipment with more modern over-the-patient equipment. This delivery system allows access to the 12:00 position in relation to the patient, and greatly lessens the amount of twisting and turning that dental personnel must do to gain access to instruments and equipment. Utilize patient chairs that are as thin as possible to allow personnel to sit as close to the patient as possible and minimize bending. All new construction should be designed with these changes in mind. Additionally, elimination of the rear delivery systems will eliminate the risk of sharps injuries from burs on handpieces mounted behind the dentist.
2. Ensure that existing equipment is functioning properly and that all chairs can be raised and lowered within the range for which they were designed. Proper positioning should help to reduce the static physical stresses placed on dental personnel. Malfunctioning equipment was identified as a significant risk factor in one of the IHS NIOSH reports.
3. Design operatories so that the assistant or dentist does not have to get up or twist to access a handpiece or suction device, or to use an amalgamator or curing light. There should be adequate space available at the head of the patient to allow access to the 12:00 position by the dentist, assistant, or hygienist, without bumping elbows on units, burs, etc.
4. Evaluate ergonomically designed instruments, particularly dental instruments with larger handles. Programs could start with employees who are having hand/wrist work-related MSDs and assess the comfort and performance of such instruments before introducing them to all dental personnel at all clinics.
5. Encourage dental staff to take mini-breaks to decrease the amount of time they have to stay in one position.
6. Provide comfortable chairs to both dentists and dental assistants/hygienists. These chairs should provide adequate adjustability to allow proper positioning for all dental personnel and adequate body and arm supports to eliminate or reduce the static loading of arm, shoulder, neck, and back muscle groups.
7. Make sure that proper lighting is available in all operatories.
8. Train and remind staff of the importance of proper posture, and periodically evaluate postures.

9. Provide a slow-setting amalgam for use when doing amalgam build-ups or other large, multisurface amalgams. Faster-setting amalgams such as Tytin may reach a hard set before carving is completed, leading to increased stress on the hands and wrists. Additionally, make sure that all amalgam carvers are kept sharp to facilitate the carving process.
10. Increased use of ultrasonic and piezo-electric scalers, as opposed to the use of hand scalers, on patients with heavy calculus may help to protect the hands and wrists of hygienists and perio-certified expanded functions assistants.

## Appendix I: A Review of The Literature

In a cross-sectional study, 1,079 dentists were screened during the ADA's Annual Health Screening Program in 1997 and 1998 by means of standard electrodiagnostic measures in the dominant hand and a self-reported symptom questionnaire. The prevalence of symptoms consistent with CTS in the dominant hand among dentists was higher than the prevalence in the general population. However, when electrodiagnostic confirmation was added, the prevalence of CTS was nearly the same as that among the general population.<sup>2</sup>

Bramson *et al.* undertook a study to determine the presence of certain ergonomic risk factors in typical tasks performed by dentists and dental hygienists. They further investigated, by means of electromyography and goniometry, the force, frequency and duration of the task. They concluded that when a task's duration, force, and frequency are accounted for, scaling, polishing, flossing, and probing activities do not represent exposure to high ergonomic risk.<sup>3</sup>

Rundercrantz and various associates have published numerous studies concerning dental ergonomics and WR MSDs in the Swedish dental literature.<sup>4,5,6, 7</sup> One of these studies compared dentists with and without occupational cervico-brachial disorders with regard to the mobility of the neck and shoulders and the static endurance of the shoulder muscles. Differences in working position and the task performance on a stimulated case were also analyzed. Of 143 dentists surveyed, 96 had signs of cervico-brachial disorders and discomfort while 47 did not. The ergonomic examination showed that significantly more dentists without symptoms of pain applied a wedge cushion under the upper part of the back of the patient to get an optimum view. They also found that significantly more dentists without symptoms were aware of and utilized the naturally arising pauses in their work than dentists with pain and discomfort. Additionally, dentists with cervico-brachial disorders kept their head bent to the side and rotated to a greater extent than did dentists without symptoms. In another study, they found a high incidence of pain and discomfort in the locomotor system among dentists that could not be explained by ergonomic risk factors such as positioning of the patient, use of the mirror or alteration of the dentist's position. Regression analysis showed that personal harmony and age had the highest value for explaining the number of painful sites in the musculoskeletal system of those studied. In another study, they looked at patient positioning and use of the mouth mirror. They found that dentists who positioned the patient to achieve a direct view had a significantly lower frequency of headaches. They also concluded that those dentists who did not have discomfort in the upper locomotor system used the mirror more often than those who did suffer discomfort.

Finsen, Christensen, and Bakke looked at MSDs among dentists and variation in the tasks they performed.<sup>8</sup> They looked at working postures and conducted electromyography of the shoulder/neck during the three most common work tasks. They found prolonged neck flexion and upper arm abduction, as well as high static muscle activity levels in the splenius and trapezius muscles. No differences between work tasks were found regarding postures, frequencies of movements, or muscle activity. Alterations between the three

work tasks did not produce sufficient variation to reduce musculoskeletal load on the neck and shoulders.

Milerad and Ekenvall studied symptoms of the neck and upper extremities in dentists by means of telephone interviews.<sup>9</sup> They compared the dentists to a reference group of pharmacists. They found 44% of the dentists and 26% of the pharmacists to have symptoms of the neck, 51% of the dentists and 23% of the pharmacists to have symptoms of the shoulder, and 12% of the dentists versus 1 percent of the pharmacists to have musculoskeletal symptoms in the forearm, mainly in the form of paresthesias and numbness. They concluded that the high frequency of symptoms from the neck, shoulders, and upper extremities of the dentists was probably related to difficult work positions with cervical flexion and rotation, abducted arms, and repetitive precision-demanding handgrips.

In 1995, Liss *et al.* surveyed MSDs among dental hygienists in Canada.<sup>10</sup> Using logistic regression models, the number of heavy calculus patients per day, "clock" position around the dental chair, and years in practice were significant predictors of CTS among hygienists. Days worked, time with the trunk rotated, and years of practice were significant predictors of reported shoulder trouble in the past 12 months. The authors emphasized the need to inform hygienists during training and continuing education about musculoskeletal problems in general and CTS in particular. They stated that attention should be directed to areas such as workstation design, posture, treating patients with heavy calculus, and scheduling rest periods. A study by Osborn *et al.* among dental hygienists in Minnesota reported similar findings.<sup>11</sup>

Lehto *et al.* surveyed musculoskeletal health in 131 professionally active dentists as part of a comprehensive health examination.<sup>12</sup> Forty-two percent of dentists had experienced pain and interference with daily activities by neck-shoulder problems during the preceding year, with a tendency to greater prevalence in salaried dentists than in private practitioners. Thirty-seven percent experienced lower back problems. Symptoms of stress, perceiving dentistry as physically or mentally too taxing and a poorer general health status rating were all associated with a greater one-yr prevalence of neck-shoulder and lower back pain and disability and with poorer general physical fitness. Age, weekly work hours, working posture, use of an assistant, or radiographic degenerative changes in the dentist's skeleton were not associated with one-yr prevalence of neck-shoulder or lower back pain and disability.



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## **Chapter 7: Quality Assessment and Improvement**

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### **Introduction to Quality Assessment**

The IOM's definition of quality in medicine, developed in 1990, is widely accepted: quality is “the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.” Dimensions of quality healthcare include the following:

- Patient perspective issues (e.g. patient satisfaction)
- Safety of the care environment
- Accessibility

- Appropriateness
- Continuity
- Effectiveness
- Efficacy
- Efficiency
- Timeliness of care (JCAHO, 1994)

The dental program must provide quality services to the population it serves if it is to achieve its mission. The provision of quality clinical services relies on having a quality professional workforce working in an environment that both requires and supports the provision of quality care. Unfortunately, quality assessment and peer review by themselves cannot guarantee that standards of care are being met on a patient-by-patient, procedure-by-procedure, or day-by-day basis; the maintenance of professional standards of care rests with the provider. However, even the most highly skilled and ethical providers will not be able to provide the highest possible quality of services unless the policies, processes, and systems under which they work support that level of care.

This chapter will discuss how the clinic can assess, maintain, and improve the quality of its clinical services and administrative processes. For the remainder of this chapter, the abbreviation “QA/I” will be used for quality assessment and improvement.

### **Historical Perspective**

Quality Assessment (QA) in the IHS dental program began in the late 1960s with the development of criteria to assess technical quality of dental care. These evaluations were originally conducted by area Dental Officers and later by senior IHS dental clinicians specifically trained as QA evaluators.

In 1981, a major revision of the QA document was accomplished. At that time criteria were developed to assess management and community components of dental programs to complement the technical QA criteria. Subsequent to 1981 additional criteria have been developed which address the indirect evaluation of dental care via chart audit, the evaluation of dental disease prevention activities, the evaluation of infection control procedures, and radiologic health and safety. In 1992, the JCAHO subsection was expanded to include examples of important aspects of care, indicators, and a data collection grid to facilitate implementation of the continuous quality improvement monitoring and review process.

After over three decades of evaluation, the quality assessment process has become increasingly complex and broad in scope. Consequently, the original format of “in-mouth” review of patients during a “normal” clinic day is no longer adequate to meet the quality assessment needs of all levels of the IHS Dental Program or the accrediting bodies that survey IHS programs.

To address these multiple areas of need, this chapter addresses several major areas. These include:

- Direct observation of dental care (i.e., a clinical, in-the-mouth review)
- Dental program management
- Community involvement
- Indirect methods of assessing clinical quality (i.e., chart review)
- Infection control
- Clinical efficiency
- Accreditation surveys
- Continuous Quality Improvement (CQI)/Performance Improvement (PI)

Considerable latitude exists for using a combination of the documents and methods presented in this chapter of the *Oral Health Program Guide* to match situational requirements. Each individual utilizing the document should recognize the dynamic nature of its contents and be encouraged to contribute to its improvement. Future experience in the quality assessment arena will permit and foster continued evolution of the program.

### **Evaluation of Clinical Quality**

#### **Determining What Constitutes Clinical Quality**

Because of the technical aspects of dental services, many in the profession equate high clinical quality with the physical characteristics of finished dental services.

- Highly polished silver and gold restorations
- Smooth margins, proper contours, proper occlusal anatomy on restorations
- Good color match on esthetic restorations
- Fit and function of removable prosthetics
- Root canal fills within 1 mm of the root apex
- Removal of all stains and calculus during prophylaxis
- X-rays without overlap or cone cutting
- Low post-extraction complication rate
- Other

Clinical quality can also be measured in other ways that may be more meaningful.

- Making the correct diagnosis

- Providing the appropriate clinical service based on the diagnosis, the patient's desires, and resources available
- Providing preventive and restorative care appropriate to the patient's risk of developing dental disease or risk of having existing conditions progress
- Following appropriate clinical guidelines and protocols

A study performed 20 years ago through the ADA and funded by the Kellogg Foundation looked at those criteria that best correlated with quality of dental care. The study looked at about 30 dental offices. The conclusion was that two criteria – diagnosis and appropriateness of treatment – were the main measures of quality. All other criteria such as quality of the radiographs, quality of restorations, etc. did not correlate well.

In general, there are two methods to ascertain clinical quality in dentistry:

- Direct observation of patient care by a trained observer
- Review of information in the dental record (chart review)

Both of these methods have advantages and drawbacks, and neither is ideal. The advantages and disadvantages of **direct clinical observation** include the following:

Advantages	Disadvantages
Can identify problems in technique that are not discernable through review of chart entries or X-rays	Time consuming – can take one or more days to get a reasonable sample of all of the procedures performed in the clinic
	Requires the consent of the patient
	Can be very intrusive into the clinic flow
Provider-focused, and can review only one provider at a time	Provider-focused, and can review only one provider at a time
	Difficult to focus on a specific aspect of care unless appointments are manipulated to schedule only one type of patient
	Even if there is a problem with the services provided by a dentist, that provider can attempt to hide the problem by practicing with extra care during the time when he/she is being observed
	The process is often disliked by providers, who correctly assert that their counterparts in private practice do not have to undergo such scrutiny in their practices once they have passed a board exam and received a license to practice.

The advantages and disadvantages of reviewing clinical quality through the use of a **chart review** include the following:

Advantages	Disadvantages
Does not require the presence of a patient	Cannot identify problems in clinical technique

<b>Advantages</b>	<b>Disadvantages</b>
	that are not visible on radiographs
Can easily be focused on one aspect of care by only reviewing the charts of patients who received the services in question	
Can review all aspects of the clinical practice by using a random sample of the charts of all clinic users	
A large amount of data can be gathered in a relatively short amount of time	
Much data can be retrieved and recorded by clerical staff on log forms (e.g., presence of absence of signatures, updates of medical histories, etc.) or by computer searches if you have an electronic record	

Evidence exists that there is a relationship between the quality of clinical record keeping and the quality of care provided. Therefore, chart reviews can provide information to determine trends in the quality of the clinical care being provided. If your clinic employs more than one dentist, chart review data can be used in aggregate to measure the overall quality of the clinic. Dentists are often more accepting of clinic-wide reviews than they are of provider-focused reviews.

If ongoing monitoring reveals problems or trends in the clinic data, then the aggregate data can be broken down by provider to see if the trend is provider-focused or clinic wide. Problems present in the records of multiple dentists most likely represent problems with systems or procedures, and should be analyzed from that standpoint. Problems or trends that point to a single provider can be related to either systems problems or to problems with the provider's skills or competence.

## **Peer Review**

In the context of this manual, the term peer review refers to the process of assessing the quality of clinical care provided by an employee, contractor, or volunteer. In this context, it is a process in which the dentist must participate as a condition of employment. The peer review can be a direct clinical evaluation, a review of dental charts, or a combination of the two. It can be conducted on a regularly scheduled basis as part of the QA/I program, or as a focused review in response to a patient complaint or other adverse occurrence. When and how the peer review is conducted should be defined clearly in the clinic's P&P Manual, and all employees should be apprised of the peer review process and standards during their initial orientation. Peer review records should be kept secure and separate from personnel files because they are frequently protected against legal discovery by the federal Healthcare Quality Improvement Act of 1986 and state statutes. They should be labeled as "Peer Review Files" and should be kept in a locked and secure location that is physically separate from the location of personnel files.

Peer review, by definition, should be conducted by a professional peer; for example, a general dentist should review general dentists, a pediatric dentist should review other

pediatric dentists, although in the IHS this might not always be possible. Peer review by chart review can either be performed by the Chief, Service Unit Dental Program or his/her designee (e.g., the Area Dental Consultant (ADC), an outside contractor, an Area Support Center, etc.) or it can be done by having all of the providers review charts and aggregate the data. One of the advantages of having all providers review charts is that the review process becomes a learning experience and each provider gets to see the strengths and weaknesses of multiple chart entries. Peer review by direct observation review is usually done by an ADC or outside consultant.

Regardless of whether the peer review is a clinical review or chart review, the criteria need to be shared with professional staff at the beginning of employment, preferably during orientation. Like any other practice guidelines, the review criteria should be based on the best available science and expert input.

Dentists in private practice do not undergo regularly scheduled peer review. As long as they maintain CDE requirements for license renewal, and have no complaints or malpractice suits filed against them, they may never again have their clinical competence evaluated after having passed a dental licensing exam. Employee dentists may feel threatened or that their knowledge and skills are being questioned when required to undergo routine peer review. However, case law has firmly established that the healthcare organization has both the right and the responsibility to ensure that the services provided by their employees meet the standard of care. It is therefore incumbent on the administration of the clinic to establish a peer review system that is fair, objective, and as palatable to the providers as possible. Failure to consider the professional feelings of the providers can lead to job dissatisfaction and increased turnover in staff, both of which are detrimental to the clinic.

Questions have arisen at times about the legal standing of the dentist performing the review and whether he or she could be held legally accountable if the peer review failed to uncover problems that later lead to findings of negligence against the dentist being evaluated. While it is not possible to predict with 100% certainty that this cannot happen, it is highly unlikely. Under both state and federal laws, a person performing peer review in good faith is well protected. According to Southwick in *The Law of Hospital and Healthcare Administration*, (Second Edition, Health Administration Press, 1988), pages 657 – 666, “members of a peer review, credentials, or similar committee and those who transmit information to a committee will at least be protected by a qualified or conditional privilege for all statements made in good faith, under proper circumstances, and transmitted only to persons having a legitimate interest in the subject matter.”

### **Accreditation Surveys**

Accreditation is a determination by an accrediting body that an eligible healthcare organization complies with applicable standards. IHS facilities have been directed to become accredited by one of the national accrediting organizations. The best-known of the organizations that accredit hospitals and ambulatory healthcare facilities are the JCAHO and the AAAHC. The Centers for Medicare and Medicaid services (CMS) also

accredit healthcare organizations. To date, the IHS has had few, if any, facilities that have undergone CMS accreditation, so no details about this process are included in this chapter.

All of the recognized accrediting agencies require certain levels of quality assessment and quality improvement activities, ongoing program evaluation, peer review, adherence to life-safety standards, and the like. Accreditation offers many more quantitative as well as intangible benefits to a healthcare organization than public recognition alone.

Accreditation can actually enhance the strategic management decision-making process. According to the AAAHC, organizations that have achieved accreditation have indicated that accreditation helps them do the following:

- Find new ways to improve the care and services they offer
- Increase their efficiency and reduce costs
- Develop better risk management programs
- Lower liability insurance premiums
- Motivate staff and instill pride and loyalty
- Strengthen public relations and marketing efforts
- Recruit and retain qualified professional staff members
- Develop alliances with other provider groups such as hospitals and managed care organizations

According to the Joint Commission, several other benefits result from accreditation.

- Identification of strengths and weaknesses with particular attention to areas in which performance may be improved
- On-site education and consultation
- Increased staff morale and enhanced ability to recruit staff
- Public recognition of the organization's commitment to quality
- Eligibility for reimbursement by many third-party payers
- Immediate eligibility to participate in the Medicare program
- Recognition, in most states, of compliance with state licensure requirements

Meeting the requirements of one of these organizations is a way to ensure that your clinic provides quality services in a safe and healthy environment.

The survey process for both organizations will include a walk-through of the clinic and staff interviews. It is essential that all members of the staff be aware of the policies and procedures related to day-to-day activities such as appointments, sterilization, infection control, emergency protocols and procedures, and the like. Their answers to questions



about such matters must be consistent with the written policies and procedures, or deficiencies will be noted. Additionally, dental program procedures in areas such as infection control, sterilizer monitoring, etc. that have similar components elsewhere in the facility must be consistent with the policies and procedures elsewhere in the facility.

Equally important is how deficiencies are handled during the survey process. Both organizations frequently will not deduct points if a noted deficiency is rectified with a new or revised policy, procedure, or protocol before the completion of the survey. Rectification, or formal written plans for change of deficiencies that are noted in the initial clinic walk-through, for example, can serve as an opportunity for your facility or department to make an immediate improvement. Such actions can leave a positive impression with some surveyors, as this type of rapid response by the facility exemplifies the process of cooperative learning and improvement that the accreditation organizations wish to foster during the review process.

### ***JCAHO***

Many IHS facilities that have become accredited have done so through the JCAHO, which calls their QA/I activities “PI.” PI is a prospective way of improving how things work by ongoing monitoring, data collection and analysis, planning, implementation, and reassessment. The details of this process, as well as some simple statistical tools for data analysis are included later in this chapter in the section titled “An In-depth Look at Quality Improvement.”

The focus of JCAHO surveys changes almost annually. Over the past several years some of the areas of focus have included the following:

- Sentinel events
- Root cause analysis
- Failure mode analysis
- Surgical site documentation (e.g., marking surgical sites)
- Prescriptions and medication errors
- Pain assessment and management

With the frequent changes in focus and standards, it is not possible for the OHPG to keep up with the changes and provide a detailed, step-by-step guide on how to prepare for a JCAHO survey. Rather, each dental program needs to be part of the overall survey process within the local hospital or ambulatory care center, and follow the guidelines in the most recent edition of the appropriate accreditation manual. Most facilities appoint a JCAHO coordinator when preparations for a survey begin. The dental program needs to coordinate with this person.

### ***IHS Dental Program and JCAHO Accreditation***

Even though it is difficult to predict how thoroughly a dental program will be evaluated, some historical patterns provide guidance in preparation for future surveys. While the JCAHO has no dental-specific standards, programmatic components that seem to have a higher probability of review include the following:

- P&P manuals
- Credentialing, privileging, and competencies of non-licensed independent practitioners
- In-house quality improvement (PI) programs
- Infection control protocols (must be consistent with the rest of the facility)
- Facilities and biomedical maintenance
- Safety procedures
- Evidence of staff meetings and in-service training
- Drug storage and utilization
- Emergency drug kits
- Nitrous oxide or sedation protocols and maintenance of equipment
- Adequacy of documentation of the medical record for dental treatment procedures

Additionally, the dental program will likely be reviewed for its compliance with the standards governing the JCAHO's current areas of focus, which will change from year to year. The review procedure is becoming more process and outcome oriented, and active ongoing interdepartmental quality improvement is being examined more critically.

### ***AAAHHC***

An IHS or tribal program may attain accreditation through AAAHC. There are a total of 24 standards developed by AAAHC for ambulatory care centers, and several of these standards may apply to all or part of dental operations in an I/T/U facility:

- Rights of Patients (Core Standard)
- Governance (Core Standard)
- Administration (Core Standard)
- Quality of Care Provided (Core Standard)
- Quality Management and Improvement (Core Standard)
- Clinical Records and Health Information (Core Standard)
- Facilities and Environment (Core Standard)

- Anesthesia Services (Adjunct Standard)
- Dental Services (Adjunct Standard)
- Diagnostic Imaging Services (Adjunct Standard)
- Teaching and Publication Activities (Adjunct Standard)
- Research Activities (Adjunct Standard)

For more detail on these and all 24 standards, visit the AAAHC Web site at [www.aaahc.org](http://www.aaahc.org).

The AAAHC Handbook for Ambulatory Healthcare does contain a chapter on Dental Services (Standard 12). This chapter was expanded considerably in the 2006 handbook, now containing 15 specific categories, or “characteristics” that an “accreditable organization” that includes the provision of dental services should have:

1. Dental services provided or made available are appropriate to the needs of the patients
2. Clinical records are maintained according to the requirements found in Chapter 6, Clinical Records and Health Information, of the AAAHC Handbook
3. Anesthesia provided or made available shall meet the standards contained in Chapter 9, Anesthesia Services, of the AAAHC Handbook
4. Surgical services provided or made available shall meet the standards contained in Chapter 10, Surgical and Related Services, of the Handbook
5. Personnel providing dental, surgical, or anesthesia services are prepared to evaluate, stabilize, and transfer medical emergencies that may occur or arise in conjunction with services provided by the organization
6. Dental services are consistent with the definition of dentistry according to state regulations
7. Dental services performed in the facilities owned and operated by the organization are limited to those procedures that are approved by the governing body
8. Dental procedures are performed only by dental health professionals who are licensed to perform such procedures within the applicable state or jurisdiction; and have been granted privileges to perform those procedures by the governing body of the organization (in accordance with the Handbook, Chapter 2.11)

9. Personnel assisting in the provision of dental services are appropriately qualified and available in sufficient numbers for the dental procedures provided
10. An appropriate history and physical is conducted and periodically updated, which includes an assessment of the hard and soft tissues of the mouth
11. The organization develops policies and procedures related to the identification, treatment and management of pain
12. The necessity or appropriateness of the proposed dental procedure(s), as well as alternative treatments and the order of care, have been discussed with the patient prior to delivery of services
13. The informed consent of the patient is obtained and incorporated into the dental record prior to the procedure(s)
14. Imaging services provided or made available meet all the standards of Chapter 17 of the handbook and the organization has guidelines to address the type, frequency and indications for diagnostic radiographs
15. The organization has a mechanism in place to evaluate and monitor dental products that the organization makes available for sale to patients to ensure such practices are done in an ethical manner.

Programmatic components that are likely to receive attention during a AAAHC survey include the following:

- Appointment system/procedures.
- Peer review and privileging activities for providers.
- Nitrous oxide and sedation protocols.
- Instrument sterilization, including sterilizer monitoring, instrument storage.
- Ensure that the clinic is clean and that standard infection control practices are in place and practiced by all employees.
- Safety protocols, including staff knowledge of facility “code” responses, and facility emergency response protocols for various safety situations.
- Emergency protocols, including drug kits and emergency oxygen supplies.
- Drug storage and expiration dates, including both proper storage of material (i.e. temperature) as well as security of certain items such as anesthetic, pharmaceuticals, and anesthetic needles and syringes.
- Facilities and biomedical maintenance.
- P&P manuals (with approval at a higher level of the organization).

- Medical records documentation, including protocols for ensuring continuity of care in the event that patient dental charts are separate from patient medical charts, and compliance with local and IHS standards.
- Informed consent – along with a clearly defined policy and procedure on informed consent within your Departmental manual, informed consent forms should be available for review. Forms for oral surgery, endodontics, nitrous oxide use, and conscious sedation should all be considered for use within a dental department. As physically marking surgical sites intraorally can be impractical due to many factors, a patient informed consent form should be considered that includes a visual representation of the mouth, enabling patients to mark the effected area (i.e. the tooth to be extracted) on the form, in an effort to ensure proper treatment is completed.
- Official policy/guidelines to address type, frequency and indications for diagnostic radiographs taken.
- Ensure that at least one quality assurance study is ongoing in the dental program, and that this quality assurance study follows the format of:
  - Identify/quantify a problem – use RPMS or other database to obtain data to support the problem
  - Propose solutions/interventions that may improve the problem
  - Implement the interventions and re-evaluate in a specific time period
  - After reevaluation, make recommendations for further improvement to the problem
  - Implement revised interventions and continue steps the above steps (see the following section for more detailed information on the PDCA cycle of quality improvement)

Of course, for complete preparation for an AAAHC survey, thorough review of the AAAHC Accreditation Handbook for Ambulatory Healthcare should be completed.

### **An In-Depth Look at Quality Improvement**

The preceding pages of this chapter, along with the associated Appendices, give the reader an overview of quality assessment and evaluation. However, all of these steps, even taken together, are not adequate to meet the standards set by the JCAHO and the AAAHC. To do this, the dental program needs to move beyond quality assessment and into the realm of CQI or PI.

Some dental programs may have the time, expertise, desire, and resources to apply CQI/PI principles to the entire program. At minimum, whenever a significant change is made in a program, such as changing staffing patterns, changing hours of operation, changing the appointment system, etc., CQI/PI principles should be used to identify desired outcomes from the changes and measure progress towards those outcomes.

This section of the chapter will provide background and tools to help the dental program manager who chooses to do so take those additional steps towards continuously improving quality.

### **CQI/PI Details**

#### ***Quality Improvement Process (PDCA Cycle)***



Continuous improvement requires that the improvement process be ongoing. Organizations plan change (**Plan**), pilot test improvements (**Do**), analyze results of the test (**Check**), and institutionalize the change (**Act**). The improvement process then continues from this new baseline of performance. The following internet Web sites give examples of the PDCA cycle and its use:

- <http://www.isixsigma.com/me/pdca/>
- <http://www.hci.com.au/hcisite2/toolkit/pdcacycl.htm>

Quality Improvement (QI) requires a balanced approach wherein planning, doing, checking and acting are all given the attention they deserve. It is common in our society to act without sufficient planning and to try to jump directly from problem identification to the solution. In doing so, the potential for success is compromised and rework or major changes may be required. This situation can be minimized with sufficient and comprehensive planning. This is one of the reasons why data collection and analysis methodologies should be built into every process within the healthcare system.

The QI process improvement model is one that process improvement teams will follow to define and solve problems and improve processes. Like any model, it will not be followed exactly the same way every time. In fact, PDCA is but one of many ways to conduct QI activities; it is presented here in some detail because it is the most commonly used method in healthcare today. Regardless of which model is used, it is imperative to realize that the process is a cycle that is repeated over and over to maximize and sustain improvements. The process must be on-going and continuous.

### **Data Collection**

Data collection methodologies should be designed into each process and service used within the clinic to facilitate future study of that process or service.

Collection of data on clinical services can be accomplished by:

- Chart reviews, if a paper-based patient health record is used
- Computer if an electronic patient record is used
- Direct observation of clinical procedures.

Extraction of clinical data will be much simpler and less consuming of time and other resources if electronic data files of all services delivered to patients are available.

The systems and processes through which the clinical services are delivered have a great impact on the ultimate quality of those services. Therefore, it is necessary to monitor and evaluate those systems and processes on an ongoing basis to maximize quality. Data on patient visits, broken appointments, ordering of supplies, etc., can be gathered by the use of check sheets in an ongoing fashion or can be extracted from computer records if your systems are designed to allow it.

### Data Analysis

From all the tools available to help with quality improvement activities, there are seven basic quality tools that can help teams as they become involved in the quality improvement effort. They are devices useful to help clarify quality issues, analyze data, and improve processes. The difficulty is not in learning how to use each tool (that is fairly simple), but when to use which tool. Experience on teams solving problems and on-going team facilitation and support will make deciding when to use each tool less difficult.

The seven basic quality tools are the following:

- Flow Chart
- Cause and Effect or Ishikawa or Fishbone diagram
- Pareto Chart
- Scatter Diagram
- Histogram
- Run Chart
- Control Chart

### ***Flow Chart***

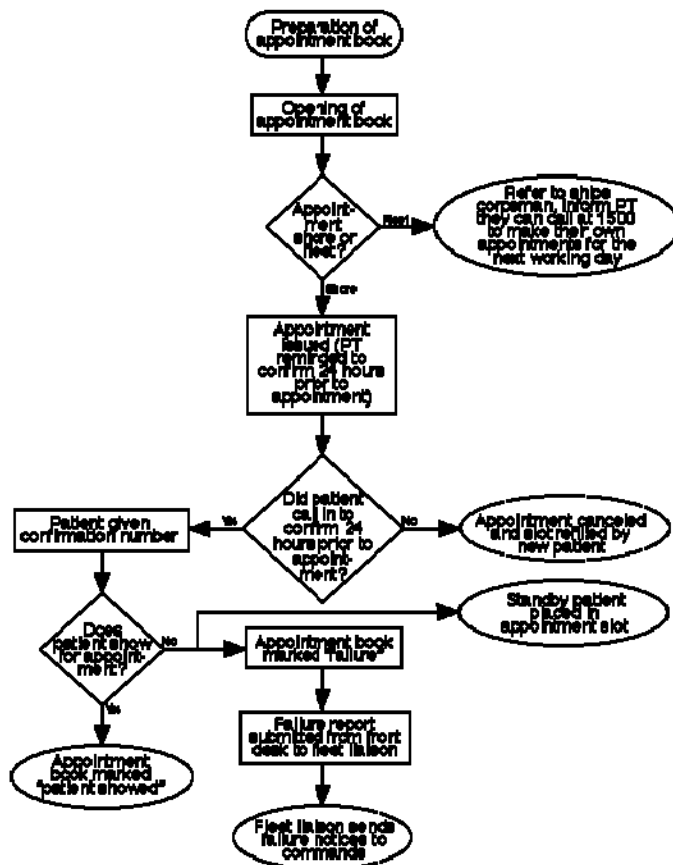
A flow chart is a visual representation of the flow of work within or through a work area. A flow chart can be used to describe a process resulting in a service or a product. It is used to identify how the work progresses, where decisions are made in the process, and what the final outcome is. It can also identify who is involved.

The major components of a flow chart are:

- Beginning activity (start)
- Activity descriptions
- Process flow
- Decisions
- Ending activity (stop)

Click on the following links for more information on flow charts:

- <http://deming.eng.clemson.edu/pub/tutorials/qctools/flowm.htm>
- <http://www.mcli.dist.maricopa.edu/authoring/studio/guidebook/flow.html>



The benefits of a flow chart include the following:

- Helps team members better understand the importance of each individual part of the process and how each part fits into the whole.
- Helps team members to see more clearly the interdependence of the process parts.



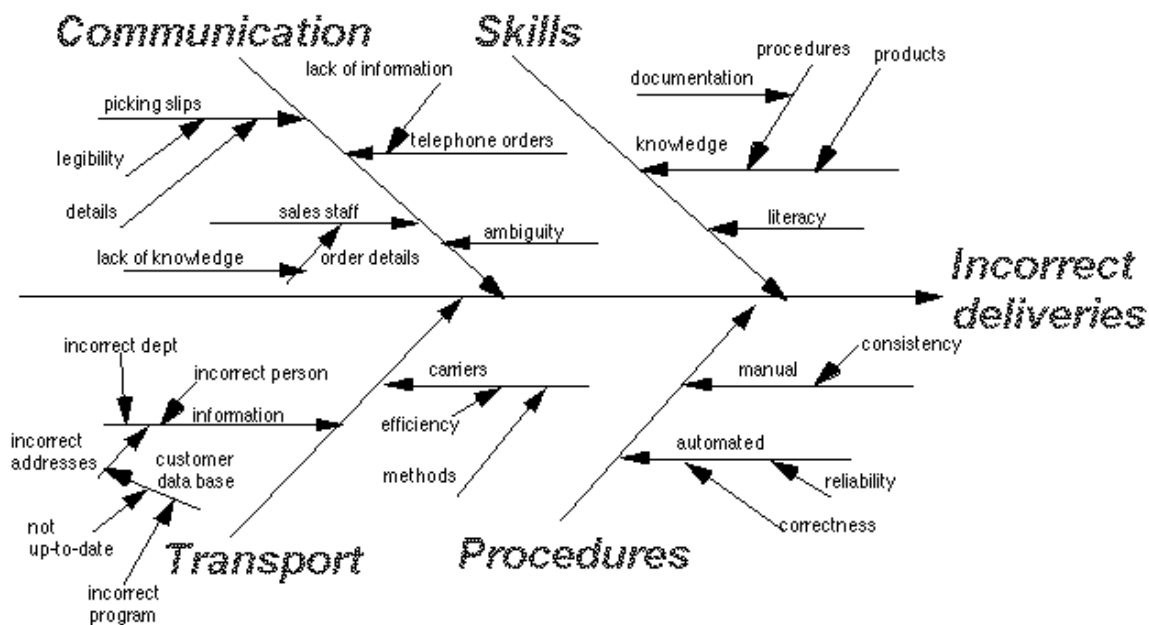
- Allows team members to identify opportunities for establishing process requirements, measurements and control.
- Can help everyone involved in the process understand everyone else's involvement. This can improve:
  - Communication
  - Customer supplier relationships
  - Employee support of the quality effort

A flow chart provides excellent documentation of how a process works and can be a useful tool to help team members uncover potential sources of trouble. Flowcharts are pictorial representations of a process. By breaking the process down into its constituent steps, flowcharts can be useful in identifying where errors are likely to be found in the system.

### ***Caus- and-Effect Diagram***

Click on the following links for additional information on cause-and-effect diagrams

- <http://www.skymark.com/resources/tools/cause.asp>
- <http://www.isixsigma.com/library/content/t000827.asp>



A cause-and-effect diagram is used to categorize and display causes of quality problems and thereby help team members to identify potential areas for improvement. This diagram, also called an Ishikawa diagram (or fish bone diagram), is used to associate multiple possible causes with a single effect. Thus, given a particular effect, the diagram is constructed to identify and organize possible causes for it.

The primary branch represents the effect (the quality characteristic that is intended to be improved and controlled) and is typically labeled on the right side of the diagram. Each major branch of the diagram corresponds to a major cause (or class of causes) that directly relates to the effect. Minor branches correspond to more detailed causal factors. This type of diagram is useful in any analysis, as it illustrates the relationship between cause and effect in a rational manner.

A cause-and-effect diagram:

- Represents the relationship between an "effect" and its "causes"
- Specifies possible causes for an effect
- Visually organizes the causes into categories
- Aids in analyzing complex problems

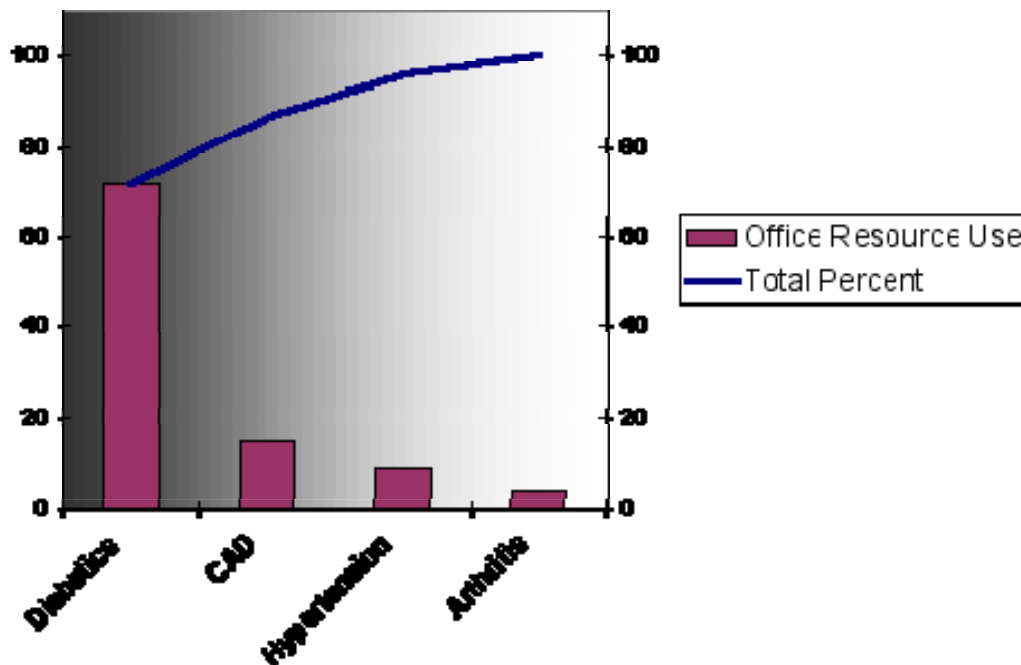
The cause and effect diagram has a number of uses. Some are:

- Sorts and segregates the possible causes of a problem into logical categories
- Identifies areas for data-gathering activity
- Educates participants in the problem solving process
- Serves as a guide for discussions and serves to keep meetings on target
- Can be developed into a complete project management tool that displays actions taken and results achieved

### ***Pareto Diagram***

Click on the following links for additional information on Pareto Charts

- <http://mot.vuse.vanderbilt.edu/mt322/Pareto.htm>
- <http://www.dartmouth.edu/~ogehome/CQI/Pareto.html>



The Pareto diagram is used to help team members identify the most significant causes related to process performance and can, therefore, help with decisions about which factor to address first.

The Pareto diagram is a bar chart with frequency or cost displayed on the vertical axis and causes on the horizontal axis. The causes are ordered along the horizontal axis from most to least frequent (or costly). There is a cumulative line chart above the bars that indicates the cumulative contribution of each cause to the total of all causes. They are created by plotting the cumulative frequencies of the relative frequency data (event count data), in descending order. When this is done, the most essential factors for the analysis are graphically apparent, and in an orderly format.

Pareto charts are extremely useful because they can be used to identify those factors that have the greatest cumulative effect on the system, and thus screen out the less significant factors in an analysis. Ideally, this allows the user to focus attention on a few important factors in a process.

A Pareto diagram can help team members

- Determine relative importance of problems
- Recognize priority order of problems
- Choose a starting point for problem analysis

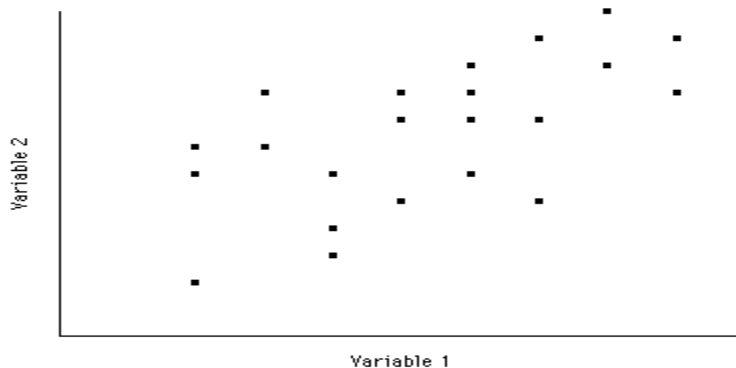
- Display the results of improvement projects when diagrams are compared in a before/after context

The Pareto diagram illustrates what is known as the “80/20 rule.” The diagram is named after Vilfredo Pareto, an Italian economist who noticed that in any economic system, about 80% of the wealth is held by about 20% of the people. Juran extended this idea to the analysis of problems in general. In any problem situation, about 80% of all problems come from about 20% of the possible categories or causes. The trick is to find those 20% and to separate them from the other problem sources. Juran refers to this idea as the “vital few” and trivial many.

### ***Scatter Diagram***

Click on the following link for additional information on Scatter Diagrams:

- <http://web2.concordia.ca/Quality/tools/25scatter.pdf>



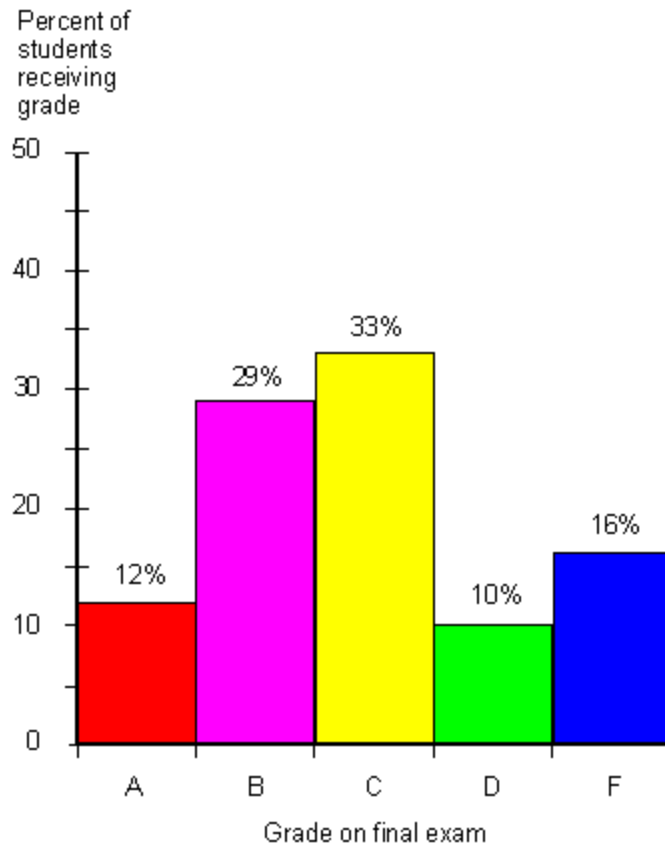
Scatter diagrams are used to determine if there is a relationship between two variables by plotting paired data for the variables on a vertical and horizontal axis. The scatter diagram can help team members understand the type of relationship that exists (if any) and the strength of that relationship.

While a scatter diagram may be used to help determine whether a cause and effect relationship exists between two variables, it will not prove that one variable causes the other. It will only demonstrate whether there is (or is not) a relationship.

### ***Histogram***

Click on the following link for additional information on Histograms:

- <http://www.skymark.com/resources/tools/histograms.asp>



A histogram is a bar graph that depicts how much variation there is in a collection of data and, therefore, in the process being studied. The height of each bar shows the number of data points falling within that interval. There is some variability in all processes and the histogram can help team members understand that variability. Histograms provide a simple, graphical view of accumulated data, including its dispersion and central tendency. In addition to the ease with which they can be constructed, histograms provide the easiest way to evaluate the distribution of data.

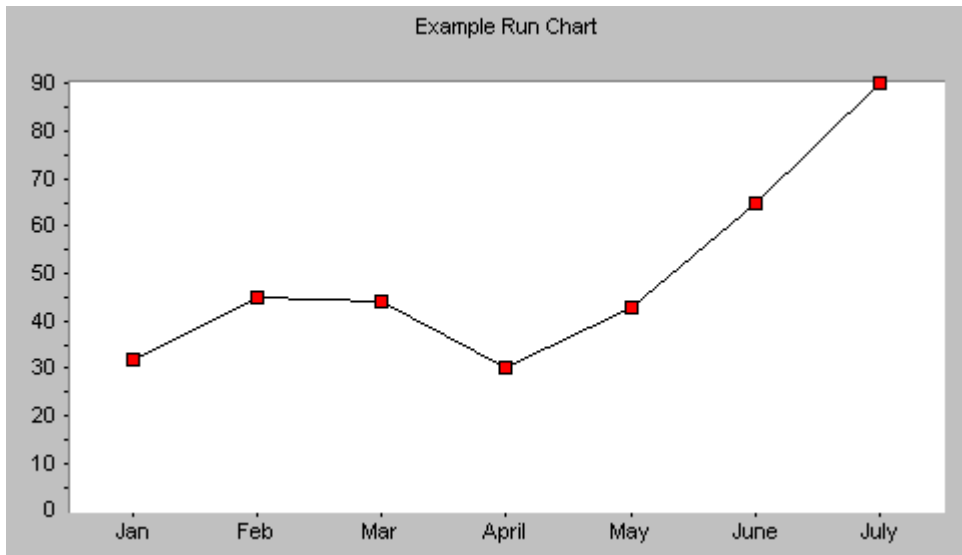
Histograms are used:

- To display the shape of the distribution of data
- To show the pattern of variation in a process
- To summarize and communicate variable data effectively

### ***Run Chart***

Click on the following link for additional information on Run Charts:

- <http://hcpc.uth.tmc.edu/pihome/tools/flowchart4.htm>



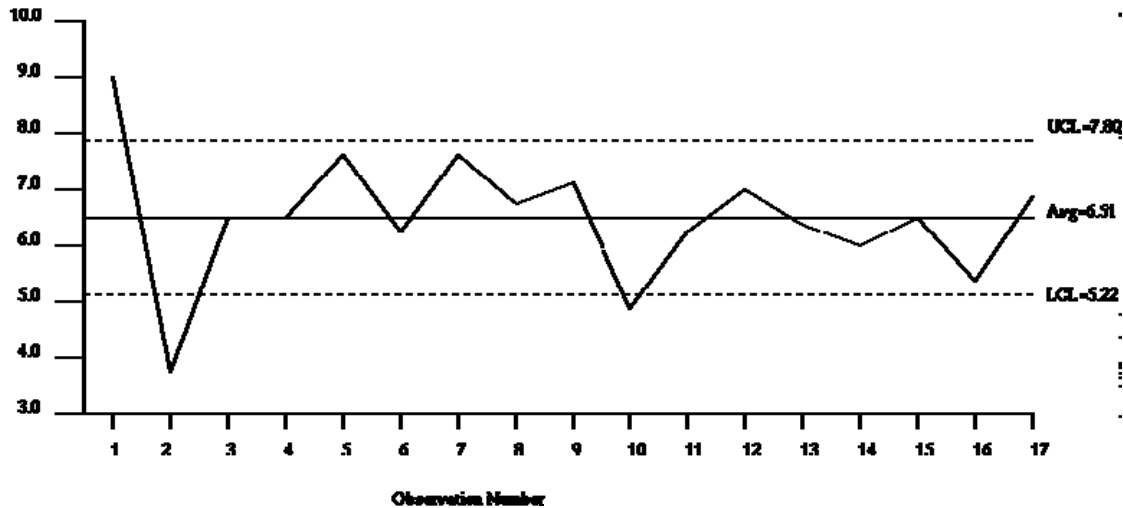
Run charts show changes in the way a process works during a period of time. A quality characteristic is selected, monitored, and plotted at equal intervals for the length of the study.

A run chart is one of the simplest tools to construct. Data are plotted in time order, so the graph aids in understanding how basic characteristics of a process vary and, therefore, how process performance can vary.

### ***Control Chart***

Click on the following links for additional information on Control Charts.

- <http://www.hci.com.au/hcisite2/articles/salesup.htm>
- <http://deming.eng.clemson.edu/pub/tutorials/qctools/ccmain1.htm>
- <http://erc.msh.org/quality/pstools/pscchrt1.cfm>



The control chart is the fundamental tool of statistical process control, as it indicates the range of variability that is built into a system (known as common cause variation). Thus, it helps determine whether or not a process is operating consistently or if a special cause has occurred to change the process mean or variance.

The bounds of the control chart are marked by upper and lower control limits that are calculated by applying statistical formulas to data from the process. Data points that fall outside these bounds represent variations due to special causes, which can typically be found and eliminated. On the other hand, improvements in common cause variation require fundamental changes in the process.

The purpose of constructing control charts is to allow the detection of any trends or changes in processes.

A control chart differs from a run chart in that control limits are statistically calculated for the process based on its typical performance. The data are plotted and compared to these limits. The control chart can help team members determine when a process is operating within expected limits of variation or when something unusual has occurred. It can also be used to monitor the effects of process improvements.

The centerline of a control chart is the mean of the sampling distribution. The upper and lower control limits, called 3-sigma limits, are calculated as the mean plus or minus three times the standard error of the mean.

In summary, a control chart:

- Displays the expected range of variation in a stable process
- Depicts relative stability of a process
- Assists team members with process analysis by illustrating when something unusual happens

- Shows effects of process control and process improvement efforts

### Communicating Results of QI activities?

The end result of effective QI activities will be the delivery of superior services to the population you serve. While this is an excellent end product in and of itself, you should not stop with the knowledge that you are doing a superior job. Share the results of your quality activities with your staff and the community you serve.

QI activities take time, and most or all of your staff will be involved in them at some time or another. Sharing the results with staff lets them know what has been accomplished, and allows those involved to receive some recognition for their work. One tool used frequently in both industry and in healthcare is the use of posters or storyboards.

Storyboards can be posted in public areas of the clinic or in staff-only areas, depending on whether or not you want to share the results with the public. Storyboards serve as a simple graphical representation of the nature of the process being improved, the steps that were taken, and the results that were obtained. Staff will usually be more willing to participate in QI activities if they can see the benefits of their work.

Click on the following links for more information on storyboards:

- <http://gunston.doit.gmu.edu/healthscience/708/storyindx.htm>
- [http://www.hc-sc.gc.ca/ewh-semt/alt\\_formats/hecs-sesc/pdf/occup-travail/radiation/dosim/storyboard-maquette\\_e.pdf](http://www.hc-sc.gc.ca/ewh-semt/alt_formats/hecs-sesc/pdf/occup-travail/radiation/dosim/storyboard-maquette_e.pdf)

Great benefits can also be realized by sharing the results of improvement projects with the public. Patients will appreciate knowing that the clinic is making efforts to ensure the quality of the services you provide. If your clinic provides any of its services through the use of volunteers, the knowledge that your clinic strives for quality should help recruitment and retention of volunteers. Include your results in newsletters. If you become accredited, report successful accreditation surveys to the local press and media.

### Additional resources

- JCAHO <http://www.jcaho.org/>
- AAAHC <http://www.aaahc.org/>
- National Committee for Quality Assurance (NCQA) <http://www.ncqa.org/>

The following internet Web site provides links to numerous sources of information about quality improvement: <http://www.mytapesty.com/qlinks.html>

## **Dental Program Management QI**

The systems and processes of healthcare delivery account for nearly 85% of the problems that have been identified in accreditation surveys by the JCAHO. Improving



administrative functions can therefore have a significant impact on the overall quality of the services provided by the dental program.

In traditional QA reviews, the aspects of care that were selected for retrospective review were those that were high volume, high risk, and/or problem prone. These criteria can be used to determine where to best focus limited resources to achieve the maximum gain. Administrative functions that should be considered include, but are not limited to the following:

- Purchasing/inventory management including expiration dates of supplies
- Referrals and the continuum of care
- Appointment system, including broken appointments
- Patient complaints
- Recruitment and retention of staff
- Patient satisfaction
- GPRA
- Other

#### Purchasing/Inventory Management

The clinic will need to either maintain stocks of dental supplies and materials or rely on just-in-time ordering. The former method of inventory management requires adequate space to store supplies, and the latter method requires an efficient inventory tracking system and ordering system. If either method fails, clinical care can suffer due to lack of adequate or appropriate supplies to provide scheduled services.

The quality and effectiveness of the inventory management system therefore should be monitored. A simple way to do so is to maintain a log of the system. Items that can be tracked on the log include, but are not limited to the following:

- Stocked supplies that go out of date before being used
- Frequency of emergency purchases (which usually cost more than routine purchases)
- Just-in time orders that are not received on time (compare with the number that are received on time to measure the effectiveness of your system and your suppliers)
- The turn-around time for receipt of orders from your various suppliers
- Number of times that supplies run out

#### Referrals and Continuity of Care

Maintain a log of all biopsies performed, when where the specimens were sent, when the results were received, final diagnosis, when the patient was notified of the results, and any follow-up provided. Review the log at least quarterly to insure that your biopsy protocols are being followed.

Maintain a log of all referrals made to other medical/dental professionals and any consultations or reports received from these referrals. Review the log on a regular basis to insure that appropriate follow-up is being provided on all referrals.

### Appointment System, Including Broken Appointments

Probably no other system within your clinic will have as much influence on your ability to meet your mission as the appointment system. Many dental clinics find that their ability to provide services is overwhelmed by the demand for those services, and the appointment system is the gateway through which most of the clinic's patients enter into treatment. When demand is greater than the clinic's ability to provide appointments, broken appointments not only decrease the efficiency of the provision of services, they also limit access to those people who are trying to get into the appointment system.

The clinic should keep a log of broken appointments and track them as a percentage of the total appointments scheduled. This can be done by physically counting the number of broken appointments on a daily or weekly basis, or by doing a computer search for broken appointments if your information systems allow you to do so.

Another easy way to track broken appointments is to graph the number per day or week longitudinally over time. Any changes in the number of broken appointments per unit time will be readily apparent in graphical form. Since many clinics have found that broken appointments tend to increase as the time interval between appointments increases over three weeks, the broken appointment rate should be compared with how far in advance appointments are scheduled. Other comparisons, such as with the arrival of new staff, changes in clinic hours, etc., should also be made to help you determine the most effective and efficient parameters for your appointment system.

### Patient Complaints

Patient complaints can be a valuable source of information about how your patients view the clinic. The clinic should maintain a log of all verbal and written complaints received. The log should include the date of the complaint, the nature of the complaint, who handled the complaint, how and when it was resolved, and whether or not the patient was satisfied with the solution. Track the log on at least a quarterly basis to see if there are any trends in the nature of complaints being received. If trends do occur, try to find ways to improve the process or system that is the subject of the complaints.

### Recruitment and Retention of Staff

The costs of recruiting, orienting, and training staff are high, as are the costs of downtime when staff are not available. One method to help with staff retention is to conduct

structured interviews or surveys with all departing staff to ascertain their reasons for leaving, and then analyze and use the information to improve your staff retention program.

Click on the following link to read more about exit interviews:  
[http://www.nobscot.com/about/what\\_is\\_an\\_exit\\_interview.cfm](http://www.nobscot.com/about/what_is_an_exit_interview.cfm)

Click here for examples of exit survey instruments:

- <http://www.rdc.noaa.gov/~hrmo/exit-sample.htm>
- [http://www.psc.gov/survey/exit/exit\\_1.htm](http://www.psc.gov/survey/exit/exit_1.htm)

Job satisfaction is a major determinant of staff retention. Dentistry is currently in an era where over 6000 dentists are leaving the profession annually and only around 3000 new dentists are entering the profession each year. If a dentist is dissatisfied with his/her job at the clinic, there are countless opportunities for him/her elsewhere. In many areas of the country, there are also shortages of dental hygienists and trained dental assistants. The routine use of staff satisfaction surveys will allow the administrator of the clinic to identify problems and trends before they lead to loss of staff.

Staff satisfaction surveys should provide the following benefits:

- Provide information on which to base actions directed to
  - Improve employee performance
  - Improve quality of service
    - Speed
    - Courtesy
    - Accuracy
  - Improve customer satisfaction
  - Improve employee retention
  - Reduce employee sick leave or other absences
- Demonstrate management's commitment to listening to employees views
- Fulfill commitment made to a union or other employee representative body

Staff satisfaction surveys should be developed, administered, analyzed, and utilized in much the same manner that will be described for patient satisfaction surveys in the next section. You must assure that all responses on staff satisfaction surveys are anonymous so that staff will not feel threatened if they provide negative answers or other criticism of the clinic, its administrators, or its programs.

Topics frequently included in staff satisfaction surveys include the following:

- Management/supervision

- Technical competence
- Management skills
- Variety on the job
- Authority
- Responsibility
- Sense of achievement
- Training and development
- Working conditions
- Job security
- Communication
- Recognition
- Compensation
- Attitude to quality
- Attitude to customer satisfaction
- Fulfillment of personal goals
- Identification with organization and its goals
- Career progression
- Teamwork

### Patient Satisfaction

In recent years, patient satisfaction has become one of the most studied patient outcomes. A well-constructed patient satisfaction survey will reveal much about the positive and negative aspects of your program; it will tell you if you are meeting the perceived needs of your service population.

One frequently-used method to begin the development of a patient satisfaction survey is to assemble a focus group consisting of key staff members, patients, and other community members. Through group processes such as brainstorming, nominal group process, and multivoting, this focus group can arrive at a group of topics that are of concern to the staff, administration, and clinic users. Questions for the survey can then be developed from the list of topics that the focus group agreed on. Once the survey instrument has been completed, the focus group can also be used to pilot test the instrument to ensure that it is gathering the information that the group wants to collect.

Click on the following internet links to view descriptions and definitions of the group processes mentioned above:

- <http://www.jpb.com/creative/brainstorming.html> for information on brainstorming
- <http://www.rand.org/publications/MR/MR1267/mr1267.appe.pdf> for information on the nominal group process
- <http://www.aafp.org/fpm/990500fm/improving.html> for additional information on the nominal group process

There are few scientifically validated patient satisfaction surveys available for ambulatory healthcare in general or dentistry in particular, and every clinic and service population will have unique problems and concerns, so you will probably need to develop your own survey instrument.

- Consider the average educational level of the population for which it is intended. Questions should be understandable to the majority of those who will fill it out, without being condescending.
- If your service population is bilingual or multilingual, translate the survey into the appropriate languages, without introducing misunderstanding or bias.
- State all questions clearly and concisely.
- Word questions neutrally so as to not lead the respondent to a desired answer or otherwise introduce bias.
- Simple yes/no or true/false questions are easily interpreted and easy to analyze, yet fail to identify areas in the middle.
- Many patient satisfaction surveys use the five-point or seven-point Likert scale to attempt to quantify the middle ground.
- Multiple choice responses and written answers can also be used, but they tend to be more difficult to analyze statistically.
- Ask for comments and suggestions at the end of the survey; respondents are likely to point out areas of concern or satisfaction
- Keep it short and simple (one page or less whenever possible); your user population will be more likely to participate if it does not take too much time

Use a font of at least 12–14 points to make it easy to read

Click on the following links for examples of dental patient satisfaction surveys:

- [www.usetinc.org/images/images\\_sub/114/CHS%20Patient%20Satisfaction.doc](http://www.usetinc.org/images/images_sub/114/CHS%20Patient%20Satisfaction.doc)
- <http://www.nvo.com/emisar/patientsatisfactionsurvey/>

- [http://www.dentalclinicmanual.com/chapt5/section\\_03/topic\\_03/attachme nts/DoD%20pt%20sat%20survey%20form.pdf](http://www.dentalclinicmanual.com/chapt5/section_03/topic_03/attachme nts/DoD%20pt%20sat%20survey%20form.pdf)

The manner in which you administer a survey will greatly influence the results you receive. You should choose the method that you feel will give you the most valid results.

- All responses must be completely voluntary
- Administration of the survey must be random
- Assure respondents that their care at the clinic will not be impacted by their willingness or refusal to participate in the survey
- All responses must be kept anonymous
- The survey form can be:
  - Given to patients in the clinic as they complete their appointment
  - Mailed to a random sample of registered users
  - Administered by a trained surveyor, either by phone or in person (in the clinic or at the respondent's home), who poses the questions and then marks answers on the form

If your clinic does block scheduling (e.g., all pediatric patients on a certain half day, or all restorative patients on a certain day), then the patient mix on any given day will be influenced by the block being scheduled. Therefore, if the survey is presented to patients as they complete their appointments, you will need to ensure that a random sampling of all of your patients is obtained by conducting the survey on several days of the week.

Bias can also be introduced by only surveying the users of the clinic and not seeking responses from those who are eligible to use your services but choose not to. Valuable information can be obtained from non-users. Therefore, you may want to consider a community-based survey rather than a clinic-based one. If the community has a local college or university, or a health professions school or school of public health, you may be able to utilize local students to conduct a community-based survey as part of a class assignment or internship.

A Likert scale measures the extent to which a person agrees or disagrees with the question. The most common scale is 1 to 5. Often the scale will be 1=strongly disagree, 2=disagree, 3=not sure, 4=agree, and 5=strongly agree. If true/false or Likert scale responses are used in your survey, then a simple frequency distribution of the responses for each question is a simple and effective method to analyze the responses.

Click on the following internet links for more information in the use of Likert scales:

- <http://www.cultsock.ndirect.co.uk/MUHome/cshtml/psy/likert.html>
- [http://www.icbl.hw.ac.uk/ltdi/cookbook/info\\_likert\\_scale/](http://www.icbl.hw.ac.uk/ltdi/cookbook/info_likert_scale/)

If the survey was designed to allow easy data entry, then the analysis of the data by a spreadsheet, database, or statistical software will simplify the process. As a general rule of thumb, any question that yields a negative response rate of greater than 10% of the respondents identifies an area that should be further investigated as part of the clinic's QA/I process.

It is generally a good idea to repeat the survey at least twice a year. Whenever possible, the same questions, worded the same way, should be used on subsequent surveys to allow for the identification and tracking of trends. If the wording of questions is changed, then the meaning to the respondents may change enough to make the responses no longer comparable from survey to survey. If new items of concern arise between surveys, then new questions can be added, and items that are no longer of concern can also be dropped.

Results of patient satisfaction surveys can be most useful in providing direction for your QA/I program. As indicated in an earlier paragraph, areas of significant dissatisfaction among your clinic users point to problems that should be addressed. Areas where the responses from survey to survey show a negative trend are also areas where QA/I activities could be focused. Conversely, if your QA/I program addresses an area of dissatisfaction, and subsequent surveys show positive trends or resolution, then that question can be dropped from the survey instrument.

Autodata Systems, on the internet at <http://www.autodata.com/>, offers a package of software, *Survey Plus 2000*, and a scanner that will create and read survey forms and automatically compute frequency distributions and other statistics. While a system such as this is not necessary, it can save significant time in compiling and analyzing survey data.

Click on the following links for examples of dental patient satisfaction surveys currently in use.

- [http://www.dentalclinicmanual.com/chapt5/section\\_03/topic\\_03/001-frameset.html](http://www.dentalclinicmanual.com/chapt5/section_03/topic_03/001-frameset.html)
- <http://www.dental.washington.edu/accred2002/Standard%205/Standard%205%20Appendices/5-1K%20Patient%20Satisfaction%20Survey%20and%20Report.pdf>

#### Other Monitoring And Assessment Activities

- Sterilizer monitoring
- X-ray developer
- Waterline decontamination
- Curing light intensity
- Preventive maintenance
- Licenses and certifications (Credentials Review)

- Emergency kit expiration dates
- Fire drills
- Fire extinguishers
- Emergency oxygen canisters
- Nitrous oxide/oxygen conscious sedation units
- Infection Control
- Refrigerator temperatures
- X-ray dosimetry badges
- Other

### **Summary**

QI can be an integral part of the operations of any dental program. QI is an ongoing process that should be designed into every system and process of the organization so that it becomes the normal way of doing business rather than just a paperwork burden. QI requires the participation and input of all employees and is best conducted through team-related activities. While some processes need to be monitored on a regular basis (daily, weekly, quarterly, etc.), all functions of the organization should be reviewed at least annually to ensure that they are performing according to QI plans, strategic plans, or other organizational objectives.



## **Appendix I: Responsibilities And Guidelines For Implementing The QA System**

### **Responsibilities And Guidelines For Implementing The QA System**

1. The overall responsibility for the quality of healthcare in the area lies with the Area Director, with specific responsibility for quality of dental care falling to the ADC or other senior Dental Program staff. Other programs implementing this system will have administrative lines of authority which will modify this requirement. The Chief dentist of every program, however, should assume the responsibility for the day-to-day quality of the program and services provided.
2. Private dentists or dental hygienists under IHS contractual agreement working in IHS or Tribal clinics should be evaluated periodically by a trained evaluator, utilizing the methodology described in this chapter and standard IHS evaluation criteria/indicators. The need for such reviews should be spelled out in the provider's contract, and contract providers should be oriented to the review standards/criteria at the time they start working.
3. The person being evaluated must be provided the criteria/indicators and standards for the evaluation prior to the evaluation. No evaluation can be conducted upon services provided or methods employed prior to the time the person being evaluated was provided the criteria and standards for the evaluation.
4. The evaluation will be by personal contact between the evaluator and person being evaluated and review of existing records as appropriate.
5. Contact with the Service Unit Director or the Tribal Health Administrator is a requirement before the evaluation. A sample letter for follow up of this contact is suggested in Appendix VIII.
6. Tact and discretion must be preeminent throughout the evaluation process. The dignity of the person being evaluated must be preserved in all instances.
7. When the quality of a service provided is considered questionable by the evaluator, but is not definitely unsatisfactory, the decision must be in favor of the person being evaluated and rated satisfactory.

8. Differences in training backgrounds are recognized as sources of potential philosophical differences in criteria for dental procedures performed by dental practitioners. Differences may also arise between the evaluator and person being evaluated as to the extent or significance of a deficiency for any criterion. A mechanism is provided for addressing these differences. If concurrence of satisfactory or unsatisfactory cannot be agreed upon through discussion between the evaluator and person being evaluated, the criterion will not be counted as unsatisfactory. However, the nature of the dispute concerning the criterion will be documented in a narrative summary. Where it is possible that the discussion of the disputed criterion can take place without the person being evaluated returning to observe the deficiency, discussion of the disputed criterion will be delayed until the closeout meeting. This process can be applied to any disputed criterion in Chapter VII.
9. The evaluation must include a confidential closeout meeting where all reports are signed by both the evaluator and person being evaluated. Reports for each survey tool are included in the respective appendices.
10. The person being evaluated and responsible administrative authorities (Service Unit Director, CEO, Facility Director, Clinical Director, Tribal Health Director, and/or other similar titles) must be advised of all evaluation findings. Further dissemination of findings must be by mutual consent of the person being evaluated and responsible administrative authorities.
11. The person being evaluated has the right of appeal for a reevaluation by the same or a different evaluator.

## **Appendix II Criteria For Quality Assessment By The Direct Observation Of Patient Care**

### **Criteria for Quality Assessment by the Direct Observation of Patient Care**

#### **General Instructions**

1. This technical review tool is designed to assess the quality of care provided by an individual provider by direct observation (by a trained evaluator) of the services being provided.
2. The provider being evaluated and the Service Unit/Facility director/Tribal Administrator must be notified of the review in advance of its taking place. A sample letter is provided in Appendix VIII. In all cases, the administrative authority of the clinic in question must give permission before the review can be performed.
3. Tact and discretion must be preeminent throughout the evaluation process. The dignity of the person being evaluated and of the patient must be preserved in all instances. The patient's consent is required before the evaluator can check the patient. This is most frequently accomplished by the dentist being evaluated introducing the evaluator to the patient, explaining the nature of the review, and asking if the patient minds having the evaluator observe the services being provided. Verbal consent is adequate for this purpose.
4. When the quality of a service provided is considered questionable by the evaluator, but is not definitely unsatisfactory, the decision must be in favor of the person being evaluated and rated satisfactory.
5. Differences in training backgrounds are recognized as sources of potential philosophical differences in criteria for dental procedures performed by dental practitioners. Differences may also arise between the evaluator and person being evaluated as to the extent or significance of a deficiency for any criterion. If concurrence of satisfactory or unsatisfactory cannot be agreed upon through discussion between the evaluator and person being evaluated, the criterion will be marked as "disputed" in the grid and the nature of the dispute concerning the criterion will be documented in a narrative summary.
6. The evaluation must include a confidential closeout meeting where all reports are signed by both the evaluator and person being evaluated.
7. The person being evaluated and responsible administrative authorities must be advised of all evaluation findings. Further dissemination of findings must be by mutual consent of the person being evaluated and responsible administrative authorities.

8. The person being evaluated has the right of appeal for a reevaluation by the same or a different evaluator.
9. All criteria must be met to score “Yes.”
10. For each category, if procedures were not performed or are not applicable, mark Not Applicable (NA).

**A. Patient Records**

1. The patient dental records are part of the patient’s primary healthcare record, and
  - 1.2. The health record is available for review.

*Method to Assess Criterion:* Review of the primary health record.

*Note:* Criterion #1 does not apply in certain locations where the dental clinic is not attached to an outpatient medical facility. However, the primary health record should still be accessible for review.

2. The patient’s dental health record contains a current (completed within the last year) health questionnaire containing items of specific significance to dental practice.
  - 2.1) Documentation exists in the patient record that this information was updated annually and
  - 2.2) Reviewed by the dentist at each visit, with documentation of changes or “no changes” in the patient’s medical status.

*Method to Assess Criterion:* Review the patient dental record for a health questionnaire containing, at a minimum, questions on current M.D. care, recent illnesses, cardiovascular disease (including rheumatic fever), liver disease, diabetes, convulsions/seizures, drug allergies, latex allergy, bleeding tendencies, current medications, harmful habits, pregnancy, blood transfusions, and sexually transmitted diseases.

3. For each “Yes” response on the health questionnaire there is documentation that follow-up questions have been asked.

*Method to Assess Criterion:* Review the Dental Progress Notes for follow-up information related to each “Yes” response on the health questionnaire.

4. All entries in the patient dental record are recorded in ink.

*Method to Assess Criterion:* Review of patient dental record.

5. All entries recorded in the patient dental record follow instructions for completing Form IHS 42-1. Services rendered are recorded on the Dental Progress Notes (Form IHS 42-2) in sufficient detail to determine: date of service, tooth/teeth, quadrant/sextant, type of local anesthetic, local anesthetic dosage in milligrams, name and dosage of other drugs administered, materials used, complications, provider (signature and degree), procedure code, and fee, if applicable. Universally understood symbols or a key are provided in clinic protocols for understanding the recording. Abbreviations used are approved by the Medical Staff.

*Method to Assess Criterion:* Review of patient dental record.

6. For emergency visits the Subjective, Objective, Assessment, Plan (SOAP) (or similar) format will be used in sufficient detail to document chief complaint, objective findings, diagnosis, and treatment plan.

S – Subjective findings, i.e., the chief complaint in the patient’s words (or paraphrased), such as “it hurts when I chew, patients points to #3.”

O – Objective findings, i.e., the clinical and radiographic findings such as “tenderness to percussion tooth #4, or “apical radiolucency tooth #3.”

A – Assessment or differential diagnosis, e.g., “acute apical Periodontitis tooth #4.”

P – Plan, or treatment rendered, in adequate detail to stand up in court.

*Method to Assess Criterion:* Chart review.

## **B. Examination and Diagnosis**

1. Existing hard and soft tissue findings obtained by clinical and radiographic examination are recorded in patient’s dental record.

*Method to Assess Criterion:* Immediately following the completion of the clinical examination provided by the attending dentist, the examiner refers to the patient’s dental record and clinically examines the same patient. The same light, mouth mirror, and explorer used by attending dentist are used by the examiner. Determine if radiographic findings are identified and recorded.

2. Other diagnostic aids such as pulp testing, cytology, biopsy, or blood pressure screening are used and recorded in the patient record when indicated.

*Method to Assess Criterion:* Review patient dental record for appropriate use of other diagnostic aids. Review patient dental record for appropriate

use of other diagnostic aids. A blood pressure screening is to be performed on all patients at their first visit (exam or emergency) within one year of the last blood pressure screening. This applies to patients age 18 and older. For those patients with a history of hypertension, those currently being treated for hypertension, or those who are diabetic, the blood pressure screening should be performed at each visit regardless of age.

3. Diagnosis is consistent with findings.

*Method to Assess Criterion:* Chart review.

4. A plan of treatment is available in the patient dental record

4.1) And follows, in general, the following order:

- a. Relief of pain and discomfort, including nonelective surgery
- b. Elimination of infection and factors predisposing to pathologic conditions
- c. Thorough prophylaxis, instruction in oral hygiene, and other oral disease preventive therapies
- d. Treatment of caries
- e. Non-surgical periodontal treatment which is incremental and based on assessment of the patient
- f. Elective care
- g. Documentation of patient acceptance of treatment plan, including signed consent by patient, parent, or legal guardian
- h. Scheduling of minimum of appointments to complete treatment

*Method to Assess Criterion:* In evaluating the plan of treatment, take into account the choice of treatment, the types of restorations, and the age, sex, and general health of the patient. The plan should reflect progressive changes in the patient's dental status as each phase of treatment is to be completed. The plan should be sufficiently flexible so that it may be altered to accommodate unanticipated results of previous treatment. The plan should be considered tentative and subject to modification throughout the course of treatment. Any changes in the treatment plan require documentation.

4.2) Treatment plan is consistent with diagnosis.

*Method to Assess Criterion:* Chart review.

5. A Screening Exit Exam will be conducted during the last visit for all routine patients.

*Method to Assess Criterion:* Chart review and direct observation. It is strongly recommended that the Screening Exit Exam for both caries and periodontal status be included in the patient's initial treatment plan. The exit exam must include a final CPITN for those patients who were initially diagnosed with any sextants of CPITN 2, 3, or 4.

## C. Radiographs

1. All radiographic exposures shall be ordered by the dentist according to patient conditions, or meet written criteria for type and frequency described in the clinic policy. The types and frequency of radiographs should meet the following broad classifications:

### 1.1) Initial Adult:

An initial radiographic examination, consisting of posterior bitewings supplemented with anterior and/or posterior films and/or panoramic radiographs, as required by oral conditions, is recommended for all individuals *15 years old and older*. Panoramic or full-mouth intraoral radiographic films are appropriate when the patient presents with clinical evidence of generalized dental disease or a history of extensive dental treatment.

### 1.2) Initial Child:

Prior to the eruption of the first permanent tooth, bitewing films (where interproximal surfaces cannot be visually inspected) are supplemented with anterior and posterior periapical films, as required by oral conditions. Individualized radiographic examinations consist of a periapical/occlusal or panoramic examination when clinical evidence or history indicate the need for additional radiographic examination. A full-mouth radiographic exam (panoramic or intraoral periapical) is performed *beginning at age 9*.

### 1.3) Recall:

1. Bite-wings and/or periapical radiographs should be taken at intervals as required by the patient's general condition.
2. In the absence of specific indications for more frequent radiographs, a panoramic radiograph or full-mouth intraoral periapical series should not be taken more often than once every five years.

### 1.4) Emergency Examination:

An appropriate diagnostic radiographic examination of the area in question.

*Method to Assess Criterion:* Review of patient dental record, clinic policy manual, and observation.

2. Dental radiographs are mounted,
3. Dental radiographs are labeled with the patient's name, chart number, and date
4. Dental radiographs are contained in the patient's dental record.
5. Density and contrast of radiographs are such that anatomical hard and soft tissue landmarks can be differentiated.
6. Radiographic image size is not distorted in the area of the mouth under study.
7. Radiographs disclose no overlapping of image in the area of the mouth under study, except where tooth alignment does not permit open contacts.
8. Radiographs disclose no cone-cutting.
9. Bitewing radiographs include the distal surface of the erupted cuspids and mesial surface of the most posterior erupted teeth.

*Method to Assess Criteria C2 to C9:* Assess the radiographs taken on patients present in the clinic during the evaluation visit and/or review radiographs taken within the previous six months, selected randomly from the files. The radiographs should be viewed with a radiographic illuminator (view box). Apply the applicable criteria to each radiograph and determine diagnostic acceptability. The anatomy in the area under study should be visible and of diagnostic quality.

Criterion C7 is not applicable for the permanent dentition, unless the patient is in the clinic for observation of the dentition to rule out crowded teeth as a cause of overlapping.

*Note:* If a radiograph has a deficiency which does not compromise the diagnostic value, the radiograph will be considered acceptable. However, the deficiency should be pointed out to the person being evaluated.

#### **D. Radiological Protection**

1. All dental auxiliaries who take radiographs will be currently certified in radiology.

*Method to Assess Criterion:* Observe posting of current certificate or review documentation showing that auxiliaries are certified.



2. Lead protective devices are used on each patient during all exposures.

*Method to Assess Criterion:* Observe directly whether the lead protective devices are placed in a manner that will protect the patient. The IHS Manual, Section 3 (Professional Services), Chapter 21 (Medical Imaging Program), 5E(4) (Procedures Applicable to Dental Units) and IHS Circular No. 91-2 (Diagnostic X-Ray Radiation Protection) both state, "A thyroid protection shield shall be used on children and teenagers during dental radiographic examinations.". As existing lead apron devices need replacement, lead apron devices with integrated thyroid shields should be purchased. Thyroid shields shall be used if they are currently available in the dental clinic.

3. The tube housing or cone shall be stationary and

3.1) positioned in close proximity to the film positioning device or skin of the patient when the exposure is made.

*Method to Assess Criterion:* Observe directly whether the tube housing or cone is stationary and within 1/4" or less of the film positioning device or skin of the patient when exposure is made. Also, observe processed radiographs for evidence of blurred images from movement of the tube head.

4. During exposure, radiographic film is not held in position by attending staff.

*Method to Assess Criterion:* Directly observe whether attending dental staff is holding film in position during exposure.

5. During exposure, tube housing or cone is not held by attending staff or patient.

*Method to Assess Criterion:* Directly observe whether attending staff or patient is holding the tube housing or cone during exposure.

6. Operator is at least six feet from patient and not in the path of the primary beam or stands behind protective barrier during exposure.

*Method to Assess Criterion:* Directly observe the distance and location of the operator when the x-ray machine is activated.

7. Only necessary persons are allowed in radiographic area during exposure.

*Method to Assess Criterion:* Directly observe whether unnecessary persons are in the x-ray area during exposure.

8. A warning signal is given prior to pushing the x-ray activator button.

*Method to Access Criterion:* Directly observe whether operator calls out “x-ray” or gives some other warning prior to activation of machine.

9. Dosimeters (film badges) are worn by all dentists, hygienists, and dental assistants.

*Method to Access Criterion:* Directly observe whether a dosimeter is worn by each dental staff member.

10. Protective devices are properly stored to reduce creasing and damage.

*Method to Assess Criterion:* Directly observe whether lead protective devices are properly stored to reduce creasing and damage.

11. Radiological reports are maintained: quarterly report of dosimetry, annual calibration of radiologic equipment, annual evaluation of patient lead protective devices.

*Method to Assess Criterion:* Directly observe whether reports are on file and current.

## **E. Prevention**

1. The patient dental record contains an individualized disease prevention plan based on the patient’s status and risk factors:
  - a. Systemic fluoride
  - b. Professionally-applied topical fluoride
  - c. Self-applied topical fluoride
  - d. Fluoride toothpaste
  - e. Pit and fissure sealants
  - f. Preventive periodontal treatment
  - g. Tobacco counseling
  - h. OHI and other health education
  - i. Recall

*Method to Assess Criterion:* Review of dental record for the above information.

2. Oral health education and

- 2.1) Self-care instructions are provided and

- 2.2) Are consistent with needs identified in the individualized prevention assessment.

*Method to Assess Criterion:* Observe what the patient is told during the appointment. If communication cannot be observed, question the patient about what they were told during the visit and ask if appropriate home-care aids were recommended (e.g., fluoride toothpaste, fluoride rinses, floss, Perio Aid, Proxabrush, floss threaders). Special instructions are given to patients with special needs and/or physical handicaps. Ask the patient to demonstrate flossing and brushing technique as taught by the provider.

3. Each dental prophylaxis provided meets the following standards:
- The presence of plaque and calculus is demonstrated to the patient or parent before prophylaxis begins. Use of a disclosing solution is recommended.
  - All plaque and other soft debris are removed from tooth surfaces (includes flossing of interproximal surfaces to demonstrate plaque removal for the patient and/or parent).
  - All coronal calculus is removed (includes all supragingival calculus and subgingival calculus up to 3 mm. below gingival crest).
  - Each patient indicated for prophylaxis receives toothbrush prophylaxis unless rubber cup is required to accomplish stain removal.

*Method to Assess Criterion:* Observe whether prophylaxis procedures being provided are explained to the patient by the attending dental staff person. Following the completion of the prophylaxis, assess the quality of the procedure by inspection of the teeth using mouth mirror, explorer, and adequate light.

4. Persons with one or more new smooth-surface carious lesions, or whose prophylaxis includes a rubber cup polishing, will be given a professionally-applied topical fluoride application. A schedule of up to four applications per year may be followed, based on the presence of moderating factors listed below. Use currently accepted criteria found in Section IV of the *IHS Oral Health Program Guide* for determining the frequency of professionally-applied fluorides.

*Note:* Professionally-applied topical gel treatments are not recommended for patients under five years of age. Fluoride varnishes may be used.

*Method to Assess Criterion:* Chart review, including review of documentation of any moderating factors, and/or direct observation.

*Note:* Moderating factors for caries risk include: age, present caries activity, past caries activity, exposure to other sources of fluoride, sugar intake and frequency, amount of plaque, dental anatomy, medications, and family history.

5. Sealants are placed on susceptible unrestored or incipient carious pit and fissure surfaces of permanent first and second molars within two years of eruption.

*Method to Assess Criterion:* Chart review or direct observation. Criteria for the use of pit and fissure sealants include: Seal if deep, narrow pits and fissures, or other occlusal lesions are present. Do not seal if broad, well-coalesced pits and fissures, or frank caries are present. Frank caries is defined as gross cavitation with a break in the enamel, softness, and usually discoloration.

6. All sealants placed meet the following standards:
  - a. Adequate isolation of teeth is achieved for placement of sealants.
    - If four-handed technique is used, isolation with cotton rolls or Dri-Aids is acceptable.
    - If two-handed technique is used, proper isolation requires rubber dam or Vac-Ejector.
  - b. Adequate etching and rinsing techniques are used prior to application of sealant.
    - Etching solution is applied for 15 to 30 seconds to achieve a frosted appearance.
    - Etched surfaces are rinsed for at least 15 to 30 seconds or until etchant and precipitate are completely removed.
  - c. Sealants exhibit adequate retention by remaining intact following a reasonable effort to remove with an explorer.
  - d. No overt occlusal interferences are present due to placement of the sealants.

*Method to Assess Criterion:* Direct observation.

7. Patients who are tobacco users are asked if they want to quit using tobacco.

*Method to Assess Criterion:* Observe the patient record for evidence that all patients are asked if they use tobacco and documentation that tobacco users have been asked if they want to quit using tobacco.

8. Tobacco cessation counseling is recommended for patients who indicate they want assistance in quitting tobacco.

*Method to Assess Criterion:* Observe the primary health record to determine that the patient who wants counseling has been counseled by the dental staff or has been referred for counseling (if such services are available locally), unless it is documented that the patient requests deferment of counseling.

9. Each patient is placed in a recall program based on his/her individual risks (see Caries Risk) rather than arbitrary time intervals such as a 6-month recall. The patient's recall category is consistent with the diagnosis, treatment received, and medical condition, e.g., diabetes, rampant caries, pregnancy, and perio status.

*Method to Assess Criterion:* Review of dental record.

#### **F. Restorative (Exclusive of Full Cast Restorations)**

1. Treatment is explained to the patient (parent/guardian) before services begin.

*Method to Assess Criterion:* Observe whether the attending dentist or dental assistant explains to the patient (parent/guardian) the planned treatment services for that visit before those treatment services begin.

2. Rubber dam isolation is utilized unless contraindicated. There is documentation of the reason for non-use in the chart.

*Method to Assess Criterion:* Direct observation. All rubber dam clamps must be positively blocked (i.e., throat pack, ligation, rubber dam) from swallowing or aspiration.

3. Tooth preparation and restoration are designed to promote success and patient satisfaction.

*Method to Assess Criterion:* Ask the patient if he/she has experienced any problems with previous restorations, e.g., difficulty flossing, food impaction, or unusual discomfort. At a minimum, the following aspects of the restoration are observed by direct observation:

- a. Caries removal
- b. Preparation design
- c. Base placement
- d. Contacts
- e. Marginal ridge

- f. Lack of overhangs
- g. Embrasure
- h. Contour
- i. Occlusal anatomy
- j. Restorative material

*Note:* Any aspect of the restoration deemed by the evaluator as being unsatisfactory to the extent of promoting failure of the restoration will be identified to the person being evaluated. If the person being evaluated disputes the evaluator's conclusion that the deficiency is cause for considering the restoration to be unsatisfactory, there will be a discussion of the deficiency identified. If concurrence between the person being evaluated and evaluator cannot be reached after discussion, the disputed restoration will not be counted as unsatisfactory. However, the nature of the dispute will be noted in a narrative summary.

- 4. Esthetics of anterior restorations satisfy the requirement for concealment and/or harmony of the restoration.

*Method to Assess Criterion:* The anterior restoration should be esthetically acceptable, and not displeasing to the patient. Ask the patient to comment on the appearance of anterior restorations.

- 5. Instructions concerning restorative care are given to the patient (parent/guardian) postoperatively, and

5.1) services planned for the next appointment are explained.

*Method to Assess Criterion:* Observe whether instructions concerning restorative care and an explanation of the services planned for the next appointment are given to the patient (parent/guardian) by the attending dentist or the dental auxiliary prior to dismissal of the patient.

## **G. Pediatric Dentistry**

- 1. All carious teeth are addressed in the treatment plan.

*Method to Assess Criterion:* Chart review. The treatment of carious anterior deciduous teeth can be addressed either through the IHS treatment plan or by indicating that this treatment is to be provided at the patient's/family's own expense.

- 2. All primary posterior teeth with three or more carious surfaces, one or more carious proximal surfaces, or teeth receiving pulp therapy, are restored with stainless steel crowns, unless a reason for not using a stainless steel crown is noted.

*Method to Assess Criterion:* Chart review and direct observation.

3. Pulp therapy procedures performed in the primary dentition are consistent with the diagnosis. The diagnosis is supported by documentation of the clinical and/or radiographic findings in the patient's chart.

*Method to Assess Criterion:* Review of progress notes and radiographs.

4. Primary teeth receiving pulpectomy treatment shall have a postoperative periapical radiograph, or one scheduled within one month.

*Method to Assess Criterion:* Review chart and radiographs.

5. The child's behavior is documented in the chart for all children age 10 and under and for older children when the behavior is not age-appropriate.

*Method to Assess Criterion:* Chart review. The Frankl Scale is offered on the following page as only one example of behavior documentation which may be used.

#### Frankl's Rating Scale Categories of Behavior

Rating 1: Definitely Negative (- -). Refuses treatment, cries forcefully, is fearful, or portrays any other overt evidence of extreme negativism.

Rating 2: Negative (-). Is reluctant to accept treatment, is uncooperative, portrays some evidence of negative attitude but not pronounced, that is, sullen or withdrawn.

Rating 3: Positive (+). Accepts treatment, at times is cautious but willing to comply with the dentist, but follows the dentist's directions cooperatively.

Rating 4: Definitely Positive (++). Has good rapport with the dentist, interested in the dental procedures, laughs and enjoys the situation.

6. Behavior Management techniques (verbal, physical, and/or chemical) are documented.

6.1) Only behavior management techniques in which the dentist is trained and privileged are used.

*Method to Assess Criterion:* Direct observation and review of charts. Review of hospital or facility privileges for approval of privileges for the type of sedation being used or documented in the dental record as having been used.

7. Documentation of informed consent is present when chemical restraints (including nitrous oxide and/or other sedation) and physical restraints (including Hand Over Mouth, mouth props, and wraps) are used.

*Method to Assess Criterion:* Direct observation and chart review.

8. The response to behavior management techniques, if used for patients less than six years of age, is noted in the progress notes.

*Method to Assess Criterion:* Direct observation and chart review.

9. All sedations must conform to the guidelines published in Section V of the *Oral Health Program Guide*.

*Method to Assess Criterion:* Review of documentation in the Dental Progress Notes (42-2) or the Dental Outpatient Sedation Record (IHS-831) if used. A review of the documentation should address the following:

- a. Is the consent statement signed by the parent/guardian?
- b. Is the type and amount of local anesthetic recorded?
- c. Is the amount of each sedative drug used recorded?
- d. Is the indication for the use of sedation recorded on the sedation record or in the progress notes?
- e. Has the patient complied with the preoperative NPO instructions?
- f. Is there evidence that a physical assessment was done, i.e., that the patient is healthy, current medications are noted, and the airway is not obstructed?
- g. Were the respiratory and circulatory systems monitored continuously and findings recorded at an interval no longer than 15 minutes?
- h. Were the patient's condition and time of discharge noted?

If any one of these requirements are absent from the documentation, the criterion for sedation is considered unsatisfactory.

*Note:* The form IHS-831 is not required, but is strongly recommended. This form can facilitate complete documentation of monitoring when more than visual monitoring is required with certain dosages and combinations of drugs described in Section V of the *Oral Health Program Guide*. If the IHS-831 is used, all the second copies (pink) should be maintained as a log.

10. Only behavior management techniques in which the dentist is trained and privileged are used.



*Method to Assess Criterion:* Direct observation and review of charts. Review of hospital or facility privileges for approval of the sedation technique being used.

11. A space maintainer is placed when primary molars are prematurely lost prior to normal exfoliation, or reason for non-provision of a spacer is noted.

*Method to Assess Criterion:* Chart review. Determine whether indications or contraindications for placement of a space maintainer are documented in the dental record.

12. Arrangements are made for recall examinations for patients with spacers.

*Method to Assess Criterion:* Review the patient record for arrangements made for recall examination for patients with spacers.

13. The space-maintaining appliance spans the edentulous area adequately, allows for normal eruption of the permanent tooth, and does not impinge upon soft tissue. Orthodontic band-type space maintainers exhibit smooth marginal adaptation and adequate cementation.

*Method to Assess Criterion:* Direct observation.

14. Space maintainer design is appropriate for the stage of the dentition.

*Method to Assess Criterion:* Direct observation

15. Treatment plan for spacer includes when it should be removed

*Method to Assess Criterion:* Chart Review

## **H. Endodontics**

### **Pulpcapping/Pulpotomy**

1. Indirect Pulp Capping – There are no longer any biological indications for indirect pulp capping on permanent teeth (Put a reference to this statement).

*Method to Assess Criterion:* Direct observation and review of charts.

2. Direct pulp capping (indicate what size of exposure- “pin-point” or whatever) is indicated when all of the following criterion exists:
  - a. A clinically vital and asymptomatic pulp is exposed
  - b. Bleeding is controlled at the exposure site

- c. Exposure permits the capping material to make direct contact with the vital pulp tissue
- d. Minimal microbial contamination of the exposure site has occurred
- e. Proper coronal seal can be maintained
- f. Patient is fully informed that endodontic treatment is an alternative and may be an eventuality, and that direct pulp capping may preclude the option of endodontic treatment in the future

*Method to Assess Criterion:* Recorded findings (subjective and objective data) support an assumption of normal pulp apical to the exposure/canal orifice(s) with a noncontaminated field. A pulp cap assumes an uncontaminated mechanical exposure. Radiographs of the involved permanent tooth reveal a radiopaque capping material in contact with pulpal tissue. Documentation exists that the patient has been placed on active recall to check for resorptive defects or accelerated canal calcification.

- 3. Pulpotomy may be appropriate if any of the following clinical conditions exists:
  - a. Exposed vital pulps or pulpitis confined to the coronal aspects of primary teeth
  - b. As an emergency procedure in permanent teeth until root canal treatment can be accomplished
  - c. As an interim procedure for permanent teeth with immature root formation to allow continued root development

*Method to Assess Criterion:*

- a. An appropriate coronal seal is required
- b. Radiographically there should be evidence of sufficient root development for endodontic treatment
- c. Periodic radiographic examination should show no resorptive defects or accelerated canal calcification

### **Non-Surgical Root Canal Therapy**

- 4. Non-surgical root canal therapy for permanent teeth is indicated if any of the following conditions exists:
  - a. Irreversible pulpitis
  - b. Necrotic pulp with or without evidence of periradicular disease
  - c. Teeth with a pulp that would be compromised during dental procedures

- d. Teeth with a pulp that would be compromised due to adjunctive medial procedures
  - e. Traumatically displaced or avulsed teeth
  - f. Treatable resorptive defects
  - g. Cracked or fractured teeth with pulpal involvement (with or without clinical symptoms) that can reasonably be expected to maintain satisfactory periodontal health
  - h. Teeth with thermal hypersensitivity that significantly interferes with normal function, when alternative methods have failed to reduce the hypersensitivity
5. Findings confirming the diagnosis are established, and competing diagnoses ruled out. Findings are recorded in the patient's dental record. A preoperative diagnostic radiograph is included. A pulpal and periradicular diagnosis is obtained and recorded.

*Method to Assess Criteria 4 and 5:* Observe the patient's dental record and determine whether support and documentation of the diagnosis is recorded. A preoperative, diagnostic radiograph is available. History, clinical signs and symptoms, and appropriate pulp and periradicular test results are noted in the patient's dental record.

6. Informed consent is obtained for root canal treatment. This should include a discussion of the nature of the treatment, reasonable foreseeable risks, reasonable alternatives, and consequences of non-treatment.

*Method to Assess Criterion:* Review patient record for the presence of an informed consent form indicating procedure, risk and benefit, treatment alternatives, patient's and dentist's signatures and date.

7. A rubber dam is placed to isolate the operating area and act as a barrier to prevent aspiration or swallowing of root canal irrigants and instruments. Use should be documented in progress notes.

*Method to Assess Criterion:* Observe endodontic procedures, determine documentation in patient chart.

8. Removal of coronal tooth structure provides adequate access to the pulp chamber and allow straight line access to the root canal system. A balance is maintained between conservation of tooth structure and straight line access.

*Method to Assess Criterion:* Observe the preoperative and postoperative radiographs to determine that the endodontic filling materials conform to the original size and shape at the apex and progress to a flared conical shape towards the pulp chamber. Observe working length and

postoperative radiographs to determine whether sufficient coronal tooth structure was removed to allow straight line access to the root canal system.

9. CaOH is the interappointment medicament of choice for non-surgical root canal treatment (when a medicament is desired). Formocresol is not used as a medicament in permanent teeth (again put reference as to why not).

*Method to Assess Criterion:* Observe patient record for documentation when medicament is used.

10. Obturation of all root canals is three dimensional and the radiographic appearance shows a well obturated root canal system where the root canal filling extends as close as possible to the apical constriction of each canal. The root canal system is obturated with a biologically acceptable non-resorbable semi-solid or solid root canal obturating material (ADA approved). Root canal sealers are used in conjunction with the obturating material to establish an adequate seal.

*Method to Assess Criterion:* Observe the routine preoperative and postoperative radiographs and determine the adequacy of the obturation with a solid core primary filling material. Observe the radiograph for filling length, the canal for proper flare and orientation. Consider the density of the fill evaluating voids, spreader or condenser tracks and minimal amount of sealer extrusion. Obturation material should be as close as possible to the apical constriction of each canal. Observe the patient dental record for ADA approved obturation material and sealer. Postoperative instructions and recommended follow-up care must also be documented upon obturation.

11. Each case has a proper radiographic documentation. A minimum of two radiographs for cases with non-overlapping canals (i.e. single canals and maxillary molars), and a minimum of three radiographs of overlapping canals (i.e. mandibular molars, lower incisors, multicaled premolars) should be available. Thus documentation should include a preoperative, proper postoperative radiograph(s), and working radiographs of archival quality (void of fixer stains, underdeveloped, brown, etc.), mounted in one connective holder and labeled consistent with IHS guidelines.

*Method to Assess Criterion:* Observe the patient's dental record and determine if preoperative, working, and postoperative radiographs were made. Radiographs are of archival quality, placed in one connective holder and labeling consistent with IHS guidelines.

12. Esthetic restorative material is used on all lingual access preparations in anterior teeth.

*Method to Assess Criterion:* Direct observation, radiograph, or review of patient's dental record.

13. A cusp-protecting restoration is used on posterior permanent teeth when either marginal ridge is violated or when remaining enamel structure is unsupported by dentin and lacks strength.

*Method to Assess Criterion:* Direct observation, radiograph or review of patient dental record for provision of cusp-protecting restoration.

### **Traumatized Permanent Teeth**

14. A thorough history of the trauma including diagnostic radiographs, vitality testing of all teeth in the involved area, soft tissue exam, status of occlusion, and proper recording of data are included in the patient's chart.

*Method to Assess Criterion:* Observe patient's chart for diagnostic data which include history, radiographs, pulpal and periradicular tests, occlusal status, and soft tissue exam.

15. Incisal trauma involving dentin on vital teeth with no pulp exposure is restored within 7 days of initial presentation with composites and a dentin bonding agent.

*Method to Assess Criterion:* Observe patient record to note time interval between trauma and restoration.

16. All patients with traumatized teeth are placed on sufficient recall status (1 month, 3 month, 6 month, 1 year) to evaluate pulpal and periradicular condition.

*Method to Assess Criterion:* Documentation exists that the patient has been placed on active recall.

17. Teeth in need of fixation are stabilized using acid-etch/resin alone or with soft arch wire, or using orthodontic brackets with passive arch wire. Semi-rigid splints are used for luxated and avulsed teeth while rigid splinting is used for horizontal root fractures and alveolar fractures. Arch bar splints are contraindicated in these specific situations.

*Method to Assess Criterion:* Observe post operative radiographs and patient record documentation.

## **I. Periodontics**

1. The record contains a recording of CPITN scores (0,1,2,3, or 4) determined by probing and radiographic evidence of pre-existing conditions and a

1.1) Written diagnosis by ADA-Case Type (Gingivitis, Early Periodontitis, Moderate Periodontitis, and Advanced Periodontitis) and. The initial recorded diagnosis is acceptable for the findings.

The diagnosis should be consistent with existing conditions observed in the mouth and/or documented.

When definitive periodontal therapy is planned for patients with CPITN of 3 or greater, a periodontal work-up should be conducted. This includes probing pocket depths, radiographic evaluation, furca involvement, mobility, occlusal evaluation, and plaque retentive features. *If definitive periodontal services are not planned, the periodontal work-up should not be conducted.*

*Method to Assess Criterion:* Chart review and/or direct examination of the patient.

2. All dentate patients 15 years or older being provided routine dental care are informed of their periodontal status, treatment needs, opportunities for self-care, and have a description of periodontal treatment planned. If a full scope of periodontal services is not available at the particular clinic, a chart notation should be made that the patient has been informed of his/her need for treatment at another facility.

*Method to Assess Criterion:* Observe the patient record to determine whether patients were informed of their periodontal status and treatment needs consistent with their CPITN and periodontal assessment.

3. Periodontal treatment is consistent with, the need indicated by the initial diagnosis and

3.1) Documented

*Method to Assess Criterion:* Observe records of patients having all planned treatment completed within the last year to determine if the appropriate treatment plan was provided for sextants with CPITN scores of 2, 3, or 4, i.e., prophylaxis, supra and subgingival cleaning, surgical and/or non-surgical treatment.

4. Communication with the patient is professional and on a level so that the patient understands the educational information and accepts scaling and root planing procedures. The provider is attentive to the patient's comfort level.

*Method to Assess Criterion:* Observe the patient and the provider's interaction during the procedure and note if levels of agreement or

disagreement are acceptable. Question the patient to determine if the treatment was acceptable and tolerable.

5. Supragingival and subgingival cleaning are performed adequately.

*Method to Assess Criterion:* Observe the patient immediately following the procedure to determine if the contents of the pocket have been debrided and that irregularities and roughness of the root surface adjacent to the pocket have been removed and smoothed. Determine whether tissue trauma from scaling procedures is within acceptable limits.

6. Hygienists who administer local anesthesia are appropriately certified to do so.

*Method to Assess Criterion:* Question the hygienist about training and certification in local anesthesia. Review clinic records to verify certification.

7. The hygienist's progress notes and referrals are countersigned by a dentist. The hygienist's signature alone is adequate only if covered by standing orders in the clinic policy and procedure manual.

*Method to Assess Criterion:* Review the dental progress notes for countersignature, or verify that standing orders exist in the clinic policy and procedure manual.

8. A screening exit exam will be included in all treatment plans for routine patients examined with CPITN scores of 2, 3, or 4.

*Method to Assess Criterion:* Observe the patient record for the presence of an exit exam in the treatment plan, or a final CPITN for those completed patients who were initially diagnosed with any CPITN scores of 2, 3, or 4.

9. The patient is placed on a recall based on patient's disease status.

*Method to Assess Criterion:* Observe the patient record for documentation of plans for recall. Discuss the clinic recall policy with the clinic staff.

10. Periodontal surgery has been effective.

*Method to Assess Criterion:* Observe the patient postoperatively to determine that periodontal pockets have been eliminated, the gingivae have been contoured to a morphologic and physiologic form, and deformities in the alveolar bone have been corrected to a physiologic form. Probe all sulcular areas with a calibrated periodontal probe to determine whether sulcus depths have been reduced (probe no sooner than 2 months post-surgery).

In the assessment, compare the pretreatment dental record findings with the posttreatment results.

11. Mucogingival surgery has been effective.

*Method to Assess Criterion:* Observe the patient postoperatively to determine that an increased zone of attached gingivae has been attained, undesirable muscle pull on the marginal gingivae has been dissipated, and/or the vestibular fornix has been deepened to allow for maintenance of health of the periodontium.

In the assessment, compare the pretreatment dental record findings with the posttreatment results.

**J. Removable Prosthodontics**

1. Pretreatment full-arch radiographs are available for all removable prosthetic patients (occlusal, panoramic, or full mouth intraoral series). Current (within 1 year) periapical radiographs are available for all abutment teeth.

*Method to Assess Criterion:* Review dental record.

2. The overall oral condition and the condition of selected abutment teeth promote success of the prosthetic case.

*Method to Assess Criterion:* A review of the radiographs, clinical exam, endodontic status, and perio charting will be used to determine the overall oral health and the probability of long-term success of abutment teeth selected to support a removable prosthetic appliance.

3. The appearance of the denture is esthetically acceptable to patient and examiner.

*Method to Assess Criterion:* The denture harmonizes with the patient's facial appearance. The positioning, shape, and shade of the teeth appear natural. Vertical dimension is within normal range. The acrylic base material is in good condition. Clasps are not unnecessarily visible. The patient expresses satisfaction with appearance of the prosthesis. Documentation should be made in the chart as to the patient's acceptance of the esthetic appearance of the prosthesis.

4. Stability/retention is acceptable.

*Method to Assess Criterion:*



- a. Ask patient if dentures stay in place while eating and speaking. The stability/retention of the prosthesis is consistent with the limitations imposed by the ridge anatomy present.
  - b. *Full denture test:* Place forefinger on incisal edge of either maxillary or mandibular denture with sufficient force to blanch the finger. If denture becomes dislodged, it is considered to lack retention/stability.
  - c. *Partial denture test:* Place forefinger on any segment of partial denture framework and press firmly. If partial denture becomes dislodged or tips, it is considered to lack retention.
5. Flange of prosthetic appliance adapts to the soft tissue borders of the oral cavity.

*Method to Assess Criterion:* Gently retract lip to minimum degree that will allow you to observe whether flange of prosthetic appliance approximates the soft tissue borders. Note if dentures spring away from borders or lift up.

*Note:* Not applicable when anatomic conditions make the assessment unfeasible. The reason(s) should be stated in the patient's dental record.

6. Occlusion is acceptable.

*Method to Assess Criterion:*

- a. *Check centric relation:* Close patient's jaw into centric relation (and/or acceptable habit position) by placing thumb on patient's chin and gently directing mandible to the most posterior position, with patient closing slowly at the same time. Note whether simultaneous bilateral contact of the teeth occurs, and whether substantially all of the teeth on each side touch. If not, or if shifting or sliding occurs, then occlusion is considered to be inadequate.

*Note:* For all tooth-borne removable partial dentures, the point of reference is centric occlusion (functional occlusion).

- b. *Check eccentric relation:* Ask patient to close and move jaw in all directions. Observe eccentric premature contact or lack of balancing contact on teeth from canine posteriorly and note any instability resulting from the eccentric relationship of the prosthesis. (Eccentric relation is considered adequate if none are noted.)
- c. *Check occluding material:* Determine if unglazed porcelain occlusal or incisal surfaces are contacting enamel, gold, alloy, or composite resin. If so, rapid wear of the softer occluding surface will occur and occlusion must be considered unacceptable.

7. Vertical dimension and anterior tooth arrangement are acceptable.

*Method to Assess Criterion:*

- a. *Check “S” sounds:* Ask patient to say key words, such as Mississippi, sixty-six, whiskey, seventy-seven. When making “S” sounds, teeth should not contact. If so, appliance(s) is (are) considered inadequate.
  - b. *Check “F” and “V” sounds:* Ask patient to say key words, such as forty-four, fine food, vim and vigor, Vivian. When making “F” and “V” sounds, the incisal edges of #8 and #9 teeth should contact the wet-dry line of lower lip.
  - c. Ask patient if teeth seem too long or too short.
8. All “Cardinal Rules” of partial denture construction are met.

*Method to Assess Criterion:*

- a. *Rest seats (depth):* Ask patient to remove partial denture. Observe clearance for rest seats with patient in centric occlusion. If unable to visualize, then place utility wax in patient’s mouth and have patient close to centric occlusion. Remove wax and insert periodontal probe through wax in central area of identified rest seats until point of probe is exposed evenly with wax surface of opposite side. Determine visually whether wax in rest seat area is 1 to 1 1/2 mm thick.
- b. *Rest seat (width):* Observe whether rest seats approximate one-third the width of the tooth (except in cingulum rests), and are positioned at a 90 degree angle to long axis of abutment tooth.
- c. *Partial denture base:* Inspect removed partial denture and determine whether base material covers all supporting areas. Ask patient to replace partial denture in mouth and then use mouth mirror to observe whether retromolar pad(s) or tuberosity(ies) are completely covered without impingement of soft tissues in flange areas.
- d. *Arms of clasps in undercut zones:* Attempt to dislodge partial denture from each abutment tooth by placing finger under retentive clasp and applying firm force occlusally. If there is no resistance to the force, then retention is considered inadequate. If too much force is required, excessive mobility of the tooth occurs, or if the patient expresses difficulty in removing it, then retention may be excessive.
- e. *Guiding planes:* Visually determine whether all guiding planes on abutment teeth are reasonably parallel to one another.
- f. *Abutment teeth:* Observe that abutment teeth are in a good state of repair and well-polished.
- g. *The tissue-bearing area:* Note any areas of tissue impingement, inflammation, or hypertrophy related to the partial denture. The partial denture should not have caused any apparent tissue damage.

9. All pertinent information concerning the prosthesis is recorded in the health progress notes. This must include shade, mould, and laboratory used. Also include laboratory fee quoted to the patient if applicable. A copy of the laboratory prescriptions (work orders) should be kept on file in chronological order.

*Method to Assess Criterion:* Review progress notes and laboratory files.

## **K. Fixed Prosthodontics**

### **Crowns (All Types, Including Bridge Abutments)**

**Note:** A crown is unacceptable *only* if the examiner recommends replacement of the crown due to one or more deficiencies noted in the following criteria:

1. Smooth marginal adaptation.

*Method to Assess Criterion:* Inspect the margins of the crown to determine if the marginal adaptation is acceptable. The marginal adaptation of the crown should be considered unacceptable if gingival irritation or blanching of the tissues is being caused by the crown or if the smaller end of the #17 explorer can be inserted between the inner surface of the crown and immediate tooth surface.

2. Occlusal functions are acceptable.

*Method of Assess Criterion:* Use articulating paper to assess premature contacts in centric and eccentric relations. Also observe whether there are heavy wear facets (or shiny areas) in any occluding surface by using mouth mirror and/or direct observation. If supra or infra occlusion was planned, it must be noted in the patient's dental record. Question the patient: "Does this give you any discomfort or pain when you eat? Does it seem higher than your other teeth?"

3. Contact is present.

*Method to Assess Criterion:* The contacts with the proximal teeth should be in the occlusal 1/3 of the proximal space and tight. Dental floss should pass through without tearing or shredding.

4. Crown contour is physiologic.

*Method to Assess Criterion:* Inspect the external contours of its cross-arch analog, if a natural tooth. If the mate is not present or grossly restored, utilize the contours of the tooth most nearly representative of the test tooth. Compare with the aid of mouth mirror:

#### **a. Buccogingival contour**

- b. Linguogingival contour
- c. Marginal ridge contour
- d. Embrasure spaces have a v-shape which avoids tissue impingement
- e. Total buccolingual width

The health of the tissue around the restored tooth (teeth) will not differ significantly from other tissue in the mouth four weeks after cementation.

- 5. Crowned, endodontically treated teeth have healthy characteristics which promote long term success of the case.

*Method to Assess Criterion:* Review the radiographs, clinical exam record, endodontic status, perio charting, and clinical appearance of the crowned tooth.

- 6. Porcelain or resin shade blends favorably with remaining dentition.

*Method to Assess Criterion:* Under natural light, inspect the crown with its cross arch analog using a Trubyte Bioform 24 button shade guide or Vita Lumen shade guide. If the mate is not present or is not a natural tooth, compare shades to the adjacent natural or opposing teeth. Shade blend should be within one shade of the matching button.

## **B. Fixed Bridges**

- 7. Pontic(s) meet(s) the principles of form and tissue adaptation.

*Method to Assess Criterion:* Observe the form of pontic(s) by using mouth mirror and/or direct observation. Determine if:

- a. Facio-lingual width of the pontic(s) approximate(s) two-thirds of the normal width of the replaced teeth.
- b. Facial contour of the pontic(s) approximate(s) the normal contour of the replaced teeth.
- c. Gingival contour, approximating the alveolar process and mucosa is (are) convex enabling self-cleansing capability. Consider *concave* pontics unacceptable. Thread dental floss through the embrasure and pass the floss mesio-distally between the apex of the pontic and the mucosa of the alveolar process. For pontic to be considered acceptable, the floss should pass freely without impingement or bleeding of involved tissues.

- 8. Solder joints meet principles of adequate strength.

*Method of Assess Criterion:* Use mouth mirror and/or direct observation and apply following principles for determining adequate strength.

- a. Facio-lingual size of the solder joint should be about one-half of the facio-lingual width of the existing pontic, and
  - b. The occlusal gingival side of the solder joint should be about one-half of the distance from the occlusal (incisal) edge of the pontic to its gingival base.
9. The overall oral condition and periodontal structures of abutment teeth are adequate to support the prosthetic appliance(s).

*Method to Assess Criterion:* Clinically observe abutment teeth and review the radiographs, clinical exam record, endodontic status, and perio charting. Observe that the prosthetic service(s) received is compatible with the overall periodontal health and caries control, and that it promotes long-term success.

10. Esthetics are acceptable to the patient and examiner.

*Method to Assess Criterion:* Question the patient: "Are you satisfied with the appearance of the bridge?" Determine in your own mind whether the existing porcelain or resin surfaces of the pontic and crowns are in harmony with the remaining natural teeth. Determine whether there is unsightly show of metal when smiling and talking.

11. Occlusal functions are acceptable.

*Method to Assess Criterion:* Observe centric and eccentric movements; use articulating paper to assess premature contacts in centric and eccentric relations. Also, observe whether there are heavy wear facets (or shiny areas) on any occluding surface of the bridge by using mouth mirror and or direct observation. Question the patient: "Does the bridge give you any discomfort or pain when you eat?"

12. Pertinent information concerning the prosthesis is recorded in the dental progress notes. This includes the material used for fabrication and cementation, the shade, and dental laboratory used.

*Method to Assess Criterion:* Review dental record.

## **L. Oral Surgery**

1. The diagnosis leading to extraction or other surgical procedures is written in the dental record and is consistent with clinical findings.

*Method to Assess Criterion:* Observe the patient's dental record and determine whether documentation for the diagnosis is recorded, including the availability of a preoperative radiograph. History, clinical symptoms,

including temperature and soft tissue findings, and possible pulp test results are noted in the patient's dental record.

2. Appropriate diagnostic preoperative x-ray(s) is/are available in the patient's dental record.

*Method to Assess Criterion:* Review of radiograph to assess presence of the entire tooth, including apex of root(s) and surrounding anatomy.

3. All postoperative complications receive appropriate follow-up treatment.

*Method to Assess Criterion:* Chart review. Specifically note use of culture and sensitivity tests, antibiotic regimens, incision and drainage (I&D) procedures, and recording of patient temperature.

4. All pathology reports based on cytology or biopsy are present in the patient records and in a biopsy log.

*Method to Assess Criterion:* Review patient's dental and/or medical record. Results must be recorded in the patient's progress notes by the dentist. When a tissue biopsy is performed, the patient record must include documentation of indications for biopsy, a copy of the pathology report, and evidence that the patient was notified of the results and received proper follow up. An additional "Biopsy Log" should also be kept. For each case this log will include the patient's name, chart #, provisional clinical diagnosis, doctor's name, date, histopathological diagnosis, and date of patient notification of results and follow-up.

5. Appropriate preoperative systemic antibiotic therapy is provided patients requiring such, as specified by the American Heart Association.

*Method to Assess Criterion:* Review of patient primary health record. Observe that these patients have documentation and/or consultation to rule out need for antibiotic prophylaxis. If a prescription is written, it is documented that the patient has complied with regimen.

6. Standard principals of flap design have been accomplished, e.g., occlusal portion of flap design to extend at least one tooth adjacent to the interdental papilla both mesially and distally from the tooth to be extracted (exception to this would be extraction of the most distal tooth in the arch). Vertical incisions extend obliquely so that the base of the flap is wider than its margin, and the tissue of the retracted flap is not mutilated or torn.

*Method to Assess Criterion:* Observe the surgical flap procedure on patients present in the clinic receiving this service, or observe the flap design of revisit patients who receive this service and are present in the clinic for postoperative follow-up or suture removal.

7. Pathologic tissue is completely removed. There is no evidence of residual periapical or periodontal pathology, including root fragments at the surgical site, unless removal is contraindicated.
8. Alveolar margin is smoothed, and displaced fragments of the alveolus and foreign particles are removed.

*Method to Assess Criteria #2 and #3:* The examiner assesses these criteria by appropriate instrumentation and palpation, including a postoperative radiograph of the operative site when deemed necessary. On patients present in the clinic for postoperative follow-up or suture removal, the examiner may assess these criteria by palpation of the operative site and by viewing a postoperative radiograph. If root tips have been left, documentation exists for the decision, including postsurgical radiographs, and documentation exists that the patient has been informed and there is provision for recall.

9. Sterile saline or sterile water is used to irrigate all surgical sites, including routine extractions.
10. Soft tissue flap is repositioned into anatomical position and maintained there with suture or gauze pressure pack.

*Method to Assess Criterion:* Inspect the surgical flap site to make certain the soft tissue is repositioned appropriately over alveolar bone without excessive tension.

11. Oral and written instructions concerning postoperative care of surgical or extraction services are given to patient (parent/guardian) and documented in the record.

*Method to Assess Criterion:* Observe whether oral and written instructions concerning postoperative care of surgical and/or extraction sites are given to the patient before dismissal.

12. Informed consent is obtained for oral surgery procedures. This should include a discussion of risks, benefits, and alternatives to treatment.

*Method to Assess Criterion:* Review patient record for the presence of formal consent form indicating procedure, risks, benefits and treatment alternatives, patient's signature, dentist's name, and date.

13. All use of conscious sedation for oral surgical procedures is performed under guidelines listed in the *IHS Oral Health Program Guide*, Section V.

*Method to Assess Criterion:* Review the clinic's *Policy and Procedure Manual* and the *IHS Oral Health Program Guide* for a conscious sedation protocol. See that all providers are properly credentialed for procedures

they perform, that adequate emergency back-up is available, that there is proper CPR/ACLS certification, and that the proper monitoring equipment is utilized. This may include the pulse oximeter, electrocardiogram (EKG), and blood pressure device. Also note that proper informed consent is present for sedation and that there is adequate patient recovery and escort service available.

## **M. Orthodontics**

1. The dental record contains documentation that patients (and/or their guardian) ages 6 to 20 have been advised of their orthodontic status and the availability of treatment at the IHS/Tribal facility or the need to seek private care.

*Method to Assess Criterion:* Chart review.

2. Practitioners providing interceptive and corrective orthodontic care who have not completed long term training in orthodontics can demonstrate a program of systematic review of selected cases by an orthodontic consultant. Practitioners providing orthodontic care have been granted privileges to provide that care and have documented training to support the level of privileges requested.

*Method to Assess Criterion:* Review the log of orthodontic patients for evidence of review of selected cases by an orthodontic consultant. Review practitioner's request for privileges and supporting documentation.

3. The following records of each patient undergoing comprehensive orthodontic therapy, which is to be provided only by an orthodontic specialist, are available:
  - a. Orthodontic examination (including the status of the TMJ), which is updated within six months of initiation of treatment.
  - b. Full mouth or panoramic x-rays.
  - c. Study casts with bite registration recording centric occlusion.
  - d. Cephalometric x-ray with the jaw in centric occlusion.
  - e. Pretreatment photographs: (1) full face at rest and smiling; (2) right and left profile; (3) right, left, and anterior intra-oral; (4) maxillary occlusal, and mandibular occlusal.
  - f. Treatment objectives established and recorded prior to treatment.
  - g. Written informed consent signed by parent/guardian which lists treatment objectives, expected outcome and limitations, patient compliance expected, reasons for discontinuing treatment before completion, and anticipated need for further specialty care.



- h. Documentation of appropriately sealed teeth in children under age 14.
- i. All other treatment completed (PTC except orthodontics) within the last six months.
- j. Documentation that compliance with home care has been demonstrated prior to treatment.

*Method to Assess Criterion:* Review of patient's health record.

- 4. Assessment of completed cases must be made in conjunction with the treatment objectives established prior to treatment relative to findings in records and/or posttreatment cast concerning:
  - a. Molar relationship and cuspid relationship
  - b. Changes in cephalometric form
  - c. Arch expansion
  - d. Axial inclination of anterior and posterior teeth
  - e. Interproximal spacing
  - f. Rotations
  - g. Arch form
  - h. Overbite correction
  - i. Overjet correction
  - j. Soft-tissue profile

*Method to Assess Criterion:* Review the hallmarks of a well-treated orthodontic case, which include:

- a. Good intercuspation of teeth
- b. Cuspids in Class I relationship
- c. Correction of rotations
- d. Correction of overbite or open bite
- e. Correct esthetic inclination of anterior teeth
- f. Correct root position of teeth (parallel roots)
- g. Good arch form
- h. General maintenance of cuspid and molar width
- i. Minimal root resorption
- j. Minimal gingival recession
- k. Minimal occlusal interferences in centric relation, in balancing, and in working movements

- l. Minimal decalcification and no caries associated with the appliance
  - m. Accomplishment of treatment objectives
5. Orthodontic treatment and orthodontic extractions are preceded by an orthodontic consultation.

*Method to Assess Criterion:* Review patient dental record for evidence of orthodontic consult.

## **N. Adjunctive General Services**

1. Drugs prescribed for and/or administered to dental outpatients or inpatients are recorded in patient's primary healthcare record.
- 1.1) Drugs administered or prescribed are consistent with the written diagnosis.

*Method to Assess Criteria #1 and #2:* Review the described health problem(s) and determine the appropriateness of the prescribed drug(s) and daily dosage. Acceptable references, such as *American Hospital Formulary Service* or *Physicians Desk Reference*, may be used to resolve any differences of opinion.

2. Appropriate preoperative systemic antibiotic therapy is provided patients requiring such, as specified by the American Heart Association.

*Method to Assess Criterion:* Review of patient primary health record. Observe that all patients who are at risk for SBE have documentation of antibiotic prophylaxis and that at each encounter it is documented that the patient complied with the prescribed antibiotic regimen.

3. Any untoward reactions to medication(s) are recorded in the primary health record. Any allergies to medication(s) are prominently displayed on the primary health record.

*Method to Assess Criterion:* Review of patient's primary health record.

4. When a sedative agent or nitrous oxide is administered, the indication for use, duration, concentration exposure and or dosage, monitored vital signs, any untoward reactions, restraints used, and patient status upon dismissal are recorded in the patient record.

*Method to Assess Criterion:* Chart review.

5. Dentists or hygienists who administer sedative drugs (inhaled, oral, intramuscular, or intravenous) can demonstrate that they are appropriately trained to do so and that dentists have been granted privileges by the medical staff to perform the procedure(s).

*Method to Assess Criterion:* Review medical privileges and documentation of training in sedation for those dentists who administer sedative drugs. Review standing orders for hygienists and documentation of training in administering nitrous oxide/oxygen sedation.

## **O. Environmental Health and Safety**

1. Basic emergency diagnostic and treatment equipment must be available in case of life-threatening episodes.

*Method to Assess Criterion:* Observe that any member of the dental staff can promptly locate and bring to the chairside the following equipment:

- a. Sphygmomanometer (infant, child, and adult sizes)
  - b. Stethoscope
  - c. Ambu-bag and oxygen with mask and bags capable of positive pressure ventilation for infants, children, and adults
  - d. Oral pharyngeal airways (infant, child, and adult)
  - e. Emergency drug kit/crash cart as specified in the operations manual of the dental clinic or facility with appropriate dosages for children and adults
2. Emergency drug kit is up-to-date.

*Method to Assess Criterion:* Inspect the locked emergency drug kit and assure that expiration dates have not passed on any medications.

3. The dental staff has received annual CPR training.

*Method to Assess Criterion:* Current certification card or list of CPR-certified staff should be available.

4. A clinic emergency plan exists for management of medical emergencies and is understood by the staff.

*Method to Assess Criterion:* Inspect the plans and interview staff for basic understanding of plan and procedures. Review documentation that the plan has been reviewed annually and/or question the staff on emergency protocol.

5. All housekeeping activities have been performed before clinical day begins.

*Method to Assess Criterion:* Observe the cleanliness and neatness of all areas of the dental clinic. If observation in the morning is not possible, then question the dental staff in accordance with the acceptability of the

housekeeping activities being provided. Suggested areas to be considered are cleanliness of floors, walls, furniture, cabinets, dental chairs, dental units, wastebaskets, etc.

*Note:* The neatness and cleanliness of all working counter top areas are considered to be the responsibility of the dental auxiliary staff. Otherwise, supplies and/or materials may be disposed of accidentally by non-dental housekeeping personnel.

6. The current copy of the IHS Mercury Hygiene Guidelines (located in Section VI of the *IHS Oral Health Program Guide*) is on file and has been reviewed and/or studied by all dental staff within the current fiscal year.

*Method to Assess Criterion:* The dental officer will show the examiner a copy of the guidelines, as well as an attached page which contains signatures and dates of all dental staff indicating that they have reviewed the guidelines.

7. The possibilities of mercury toxicity are minimized by the dental staff through the practice of good mercury hygiene.

*Method to Assess Criterion:* Observe operations involving mercury transfer and determine whether the work surface is smooth, impervious, and suitably lipped to confine spilled mercury, and whether the floor covering is smooth and impervious. A mercury spill kit is available in the facility.

Scrap amalgam should be stored in a closed, labeled container under appropriate (e.g., x-ray fixer, commercial solution) liquid barrier. Water, mineral oil, or glycerin are not acceptable liquid barriers. Preencapsulated silver alloy is utilized to minimize the need to handle free mercury.

8. Concentration of mercury vapors in the environment should be below the threshold limit value (TLV) of 0.025 mg Hg/m<sup>3</sup>, or in compliance with the Area Office of Environmental Health (OEH) policy.

*Method to Assess Criterion:* Ask to see a copy of the most recent mercury vapor level survey, and the Area OEH policy concerning mercury surveillance for dental clinics. Determine whether the mercury vapor level is below 0.025 mg Hg/m<sup>3</sup> and/or if the facility is in compliance with the Area OEH policy.

9. Nitrous oxide/oxygen administration logs are maintained which permit monitoring of the duration of staff exposure to waste anesthetic gas.

*Method to Assess Criterion:* Review nitrous oxide/oxygen log.

10. Concentrations of waste anesthetic gas are within accepted levels.

*Method to Assess Criterion:* Review copy of most recent certification by the IHS Office of Environmental Health waste gas survey/report or records of local monitoring of nitrous oxide.

11. An infection control policy for the dental facility has been reviewed and approved by dental and medical staff.

*Method to Assess Criterion:*

- a. A copy of the most recent release of “Recommended Infection Control Practices for Oral Health Programs Serving Native Americans” should be available in the dental clinic. This document should contain the dated signatures of all dental personnel to verify their review of the document, as well as those of the Program Director or Service Unit Director and the Chairman of the Service Unit Infection Control Committee (or Clinical Director).
- b. The reasons for any exceptions or significant variations to the recommended practices which the local facility has decided to adopt should be explained in writing, initialed by dental staff, and filed with the policy document.

12. The requirements of the “OSHA Bloodborne Pathogen Standard” are met by having documentation of an exposure control plan, training, and immunization record.

*Method to Assess Criterion:* Review of the dental staff, personnel records, and direct observation. Determine whether all dental staff have been given the opportunity to be immunized for hepatitis B and other diseases. Determine whether a surveillance record of the immunization status of each member of the dental staff is available for review. (The record should include sero-testing and dates of Tuberculin tests. Follow-up action is documented for employees with “positive” findings which require attention.)

Those staff members refusing the hepatitis vaccine must be informed of the risks and are required to sign a form stating that the vaccine has been offered and refused. Refusal of vaccine and notation of possible consequences must be recorded.

Written policy should exist to address the management of employees involved in patient care who have acute or chronic infectious conditions, including colds, flu, herpes or other skin infections, and any other known or suspected contagious condition.

13. Accepted infection control procedures are practiced prior to the delivery of care.

*Method to Assess Criterion:* Observe the performance of infection control procedures routinely practiced prior to the delivery of care for at least 10 patients, if possible. Evaluate each of the following components of practice relative to the infection control methods recommended by the IHS.

*Prior to Treatment:*

- a. *Health history:* A summary of findings is documented on Part II of IHS-42-1 (or other standard form if IHS forms are not used). Significant conditions should be noted clearly in the patient's record and addressed prior to treatment.
- b. *Hand washing:* Hands are washed between patient treatment contacts and whenever gloves are changed. Nails are cleaned and without polish, jewelry is removed, and recent wounds are covered.
- c. *Protective barriers:* Handles and switches on dental lights, x-ray equipment, patient records and other noncritical items are covered or prepared as recommended in Section VI of the IHS *Oral Health Program Guide*.

14. Accepted infection control practices are maintained routinely throughout the delivery of care for dental patients.

*Method to Assess Criterion:* Observe the performance of infection control procedures used routinely during the delivery of care based upon at least 10 patients, if possible. Evaluate each of the following components of practice relative to the infection control methods recommended by the IHS.

*During Treatment:*

- a. *Protective barriers:* For protection of personnel and patients, gloves must always be worn when touching blood, saliva, or mucous membranes. Gloves must be worn by dental health-care workers when touching blood-soiled items, body fluids, or secretions, as well as surfaces contaminated with them. Gloves must be worn when examining all oral lesions.

Surgical masks, in addition to eye protection with solid side shields or chin-length plastic face shields, are mandatory for operator protection when splashing or splattering of blood or other body fluids or solids is likely.

Fluid-resistant gowns must be worn when clothing is likely to be soiled with blood or other body fluids. Home laundering of gowns is prohibited. Gowns should be changed when visibly soiled.

A rubber dam is used unless contraindicated.

- b. *Handling of instruments and materials:* Adequate methods are employed to minimize “breaks” in aseptic technique during treatment. Four-handed dentistry is practiced when possible. The unit dose concept is applied and forceps are used to transfer or handle objects involved in treatment, especially when small items are removed from or placed into storage drawers, tray set-ups and other noncritical surfaces.
- c. *Patient records:* Adequate measures are taken to minimize the contamination of patient records during and after treatment, especially when entries are made in the record.

15. Accepted infection control procedures are practiced after the delivery of care.

*Method to Assess Criterion:* Observe the performance of infection control procedures used routinely after the delivery of care based upon at least 10 patients, if possible. Evaluate each of the following components of practice relative to the infection control methods recommended by the IHS.

*After Treatment:*

- a. *Operatory decontamination:* Environmental surfaces are disinfected with a suitable germicide before the next patient is seated. This includes the removal of “dirty” instruments and waste materials from the operatory, replacing protective barriers (e.g., headrest and bracket table covers), changing burs and handpieces, disinfecting control switches and other noncritical surfaces, and other measures recommended by the IHS (refer to “Recommended Infection Control Practices for Oral Health Programs Serving Native Americans.”) All “sharps” must be placed in an approved sharps container. Biohazardous waste materials must be disposed of in covered refuse containers labeled “BIOHAZARD.”

Air/water syringe tips must be autoclaved or disposable and changed between patients.

- b. *Use and care of sharp instruments and needles:* Sharp items (needles, scalpel blades, endodontic files, orthodontic wires, and other sharp instruments) must be considered as potentially infective and must be handled with extraordinary care to prevent unintentional injuries. A one-handed technique or mechanical capping device must be used for the recapping of needles.

Disposable syringes and needles, scalpel blades, worn out and broken burs, endodontic files, orthodontic wires, and other disposable sharp items must be placed into puncture-resistant containers located as close as practical to the area in which they were used.

Review of the last 12 months injury reports.

- c. *Instrument disinfection/sterilization:* In a designated cleanup area, dirty instruments are adequately cleaned (free of visible debris) before disinfection or heat sterilization methods are used. Persons involved in cleaning and decontaminating instruments must wear heavy rubber gloves to prevent hand injuries and eye protection with solid side shields. The lid should be in place on the ultrasonic cleaner during use to avoid splatter. Heat sensitive tape should be used on bagged or packaged instruments which are to be sterilized. Refer to “Recommended Infection Control Practices for Oral Health Programs Serving Native Americans” for the details of accepted practice regarding external/internal indicators. Sterilizer(s) are monitored on a weekly basis with biologic indicators (review records on file). Disinfection solutions should be diluted and replenished according to product instructions and volume of workload.
- d. *Instrument storage:* Disinfected and sterilized instruments are placed in storage using accepted methods. The use of clear plastic autoclave bags is recommended when possible. Sterilized instruments/instrument packs must exhibit an expiration date (refer to “Recommended Infection Control Practices for Oral Health Programs Serving Native Americans” for instrument pack shelf life).
- e. *Handpiece sterilization:* All surgical instruments including handpieces (high speed, low speed attachments, and prophylaxis angles) must be used as an alternative.

- 16. A written schedule should exist which describes general sanitation and housekeeping procedures for the dental facility. Housekeeping services should be available to remove refuse daily and to clean floor coverings (carpeting is not recommended in dental operatories).

*Method to Assess Criterion:* Review dental clinic policy.



17. Incoming or outgoing orthodontic or prosthetic appliances are disinfected, and impressions and casts are handled according to recommended IHS infection control practices for oral health programs.

*Method to Assess Criterion:* Direct observation. Laboratory instruments and supplies (e.g., rag wheels, case pans, model trimmer, knives, and other frequently used equipment) are disinfected or sterilized according to an acceptable policy.

### Technical Quality Assessment by Direct Observation of Patient Care

**Y - Yes N - No N/A - Not Applicable D – Disputed Findings, summary needed**

**Record Number**[illegible]

**Y - Yes N - No N/A - Not Applicable D – Disputed Findings, summary needed**

**Record Number**

Criteria											
<b>D. Radiological Protection</b>											
1) Auxiliaries are certified											
2) Lead protective devices are used											
3) Tube head stationary											
3.1) Tube head properly positioned											
4) Film not held by staff											
5) Tube not held by staff											
6) Operator stands in proper position											
7) Area Properly cleared for exposure											
8) Warning before exposure											
9) Dosimeters worn											
10) Protective devices properly stored											
11) Radiological Reports maintained											
<b>E. Prevention</b>											
1) Prevention Plan											
2) Oral Health Education Provided											
2.1) Self-care Instruction provided											
2.2) Consistent with needs											
3) Prophy meets standards											
4) Topical Fluoride appropriately provided											
5) Sealants appropriately placed											
6) Sealant technique meets standards											
7) Tobacco users asked about quitting											
8) Tobacco Cessation Counseling recommended											
9) Individualized Recall											
<b>F. Restorative</b>											
1) Treatment explained											
2) Rubber dam used unless contraindicated											
2.1) Documentation for non-use											
3) Prep and restoration meet criteria											
4) Esthetics of anterior restorations											
5) Care of restorations explained											
5.1) Next visit explained											

**Record Number**

## Dental Clinic Efficiency and Effectiveness

**Y - Yes N - No N/A - Not Applicable D – Disputed Findings, summary needed**

Record Number

[illegible]

**Y - Yes N - No N/A - Not Applicable D – Disputed Findings, summary needed**

**Record Number**

Criteria										
<b>K. Fixed Prosthodontics</b>										
1) Smooth Margins										
2) Acceptable Occlusion										
3) Proper contacts										
4) Physiologic Contours										
5) Endodontically treated abutments										
6) Proper porcelain shades										
7) Pontics meet criteria										
8) Solder joints are adequate										
9) Abutment tooth condition is adequate										
10) Esthetics acceptable										
11) Occlusion acceptable										
12) Progress notes adequate										
<b>L. Oral Surgery</b>										
1) Diagnosis present and appropriate										
2) Appropriate radiographs										
3) Post-op complications properly treated										
4) Pathology reports present										
5) Antibiotic prophylaxis appropriate										
6) Flap design is appropriate										
7) Pathologic tissue completely removed										
8) Alveolar margins smoothed										
9) Sterile irrigant										
10) Flap properly repositioned										
11) Post-op instructions										
12) Informed consent										
13) Conscious sedation follows guidelines										
<b>M. Orthodontics</b>										
1) Patients advised of orthodontic status										
2) Practitioner has proper training/privileges										
2.1) Cases reviewed by orthodontic consultant										
3) Appropriate Ortho records are available										
4) Completed cases meet objectives										
5) Ortho consultation precedes treatment										

**Y - Yes N - No N/A - Not Applicable D – Disputed Findings, summary needed**

Record Number

[illegible]

### Summary

(Within each category, subtract NA and D boxes from total number available to calculate denominator.)

<b>Category</b>	<b>% Compliant Y/(Y+N)</b>	<b>Comments</b>
Patient Records		
Exam Diagnosis		
Radiographs		
Radiological Protection		
Prevention		
Restorative		
Pediatric Dentistry		
Endodontics		
Periodontics		
Removable Prosthodontics		
Fixed Prosthodontics		
Oral Surgery		
Orthodontics		
Adjunctive General Services		
Environmental Health and Safety		



**Technical Feedback And Recommendations**  
**(Provide to Person being evaluated at Close-Out Session)**

Person being evaluated: \_\_\_\_\_

Criterion considered unsatisfactory:

\_\_\_\_\_

Describe deficiencies related to this criterion:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Criterion considered unsatisfactory:

\_\_\_\_\_

Describe deficiencies related to this criterion:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Criterion considered unsatisfactory:

\_\_\_\_\_

Describe deficiencies related to this criterion:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Criterion considered unsatisfactory:

\_\_\_\_\_

Describe deficiencies related to this criterion:

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Plan of action for correcting deficiency/deficiencies:

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Signatures: \_\_\_\_\_

Evaluator

Person being evaluated

Date

cc: Service Unit Director/Tribal Health Administrator

### **APPENDIX III: INDIRECT REVIEW OF CLINICAL QUALITY CHART REVIEW**

## **Indirect Review of Clinical Quality Chart Review**

### **General Instructions**

General responsibilities and guidelines for conducting quality assessment reviews are included in Appendix I of this chapter and should be followed when an outside reviewer conducts a chart review.

1. This chart review tool can be used to assess the quality of an individual provider, a targeted aspect of care, or a dental clinic as a whole. The entire document can be used or individual criteria can be selected, depending on the focus of the survey.
2. When the tool is used for ongoing peer review, it is helpful to have all of the providers in the clinic participate in reviewing the charts, so that the findings can be used as a learning experience.
3. Whenever possible, the charts being reviewed should be randomly selected to eliminate bias from the review process. Medical Records or Information Technology personnel can usually develop a random selection of records.
4. As a rule of thumb, review 10 charts per provider.
5. Identify a time frame for the review (e.g., only review chart entries that were made since the previous chart review: or, for a new employee, only review chart entries made after the provider was oriented to the chart review process and review criteria).
6. All criteria must be met to score “Yes.”
7. For each category, if procedures were not performed or are not applicable, mark NA

### **Chart Review Criteria**

#### **A. Every Visit**

1. A health questionnaire completed by the patient and signed by the provider within the past 12 months is present and documentation exists that it was reviewed at each visit with the changes or the phrase “no changes” recorded. Medical alerts are highlighted.
2. For patients with ASA Physical Status (PS) Classifications 2–5, appropriate measures have been taken to ensure patient safety and appropriate treatment. (e.g. blood pressure, blood sugar, consultations when necessary) See ASA Web site for PS definitions:  
<http://www.asahq.org/clinical/physicalstatus.htm>

3. Progress notes are legible and clearly describe the treatment provided.
4. Appropriate ADA codes are recorded (including tooth number and surface when appropriate) and documentation exists in the progress note to justify all codes.
5. Dental Progress Notes include:
  - a. Date of treatment
  - b. Signature of the provider(s)
  - c. Printed or stamped name of provider(s)
  - d. Degree of the provider(s)
6. Progress notes indicate that dental auxiliaries initial the direct patient care procedures performed.
7. Dental progress notes include a disposition at the end of each visit. (Next appointment, further dental needs. The purpose is to demonstrate continuity of care.)
8. Documentation of informed consent is present for appropriate procedures as defined by the facility. Informed consent includes documentation of discussion of risks, benefits, and alternatives to treatment.
9. Patient's pain has been assessed, documented, and adequately addressed and/or managed.
10. All entries in the dental record are in ink.

## **B. Exam and Treatment Plan**

1. All hard tissue findings (pathology, abnormalities) are recorded in the dental record.
2. Documentation that radiographs have been read exists in the patient record.
3. Evidence of soft tissue exam is present, either by listing of abnormalities or designation of Soft Tissues Normal (STN) or Within Normal Limits (WNL).
4. The record of patients receiving a complete dental exam contains CPITN/PSR scores and a written diagnosis by ADA-Case Type (Gingivitis, Early Periodontitis, Moderate Periodontitis, or Advanced Periodontitis), based on probing and radiographic evidence.
5. Orthodontic status (for patients ages 6 to 20) is noted on the dental exam sheet.

6. Written treatment plan exists for all patients receiving initial or recall dental exams.
  - a. Treatment plan is easily understood
  - b. Follows a logical sequence
  - c. Is revised as needed, revisions are dated and initialed
7. If a full scope of services is not available at the facility, a chart notation is made that the patient has been informed of his/her need for treatment at another facility.
8. The patient is placed in a recall program based on his/her individual risks and clinic resources, rather than arbitrary time intervals.

### **C. Drugs Administered or Prescribed**

1. Drugs administered or prescribed are consistent with the written diagnosis.
2. Drug dosages are within limits recommended by the Physician's Desk Reference or American Hospital Formulary Service.
3. All drugs and dosages are entered in the medical and/or dental progress notes (including local anesthetic).
4. Reactions and allergies to drugs are prominently displayed in dental record and on outside of medical chart.
5. If the medical history suggests that prophylactic antibiotics may be necessary, determination of need or lack of the need is documented.
6. Patients who need prophylactic antibiotics receive the prophylactic antibiotic regimen currently recommended by the American Heart Association.
7. Sufficient documentation exists to demonstrate that the patient complied with the prescribed antibiotic regimen, was sufficient to cover the procedure, and that the dental procedure began after the recommended time interval.

### **D. Radiographs**

1. Radiographs are dated and are labeled with name or chart number, and operator's initials.
2. Radiographs are of good diagnostic quality with regard to density, contrast, and lack of overlapping, cone-cutting, or distortion. (All criteria must be met)

3. Bitewings include distal surface of erupted cuspid and mesial surface of the most posterior erupted tooth in each quadrant. (Check all radiographs taken during review date range.)
4. The types and frequency of radiographs meet clinic policies and are consistent with ADA/FDA guidelines. Copies of the guidelines can be obtained at:  
[http://www.ada.org/prof/resources/topics/topics\\_radiography\\_chart.pdf](http://www.ada.org/prof/resources/topics/topics_radiography_chart.pdf)  
and  
[http://www.ada.org/prof/resources/topics/topics\\_radiography\\_examinations.pdf](http://www.ada.org/prof/resources/topics/topics_radiography_examinations.pdf)

### **E. Dental Emergency Treatment**

1. SOAP or similar format is used for each dental emergency patient to document chief complaint, objective findings, diagnosis, and treatment plan in the patient record.
2. Diagnosis is consistent with subjective and objective findings.
3. Treatment is consistent with and appropriate for the diagnosis.
4. Evidence of an intraoral screening exam is present for emergency patients, either by listing of abnormalities (e.g., gross caries, periodontal disease, soft tissue lesions) or WNL.

### **F. Endodontics**

1. Preoperative and postoperative radiographs are available for each tooth receiving endodontic treatment.
2. Findings confirming the diagnosis and ruling out competing diagnoses are entered in the dental record.
3. Postoperative radiograph indicates complete obturation of all root canals to within 2 mm of and not beyond the radiographic apex (refers to primary filling material, not sealer).
4. Dental record indicates that a non-resorbable primary filling material and non-staining sealer are used in the endodontic treatment of a permanent tooth, a resorbable filling material is used for a primary tooth, and that formocresol is not routinely used in permanent teeth.
5. Chart entries document the following
  - a. Working lengths
  - b. Reference points

- c. Instrument sizes are recorded in the patient record.
- 6. An esthetic restorative material is used to restore each lingual access preparation on anterior teeth.
- 7. Choice of restoration on each posterior endodontically-treated tooth meets the need for cusp protection (i.e., provision of a crown or a cusp-protecting amalgam restoration).
- 8. Postoperative instructions and recommended follow-up care are documented at the obturation appointment.

### **G. Oral Surgery**

- 1. A preoperative radiograph showing the apex of each root is available for all teeth extracted.
- 2. If sutures are placed, type and number are documented.
- 3. All pathology reports are present in the patient record.
  - a. Evidence that the patient was notified of appropriate follow-up is present in the patient record.
- 4. Any documented difficult surgical procedure or untoward outcome has appropriate follow-up arranged.

### **H. Restorative Dentistry**

- 1. Restorative materials are used appropriately for satisfactory esthetic results and as accepted for use by the ADA.
- 2. Recent bitewing radiographs (no older than two years) show absence of obvious overhangs, open margins, or open contacts on restorations previously placed by the dental staff being evaluated.
- 3. In cases where rubber dam is not used, the reason for non-use is documented. In clinics where there is no evidence of documentation of non-use of the rubber dam, the provider(s) should be questioned as to whether the rubber dam is used for all restorations.

### **I. Pediatric Dentistry**

- 1. An SSC is provided or planned for each primary molar with three or more carious surfaces or pulp therapy, unless contraindications are documented.
- 2. All primary teeth receiving pulpectomies have preoperative and postfill periapical radiographs.



3. The dental record indicates that space maintenance is provided or planned for each prematurely lost primary molar, or reason for non-provision is documented, and there is provision for appropriate recall (six months or less).
4. Documentation of the behavior for all children under the age of six is documented.
  - a. Behavior management techniques used and their level of effectiveness are documented.

## **J. Orthodontics**

1. Request for treatment (x-rays, extractions, restorative, other) from an orthodontist is documented in the patient record.

### **For Patients Receiving Orthodontic Care at This Facility:**

1. Pretreatment full mouth or panoramic radiographs are available for each patient undergoing orthodontic treatment.
2. Pretreatment study casts are available for each patient receiving orthodontic treatment.
3. Orthodontic treatment plan and treatment provided are consistent with pretreatment findings.

## **K. Periodontics**

1. Patients with two or more sextants of CPITN 4 should have a complete periodontal chart and treatment plan. This includes probing pocket depths, furca involvement, mobility, and occlusal features, with documentation. Isolated pockets may be recorded on the examination form.
2. Preoperative radiographs and record of pocket depths of areas receiving periodontal treatment are present in the dental chart.
3. Diagnosis and treatment plan are consistent with preoperative findings.
4. Dental record contains evidence of patient's oral health. May include plaque score or bleeding index.
5. The hygienist's progress notes and referrals are countersigned by a dentist. The hygienist's signature alone is adequate only if covered by standing orders in the clinic policy and procedure manual.
6. Recall visits for patients receiving perio treatment includes a CPITN score.

**L. Preventive Dentistry**

1. The dental record contains an individualized dental disease prevention plan.
2. Persons with one or more smooth-surface carious lesions, decalcified areas, or with other moderating factors will receive a professionally-applied topical fluoride application. A schedule of a minimum of two and up to four applications per year should be followed, based on the presence of moderating factors documented for the patient. Moderating factors include: age, present caries activity, past caries activity, exposure to other sources of fluoride, sugar intake and frequency, amount of plaque, dental anatomy, and family history.
3. Sealants are placed on unrestored, noncarious or incipient carious pit and fissure surfaces of all appropriate permanent first and second molars within two years of eruption.
4. The record indicates that patients who are tobacco users are asked if they want to quit using tobacco.
5. The record indicates that tobacco cessation counseling was provided or recommended for patients who indicated that they wanted assistance in quitting tobacco.

**M. Prosthodontics**

1. Preoperative periapical radiographs of fixed bridge or partial denture abutment teeth are present in the dental record.
2. Radiographic and other diagnostic findings indicate that the periodontal condition of the abutment teeth is adequate to support the prosthesis (i.e., Ante's Rule for fixed bridges).
3. Pretreatment full-arch radiographs (occlusal, panographic, or full-mouth x-ray [FMX]) are available for all full denture patients.
4. Documentation exists and is readily available that records shades, moulds, laboratory and type of metal used

**N. Preoperative Documentation**

1. The chart contains the patient's name, chart #, and age.
2. The patient's chief complaint and history of present illness, including a justification/rationale for the procedure to be performed in the operating room, are present.

3. Documentation of allergies and current medications is present.
4. Documentation of family and surgical history is present.
5. A review of systems including systemic condition, physical examination, and assessment of patient is present.
6. Planned treatment is documented.

#### **O. Consent**

1. A consent is present which includes the diagnosis and proposed procedure.
2. The common risks, benefits, complications and alternatives to the proposed treatment and mode of anesthesia are included.
3. The consent is dated, including time of day, and signed by the surgeon, patient or guardian as appropriate, and a witness.

#### **P. Operative/Postoperative Note**

1. A preoperative and postoperative diagnosis (if different from the preoperative diagnosis) are present.
2. A detailed narrative of the operative procedure(s) is present and contains the following:
  - a. Operative findings
  - b. Anesthesia
  - c. Fluids (as appropriate)
  - d. Drains
  - e. Specimens
  - f. Complications
3. Documentation of the patient's condition, including any complications, upon transfer from the operating room is present.
4. Patients going from the operating room to the Intensive Care Unit or medical surgical floor have a standard admission/transfer order written.
5. The surgeon's name is included in the note.

#### **R. Dental Inpatient Documentation**

1. Patients admitted for overnight stays will have admission orders which include the order to admit to the dental service, the diagnosis, and current condition of the patient.
2. The admission orders will include the following as appropriate:
  - a. Allergies
  - b. Nursing orders
  - c. Diet
  - d. Medications
  - e. Laboratory tests
  - f. IV fluids and rate
3. Patients admitted for overnight stays have a discharge summary which includes the name of the person dictating, date of admission and discharge, and a final diagnosis if different from the admitting diagnosis.
4. The discharge summary includes the pertinent admission history and physical findings, a description of the hospital course, and the patient's disposition upon discharge.
5. The discharge summary includes documentation regarding discharge medications and/or dietary instructions as appropriate, and a follow-up date and time.

### Chart Review Tool

Facility: \_\_\_\_\_ Provider: \_\_\_\_\_

Reviewer: \_\_\_\_\_

Date Range for Review: \_\_\_\_\_ Date of Review: \_\_\_\_\_

#### Record Number

CRITERIA										
<b>Key</b> <b>Y – Yes</b> <b>N – No</b> <b>NA – Not Applicable</b> <b>I – Insufficient Information to Determine</b>										
	<b>Date of last exam</b>									
<b>A. Every Visit (Total= __)</b>										
Completed and Signed Medical History, Updated										
Precautions appropriate for PS										
Legible Notes										
Appropriate Codes										
Complete progress notes										
Auxiliary initials										
Disposition										
Informed Consent										
Pain Documentation										
Entries in ink										
<b>B. Exam and Treatment plan (Total= __)</b>										
Hard tissue findings recorded										
X-rays read										
Soft tissue findings recorded										
Periodontal status and diagnosis										
Orthodontic status										
Treatment Plan Complete										
Notation of needed, unavailable services										
Follow up/ recall consistent with patient needs										
<b>C. Drugs Administered or Prescribed (Total= __)</b>										
Consistent with Written Diagnosis										
Within recommended Limits										
Entered in Progress Notes (including anesthetic)										
Reactions and allergies displayed										
Need for Prophylaxis Determined										
Prophylaxis Given When Needed										
Patient Compliance with Prophylaxis										

## Record Number

Criteria											
<b>Key</b> <b>Y – Yes</b> <b>N – No</b> <b>NA – Not Applicable</b> <b>I – Insufficient Information to Determine</b>											
	<b>Date of last Exam</b>										
<b>D. Radiographs (Total= __)</b>											
Radiographs are Dated, Labeled, and Initialed											
Good Diagnostic Quality											
Bitewings Include Proper Landmarks											
Type and Frequency Meet Guidelines											
<b>E. Dental Emergency Treatment (Total= __)</b>											
SOAP used											
Diagnosis Consistent with Findings											
Tx Consistent with Dx and Appropriate											
Screening Exam											
<b>F. Endodontics (Total= __)</b>											
Radiographs Available											
Findings Conform Diagnosis											
Obturation											
Obturation Material and Sealer											
Adequate Documentation											
Esthetic Restoration of Lingual Access											
Cusp Protection on Posteriors											
Post-Op Instructions											
<b>G. Oral Surgery (Total= __)</b>											
Appropriate Preop X-ray											
Sutures Documented											
Path Reports Present, adequate, have appropriate follow-up											
Appropriate Follow-up for Difficult Procedures											
<b>H. Restorative (Total= __)</b>											
Materials Used Appropriately											
No Overhangs/Open Margins											
Rubber Dam documentation											

		Record Number									
Criteria											
<b>Key</b> <b>Y – Yes</b> <b>N – No</b> <b>NA – Not Applicable</b> <b>I – Insufficient Information to Determine</b>											
	<b>Date of Last Exam</b>										
<b>I. Pediatric Dentistry (Total= __)</b>											
SSCs used appropriately											
Pre and Post-op x-rays for Pulpectomies											
Space Maintenance											
Behavior and management documented											
<b>J. Orthodontics (Total= __)</b>											
Request for treatment Documented											
<b>For Patients receiving orthodontic care in the facility:</b>											
Pre Treatment X-rays											
Pre Treatment Study Models											
Treatment Consistent with Findings											
<b>K. Periodontics (Total= __)</b>											
Perio Work-up											
Preoperative radiographs											
Diagnosis and treatment plan are consistent with preoperative findings											
OH documented											
Hygienist's Progress Notes											
Recall includes CPITN score											
<b>L. Prevention (Total= __)</b>											
Individualized Prevention Plan Present											
Appropriate Topical Fluoride received											
Sealants Placed Appropriately											
Tobacco Query											
Tobacco Counseling											
<b>M. Prosthodontics (Total= __)</b>											
Radiographs of Abutments											
Perio Condition Adequate											
Full Arch X-rays for Dentures											
Adequate documentation available											

		Record Number									
Criteria											
<b>Key</b> <b>Y – Yes</b> <b>N – No</b> <b>NA – Not Applicable</b> <b>I – Insufficient Information to Determine</b>											
<b>Inpatient/Operating Room Care</b>											
<b>N. Preoperative Documentation (Total = __)</b>											
Name, chart # and age documented											
Chief complaint and history of present illness are present.											
Allergies/current meds documented											
Family and surgical history documented.											
Review of systems is present.											
Planned treatment is documented											
<b>O. Consent (Total = __)</b>											
consent is present											
Risks, benefits, complications and alternatives are included.											
Dated, including time of day, and signed by the surgeon, patient or guardian, and a witness.											
<b>P. Operative/Postoperative Note (Total = __)</b>											
Preoperative/postoperative diagnosis is present.											
A detailed narrative of the operative procedure(s) is present											
Patient's condition documented											
Admission/transfer order present											
The surgeon's name is included											
<b>Q. Inpatient Documentation (Total = __)</b>											
Admission orders include appropriate information											
The admission orders will include the following as appropriate:											
Patients admitted for overnight stays have a discharge summary											
The discharge summary includes the pertinent information											
The discharge summary documents meds, diet, follow-up											



### Summary and Recommendations

(Within each category subtract NA and I boxes from total number available to calculate denominator.)

Category	% Compliant Y/(Y+N)	Comments
A. Every Visit		
B. Exam and Tx Plan		
C. Drugs		
D. Radiographs		
E. Emergency Tx		
F. Endodontics		
G. Oral Surgery		
H. Restorative		
I. Pediatrics		
J. Orthodontics		
K. Periodontics		
L. Prevention		
M. Prosthodontics		
<b>Inpatient/Operating Room Care</b>		
A. Preoperative documentation		
B. Consent		
C. Operative/ Postoperative note		
D. Inpatient documentation		

Recommendations:

## **Appendix IV: Evaluation of Community Involvement in Oral Health Programs**

## Evaluation of Community Involvement in Oral Health Programs

### Introduction

The Evaluation of Community Involvement may be conducted concurrently with the review of other dental program aspects or reviewed separately. The community and management evaluation documents, while professionally conceived, are not limited exclusively to use by dental professionals. They may be assessed by non-dental persons with general background knowledge in these areas. Uses for the documents also include orientation of new staff, self-evaluation by individual professionals, establishment of program standards, and assessment of program activities which impact on oral health.

The following criteria address many in the community-based activities that are known to have a positive influence on oral health:

1. An ongoing fluoridation program is established at the community level. At a minimum this program consists of the following components:
  - a. A Service Unit\* Fluoridation Committee/Team or similar work group that regularly meets to develop a strategy for increasing the percentage of CWS<sup>1</sup> users with fluoridated water to 75%<sup>2</sup> or to maintain the percentage at or above that level.

*Method to assess:* Review Fluoridation Committee/Team/Work Group meeting minutes and current and past CWS inventories (See b.).

*\* Any reference to Service Unit fluoridation committees/teams could also refer to Tribal or Urban health committees/teams or area-wide initiatives.*

- b. A current plan for promoting fluoridation according to the recommendations outlined in the Centers for Disease Control and Prevention *Engineering and Administrative Recommendations for Water Fluoridation, 1995*<sup>3</sup>. This plan should include a Service Unit CWS inventory of fluoridating, non-fluoridating, and naturally fluoridated systems; indicate each CWS user population; establish criteria to prioritize and target CWSs where fluoridation could be implemented or resumed; and specify activities planned to promote implementation at targeted sites.

*Method to assess:* Evaluate the fluoridation plan and outcomes.

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<sup>1</sup> A community water system is defined as a water system which supplies drinking water to 25 or more of the same people year-round in their residences (Source: U.S. Environmental Protection Agency).

<sup>2</sup> Healthy People 2010 Oral Health Objective 21.9: Increase persons on public water receiving fluoridated water to 75%.

<sup>3</sup> CDC Morbidity and Mortality Weekly Report, Recommendations and Reports, September 29, 1995/Vol. 44/No. RR-13.

- c. Resources for fluoride analysis of drinking water, including samples from private wells serving American Indian/Alaska Native households. These resources should include state or Environmental Protection Agency-certified laboratories, and the availability of approved and properly calibrated, operated, and maintained field test kits (colorimetric, or ion specific electrode) at the Service Unit level.

*Method to assess:* Determine if a current listing of certified laboratories exists, and if agency-sponsored water testing services are available at the Service Unit. Review the availability of field test kits.

- d. Cooperatively established criteria that define optimal fluoridation status for tribally-owned and operated CWSs at the Service Unit. At a minimum, the criteria should include the optimal fluoride level and control range; define the frequency of monitoring and split sampling by the CWS; the percentage of monitoring results that must fall within the control range, and split sample tolerance.

*Method to assess:* Review the current optimal fluoridation criteria.

2. Schools with at least 30% AI/AN enrollment promote school topical fluoride (mouthrinse, varnish, etc) and/or toothbrushing (with a fluoridated dentifrice) programs for reducing the incidence of dental caries, unless unwarranted due to documented low caries rates.

*Method to assess:* Survey dental staff and/or school administrators to determine how many schools have FMR and/or toothbrushing programs and how many more could be implemented.

3. A sealant program exists for those schools with at least 30% AI/AN enrollment. These programs provide pit and fissure sealants on permanent molars for at least 80% of all AI/AN school children 6 to 8 years and 12 to 15 years. An evaluation method for retention of sealants should also be conducted.

*Method to assess:* Review dental data and participate in discussions with dental staff and/or school administrators. Conduct random chart reviews to determine if 80% compliance is being met. Review any available retention studies.

4. Oral health education curricula are provided for schools with at least 30% AI/AN enrollment.

*Method to assess:* Survey dental staff and/or school administrators to determine how many schools have oral health education curricula and how many more schools could be included.

5. Programs have been established to make oral health services available to individuals/families, and target groups at high risk for oral disease. These groups may include diabetics, tobacco users, Head Start children, and other special population groups as identified in the PL 94-437 oral health objectives.

*Method to assess:* Review community health plan and perform chart reviews to determine whether needs of high-risk individuals are addressed. The Community-Based Activity Reporting System (CBARS) can be used to measure preventive activities by target groups.

6. The dental program has provided oral health in-service training to non-dental health professionals in the past 12 months. An evaluation of the training should be conducted.

*Method to assess:* Review annually the number of presentations to non-dental health professionals and the number of participants. CBARS should be used to provide documentation. An evaluation method to assess appropriateness and effectiveness should also be reviewed.

7. The dental program participates in community health activities and promotes community-based oral health promotion/disease prevention programs based on the needs of the community. An evaluation is conducted on these programs.

*Method to assess:* Review dental program participation in school-based programs, health fairs, health professions recruitment, community meetings, Head Start functions, etc. CBARS should be used to document these activities. **These activities should support the oral health objectives specified in each Service Unit/Tribal/Urban preventive plan.**

8. Dental clinic staff have identified and participated in effective primary healthcare education or services delivery programs, e.g., diabetes, tobacco education, Well Baby, and WIC programs.

*Method to assess:* Review policies and procedures of dental program to assess involvement with other primary healthcare programs. Ask primary healthcare program directors if dental program could improve role in education or services delivery. Review any program evaluations.

9. Local Tribal administration is involved in planning, implementation, and evaluation of oral health promotion/disease prevention programs. Opportunities for local Tribal participation have been presented and explored.

*Method to assess:* Review documents (Tribal health committee meeting minutes and/or correspondence from the dental program) to the Tribe to determine what efforts have been undertaken. Determine that dental program staff have met at least once in the past year with the Tribal health leaders, e.g., Tribal health director, Tribal council, Tribal chairman, or council members.

10. Community satisfaction assessments have been conducted during the preceding year. Findings have been incorporated into changes in programs and policies.

*Method to assess:* Review data from any available community satisfaction assessments and actions which have resulted from this process.

11. The Dental Program develops and routinely monitors and evaluates a community-based baby-bottle tooth decay (BBTD)/rampant caries prevention program.

*Method to assess:* Review dental prevention plans to assess appropriateness and effectiveness of collaborative efforts. Review annual dental data reports or other surveys to assess the incidence of disease in target population (0–3 years). An annual evaluation method should also be in place. Knowledge, skill, and attitude surveys should be developed with evaluation at regular intervals to assess program progress.

12. An annual evaluation process should be implemented for a select number of the criteria.

*Method to assess:* Review evaluation methods and analysis. Discuss findings and how changes have been incorporated into programs.

### Evaluation of Community Involvement in Oral Health Programs

Criteria	Yes	No	N/A	Comments
Community Water Fluoridation				
Service Unit Plan				
Fluoridation team has met				
Team assesses compliance				
Reliable mechanism for testing				
School fluoride program				
School sealant program				
School oral health curriculum				
Oral health services available to high risk groups				
Oral health in-service provided				
Community health activities				
Participation in health ed or primary services delivery				
Tribal involvement				
Community satisfaction assessment				
Community-based ECC prevention program				
Annual evaluation for selected criteria				

### Community Feedback Form

Describe strengths of the community component of the dental program:

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Describe any weaknesses of the community component of the dental program:

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Recommendations for improving the community component of the dental program:

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Signatures: \_\_\_\_\_

Evaluator

Evaluatee

Date

cc: Service Unit/Tribal Health Administrator



## **Appendix V: IHS Criteria for the Assessment of Dental Program Management**

## **IHS Criteria For The Assessment Of Dental Program Management**

### **Introduction**

Management of clinical dental programs in the IHS presents the clinical manager with a variety of unique challenges. Organizational variability between areas and Service Units, decentralized management, and Tribal contracting are but a few factors which contribute to the variability present within dental programs which serve AI/ANs. Nonetheless, certain core management elements should serve as a nucleus for the management of these programs.

In this section of the quality assessment chapter, certain questions are posed to dental managers. These questions generally require a yes/no answer or other short response. It should be noted that there is no mechanism provided to convert the results into a “score.” The value of this format lies in its ability to stimulate communication during the review process.

This evaluation measures productivity, cost-effectiveness, and appropriateness of dental services delivered in public health dental programs which exist in I/T/U programs. These data and calculations are useful as a baseline for determining the present status of the program and for planning and evaluating planned changes in the direction of the program. Much of this can only be measured by reviewing process indicators which are believed to contribute to effectiveness and efficiency of the program.

After completion of a management QA review, the evaluator will be able to develop a list of program strengths as well as a list of recommendations to improve program management.

Since this document is intended for review of core elements, it may be necessary to add review elements locally to deal with those items unique to individual programs.

### **Management Review Criteria**

#### **A. Facilities**

1. Patients have privacy for treatment and confidential conversations in the operatory area. (In open bays signs may be posted informing patients of the opportunity for more privacy if requested.)
2. Facilities are clean, neat, and in good repair.
3. The disabled have access to the dental clinic and operatory area.

#### **B. HIPAA**

1. Staff has received HIPAA training

2. Facility has business agreements with appropriate entities (e.g. dental laboratory)
3. unique patient identifiers are removed from any materials leaving the dental facility
4. Workplace practices ensure patient confidentiality for protected medical information

### **C. Policies And Procedures**

1. Facility has policy and procedure manual for dental department
2. P&P Manual is updated annually
3. At a minimum P&P manual covers:
  - a. Definition of services available
  - b. Protocols for referral of routine and emergency procedures
  - c. Standards and procedures for routine clinic operations including
    - i.Procedures requiring informed consent
    - ii.Equipment maintenance
    - iii.Handling tissue specimens
    - iv.Continuing education
    - v.Credentialing
    - vi.Privileging
    - vii.Standing orders
    - viii.Inventory
    - ix.Prescription
    - x.Infection Control including bloodborne pathogen exposure plan
    - xi.Mercury safety,
    - xii.radiological protection
    - xiii.N2O policies
    - xiv.Response to medical device recall and hazard notices

- d. Patient eligibility including determination of eligibility for services and CHS
  - e. Appointments
    - i. exams and routine treatment
    - ii. Dental urgent/emergency treatment
    - iii. Broken or canceled appointments and late arrivals
    - iv. Referrals
    - v. Deferred care
  - f. Clinic hours
  - g. Leave policies
  - h. Emergencies
    - i. Fire
    - ii. Disasters
    - iii. Medical emergencies
  - i. Laboratory procedures
  - j. Organizational chart
1. Is there an up-to-date copy of the *IHS Oral Health Program Guide* available in the clinic or ready access to the manual on the IHS Web site?
  2. Is a written “Patient Bill of Rights and Responsibilities” posted?
  3. Has a patient satisfaction questionnaire been completed within the last year?
  4. Is there a formal mechanism for monitoring patient complaints and resolving complaints to improve care?
  5. Is a written Service Unit/Tribal dental plan available which includes community and clinical oral health promotion/disease prevention objectives?
  6. Has the Service Unit/Tribal dental plan been presented to the Tribal health board for approval and/or comment
  7. Are dental staff meetings held regularly?
  8. Are minutes of previous dental staff meetings available?

9. Has a budget listed by object classes been completed for the current fiscal year?
10. Does the budget include both direct and CHS activities?
11. Have equipment replacement lists been updated within the past year?

**D. Staff**

1. There is a minimum of one full-time equivalent (FTE) chair-side assistant per FTE dentist.
2. Staff maintains current state licensure, registration, or certification as required.
3. Dentist has a current unrestricted Drug Enforcement Agency (DEA) number unless all prescriptions are filled at the facility's pharmacy.
4. Staff has completed continuing education requirements for the past calendar year consistent with licensure.
5. Staff practices within their Dental Practice Act and the Rules of the State Board of Dentistry, which govern the practice of dentists, dental hygienists, and dental assistants.
6. All personnel rules, regulations, and policies promulgated by the specific Tribe, IHS, and facility are followed.
7. Is a protocol in place for orientation of new dental staff and documentation of orientation to the dental program and hospital or clinic?
8. Does each employee have a current and accurate position description or billet description?
9. Do current standards of performance exist for each dental employee?
10. Have the training needs of each dental employee been identified for the current fiscal year?
11. Is the selection of training for employees based on needs identified for the Service Unit/Tribal/Urban program and the individual?
12. Is in-service dental training available to the dental staff?

**E. Access**

1. Patients with dental emergencies are seen on the same day they call if at all possible.

2. A recall system is utilized when appropriate (high risk patients). Intervals are based on the dental need of the individual patient.
3. The facility accommodates patients who require dental clearance for medical treatments (transplants, joint replacements, etc.)
4. The Secretary's Regulations on IHS Eligibility (42 CFR, Section 36.12, 36.23-24, Section 813, IHCIA) are adhered to.
5. There is follow-up on all canceled or broken appointments.
6. The appointment policy is adhered to.
7. The broken appointment policy has been approved by the Tribal health board and communicated to patients/community
8. Patients are booked no more than three weeks in advance of appointments
9. The recall interval based on each patient's individual disease rates, rather than using arbitrary time intervals
10. A call list is available for patients who can respond on short notice to fill in broken or canceled appointments.
11. Appointment policies are available as handouts or posted for public view?

#### **F. Infection Control**

1. Infection Control QA has been completed within the last year
2. Deficiencies have been corrected
3. Deficiencies and/or changes have been reviewed with the dental staff

#### **G. Medical Emergency Preparedness**

1. All staff has current CPR certification.
2. An oxygen tank with an appropriate valve, tubing, and mask is available. Dental staff is familiar with its location and use.
3. Blood pressure is taken on all patients over the age of 16 at least once per year.
4. An emergency kit is readily available.
  - a. All dental staff knows its location and how to use the contents.
  - b. The expiration dates of the drugs are current.
5. Emergency phone numbers are prominently posted.

6. The facility has an emergency management protocol.
7. The staff reviews the emergency management protocol at least annually.

## **H. Radiation Safety**

1. X-ray machines are inspected at the required intervals.
  - a. Deficiencies are corrected in a timely manner.
2. Lead aprons are used on all patients receiving radiographs.
  - a. The aprons are x-rayed annually to assure that no damage occurred to the lead lining during storage and/or use. This service can usually be obtained at a local hospital.
3. Film positioners are used.
  - a. Neither patient nor staff holds the film during exposure.
4. Staff is protected from scattered radiation during film exposure.
5. All dental assistants who take radiographs are currently certified in radiology?

## **I. Mercury Hygiene**

1. Premeasured, disposable amalgam capsules are used.
2. The agitator of the amalgamator functions under a protective cover.
3. Amalgam scrap is stored in tightly closed containers and recycled properly.
4. Amalgam waste is handled according to the ADA's "Best Management Practices," a copy of which can be downloaded at [http://www.ada.org/prof/resources/topics/topics\\_amalgamwaste.pdf](http://www.ada.org/prof/resources/topics/topics_amalgamwaste.pdf)

## **J. Chemical Hazards**

1. Staff complies with the OSHA Hazard Communication Standard.  
(Evaluate by using the Hazard Communication Compliance Checklist, a copy of which can be obtained from the OSHA Web site at <http://www.osha.gov/Publications/osh3111.pdf#search='hazard%20communications%20compliance%20checklist'>)
2. A written HCP is on file and accessible to staff.
  - a. The HCP is reviewed at least annually and updated as necessary.

3. Material safety data sheets (MSDS) are on file for each hazardous chemical.
  - a. Any missing MSDS has been requested in writing, and a copy of the request is on file.
  - b. MSDSs no longer in use are archived and kept for 30 years.
4. The inventory of chemicals, materials, and supplies and the list of hazardous chemicals in the HCP accurately reflect all the hazardous chemicals and products that are present in the dental clinic.
5. Staff participates in hazard communication training at least annually.

#### **K. Public Health/Data Analysis**

1. If emergency care exceeds 40% of total services provided, indicating large unmet dental needs, do Level IV plus V, equal less than 5% of total services?
2. Do Level II (primary care) services comprise at least 15% of total services provided, indicating the existence of a clinical prevention program?
3. Does the facility dental chief understand the relationship between the “levels of care” concept and the practice of public health dentistry?
4. Do services provided data reveal the absence of procedures that are not generally recommended in IHS practice, such as gold foil restorations or unilateral removable partial dentures (“Nesbitt” partials)?
5. Does the number of sedative fillings provided (Code 2940) comprise less than 5% of the total number of restorations provided?
6. Do stainless steel crowns comprise at least 80% of primary restorations involving three or more surfaces?



**IHS Review Instrument for The Assessment Of Dental Program Management**

Date \_\_\_\_\_

Clinic Site \_\_\_\_\_ Reviewer \_\_\_\_\_

Criteria	Yes	No	N/A	Comments
<b>A. FACILITIES</b>				
Privacy				
Clean, Neat, and in Good Repair				
Access for the Disabled				
<b>B. HIPAA</b>				
HIPAA training				
Bus. agreements or removal of pt ID				
Confidentiality ensured				
<b>C. POLICIES AND PROCEDURES</b>				
Facility has P&P Manual				
Manual Updated annually				
P&P manual covers:				
a. Scope of Services				
b. Referral procedures				
c. Clinic operations				
i. Informed consent				
ii. Equipment maintenance				
iii. Handling tissue specimens				
iv. Continuing education				
v. Credentialing				
vi. Privileging				
vii. Standing orders				
viii. Inventory				
ix. Prescription				
x. Infection Control				
xi. Mercury safety				
xii. Radiological protection				
xiii. N2O policies				
xiv. Medical device recalls				
a. Patient Eligibility				
b. Appointments				
Exams/routine care				
urgent/emergent care				
Broken/canceled/late				
Referrals				
Deferred care				

Criteria	Yes	No	N/A	Comments
<b>POLICIES AND PROCEDURES, continued</b>				
a. Clinic Hours				
b. Leave Policies				
c. Emergencies				
fire				
Disasters				
Medical emergencies				
a. Dental Laboratory Procedures				
b. Organizational Chart				
1. OHPG available				
2. Patient Bill of Rights/Responsibilities				
3. Patient Satisfaction Survey				
4. Patient complaints monitored				
5. Service Unit/Tribal Dental Plan				
6. Plan presented to Tribe				
7. Dental staff meetings				
8. Minutes available				
9. Budget by Object Class				
10. Budget includes direct and CHS				
11. Equipment list				
<b>D. STAFF</b>				
One Assistant per Dentist				
Current Licenses				
Unrestricted DEA Number				
Continuing Education				
State Board guidelines				
Policies, Rules, and Regulations				
Orientation protocol				
Accurate position descriptions/billets				
Standards of Performance				
Training needs assessed				
Training based on needs				
In-service training available				

Criteria	Yes	No	N/A	Comments
<b>E. ACCESS TO CARE</b>				
Emergencies				
Recall				
Accommodates special needs				
Eligibility Regulation Compliance				
Follow-up				
Appointment policy adhered to.				
Broken appointment policy approved				
Three week limit				
Recall interval individualized				
Call list is available				
Appointment policies available				
<b>F. INFECTION CONTROL</b>				
Infection control review				
Deficiencies corrected				
Staff update				
<b>G. MEDICAL EMERGENCY PREPAREDNESS</b>				
Current CPR				
Oxygen Tank				
Blood Pressure				
Emergency Kit and Drugs				
Staff knows location and use				
Expiration dates current				
Emergency Phone Numbers				
Emergency Plan Review				
<b>H. RADIATION SAFETY</b>				
Inspection Current				
Deficiencies corrected				
Lead Apron				
Apron x-rayed annually				
Film Positioners				
Films not held by hand				
Scatter Protection				
DAs certified in radiology				

Criteria	Yes	No	N/A	Comments
<b>I. MERCURY HYGIENE</b>				
Premeasured amalgam capsules				
Agitator Covered				
Storage of Scrap Amalgam				
Best Management Practices				
<b>J. CHEMICAL HAZARDS</b>				
Hazard Communications Standard Compliance				
Hazard Communication Standard				
Annual review				
MSDSs				
Missing MSDS requested				
Old MSDSs archived				
Supply Inventory/List of Chemicals				
Annual Training				
<b>K. PUBLIC HEALTH / DATA ANALYSIS</b>				
Ratio of Level I care to Level IV plus V care				
Level II at least 15% of total				
Chief understands the relationship between the “levels of care” and public health dentistry?				
Absence of IHS-nonrecommended procedures				
Sedative fillings less than 5% of restorations provided?				
SSCRs at least 80% of primary restorations involving three or more surfaces?				

### Summary And Recommendations

Date \_\_\_\_\_

Clinic Site \_\_\_\_\_ Reviewer \_\_\_\_\_

Category	Findings	Recommendations
Facilities		
HIPAA		
P&Ps		
Access to Care		
Infection Control		
Emergency Preparedness		
Radiation Safety		
Mercury Hygiene		
Chemical Hazards		
Public Health/Data Analysis		

### Management Feedback Form (Provide to Evaluatee at Close-Out Session)

Objective considered unsatisfactory: \_\_\_\_\_

Describe deficiencies related to this objective:

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Objective considered unsatisfactory: \_\_\_\_\_

Describe deficiencies related to this objective:

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Objective considered unsatisfactory: \_\_\_\_\_

Describe deficiencies related to this objective:

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Objective considered unsatisfactory: \_\_\_\_\_

Describe deficiencies related to this objective:

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Program strengths:

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**Management Feedback Form, continued**

Plan of action to correct deficiency(ies):

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Signatures: \_\_\_\_\_

Evaluator

Evaluatee

Date

cc: Service Unit Director/Tribal Health Administrator

## **Appendix VI: Infection Control Program Assessment**



### Infection Control Program Assessment

***A-acceptable, U-unacceptable, Ob-by observation, Int-by interview,  
Cor- corrected, Com-comments***

	A	U	N/A	Ob	Int	Cor	Com
<b>Personnel Elements</b>							
1. Each employee has received training on infection control							
2. Each employee has received, is in process of receiving, or has documentation of declination of Hepatitis B vaccination series							
3. Each employee has received an annual TB skin test and any appropriate follow-up for positive tests							
<b>Administrative Elements</b>							
1. Facility has a written, updated Infection Control Policy							
2. Facility has a written policy of required vaccinations							
3. Facility has a postexposure management plan that includes toll-free numbers and websites for access to additional information							
4. Facility has a policy regarding work related illnesses and work restrictions							
5. Facility has a policy for maintaining the confidentiality of employee medical records							
6. An incident log is maintained for all occupationally-related injuries and exposures, including sharps injuries							
7. All occupational exposures are investigated according to the management plan and steps are taken to prevent similar exposures in the future							
7. A copy of the most recent CDC Guidelines for Infection Control on Dentistry is available in the facility							
8. Records are maintained in the following areas							
a. Training and in-services in infection control (3 years)							
b. Inspection results							
c. Sterilization records (2 years)							
d. Healthcare associated infections							
9. Exposure control plan is reviewed annually for developments in safer medical devices							
<b>Contact Dermatitis and Latex Sensitivity</b>							
1. Patients are screened for latex sensitivity							
2. The facility can provide a latex-free environment for patients and dental healthcare personnel (DHCP) with latex sensitivity							

3. The facility has an emergency kit with latex free items							
4. Policies are in place to identify, evaluate, and manage DHCP with suspected or known latex allergy or occupational contact dermatitis							

**A-acceptable, U-unacceptable, Ob-by observation, Int-by interview,  
Cor- corrected, Com-comments**

	A	U	N/A	Ob	Int	Cor	Com
<b>Medical History</b>							
1. A thorough medical history is taken on each patient							
2. The medical history is reviewed and updated at each visit							
<b>Preventing transmission of bloodborne pathogens</b>							
1. Each employee has received, is in process of receiving or has documentation of declination of Hepatitis B vaccination							
2. Standard precautions are used for all patients							
3. Used sharps are placed in a puncture resistant container							
4. Needles are recapped using either a one-handed scoop technique or a mechanical device designed for holding the needle cap							
5. Exposure incidents are followed up according to CDC recommendations							
<b>Hand Hygiene</b>							
1. Hands are washed with soap and water or cleaned with an alcohol gel before and after each patient							
2. Sterile gloves are used for appropriate procedures							
3. Fingernails and/or jewelry do not impair the proper use of gloves							
4. All cases of hand dermatitis are evaluated for treatment and follow-up							
<b>Personal Protective Equipment (PPE)</b>							
1. A surgical mask and eye protection with solid side shields or a face shield to protect mucous membranes of the eyes, nose, and mouth are worn during procedures likely to generate splashing or spattering of blood or other body fluids							
2. Masks are changed between patients or if the mask becomes wet							
3. Protective wear (gown, lab coat, uniform) is worn when skin or personal clothing is likely to become soiled							
4. Protective clothing is removed before leaving work area							
5. Gloves are worn when a potential exists for contacting blood, saliva, mucous membrane, or OPIM							
6. Gloves are changed if they become torn and between each patient							
7. Sterile gloves are used for all surgical procedures (excluding simple extractions)							
8. Head and shoe covers are available for personnel who request them							

9. Protective clothing is changed if visibly soiled or if penetrated by blood or OPIM							
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**A-acceptable, U-unacceptable, Ob-by observation, Int-by interview, Cor- corrected, Com-comments**

	A	U	N/A	Ob	Int	Cor	Com
<b>Sterilization and Disinfection of Patient-Care Items</b>							
1. Critical and semi-critical items, including handpieces and accessories, are heat sterilized before and between uses							
2. Sterilized items are allowed to dry before handling							
3. Disposable items are not reused							
4. Noncritical patient-care items are barrier-protected or cleaned, or if visibly soiled, cleaned and disinfected after each use with an EPA-registered hospital disinfectant.							
5. Instrument processing area is divided into a "Clean" and "Dirty" area or measures are taken to avoid contamination of clean instruments							
6. Instruments are debrided prior to sterilization							
7. Puncture resistant gloves are used for instrument processing							
8. Masks, protective eyewear, and protective clothing are worn when instruments are cleaned manually							
9. Ultrasonic cleaner is tested periodically							
10. Internal and external chemical indicators are used for each instrument package or load of unwrapped instruments							
11. Time, temperature, and pressure are recorded for each sterilization load							
12. Sterilizer is loaded according to manufacturer's instructions							
13. Container or wrapping system is compatible with method of sterilization							
14. Unwrapped instruments are cleaned and dried prior to sterilization							
15. If instruments are sterilized unwrapped, there is a written policy on how they will be labeled and stored							
16. Internal and external chemical indicators are used for each instrument package or load of unwrapped instruments							
17. Time, temperature, and pressure are recorded for each sterilization load							
18. Chemical and biological monitors are used							
19. In facilities with a medical clinic, biological monitoring is done on the same frequency as the medical clinic							
20. In the case of a positive spore test: problem is corrected, and another spore test is run to confirm sterilization effectiveness. All affected instruments are resterilized							

21. Wrapped instruments are marked for date of sterilization, sterilizer, and load							
22. Sterile packages are inspected before use, compromised packages are re-sterilized prior to use							
23. Sterile packages are stored in a closed or covered cabinet							
24. All sterilization equipment is FDA-approved							
25. Manufacturers' instructions are available for sterilization equipment							
26. Routine preventive maintenance is performed per manufacturers' instructions							

**A-acceptable, U-unacceptable, Ob-by observation, Int-by interview, Cor- corrected, Com-comments**

	A	U	N/A	Ob	Int	Cor	Com
<b>Environmental Infection Control</b>							
1. Cleaning and EPA-registered hospital disinfecting products are used correctly							
2. EPA registered intermediate level disinfectants are used for environmental surfaces that are not barrier protected							
3. PPE, as appropriate, is used when cleaning and disinfecting environmental surfaces.							
4. Surface barriers are used on surfaces difficult to clean and changed between patients							
5. Contaminated environmental surfaces are appropriately cleaned							
6. Spills of blood or other potentially infectious materials are cleaned and decontaminated with an EPA-registered hospital disinfectant with low- (i.e., HBV and HIV label claims) to intermediate-level (i.e., tuberculocidal claim) activity							
7. Facility has an infected waste management plan that is consistent with state and/or federal regulations							
8. Contaminated non-sharp waste is stored in a puncture resistant, color coded bag							
9. Liquid waste is disposed of in a sanitary sewer system or in a manner in accordance with state regulations							
10. There is no carpet or cloth furnishings in patient care, lab, or instrument processing areas							
<b>Water Quality</b>							
1. Water used for routine non-surgical dental treatment meets EPA standards for drinking water (less than or equal to 500 CFU/ml)							
2. Any device connected to a water system that enters the patient's mouth is flushed for 20–30 seconds between patients							
3. Water lines are monitored according to manufacturer's recommendations, using commercial, self-contained test kits or commercial water-testing laboratories							

4. The facility has a protocol to manage water not meeting the EPA standard							
5. Sterile irrigating solutions are used for all surgical procedures							

**A-acceptable, U-unacceptable, Ob-by observation, Int-by interview,  
Cor- corrected, Com-comments**

	A	U	N/A	Ob	Int	Cor	Com
<b>Special Considerations</b>							
1. Handpieces are removed, cleaned and sterilized between each patient							
2. Patients are not instructed to close lips around suction devices							
3. Gloves are worn when exposing radiographs and when handling contaminated packets							
4. Radiography film holders are disposed of, heat sterilized or disinfected appropriately between patients							
5. Aseptic procedures are used when transporting and developing films							
6. Dispensing medication from multidose vials:							
a. sterile needle and syringe are used for each patient							
b. Vials are kept out of patient care areas							
7. Biopsy specimens are stored in a sterile, leak-proof container labeled with the biohazard symbol							
8. Extracted teeth are handled as regulated medical waste unless returned to the patient							
9. Extracted teeth to be used for educational purposes are appropriately sterilized							
<b>Dental laboratory</b>							
1. Appropriate PPE is used for all laboratory procedures							
2. Prostheses and impressions are disinfected with an intermediate level disinfectant before being handled in the laboratory							
3. Heat-tolerant lab items (e.g., bite forks, metal impression trays) are autoclaved before reuse							
4. Pumice is mixed with a disinfectant and changed at least daily							
5. Rag wheels are cleaned and disinfected (autoclaved, preferably) at least daily							
6. Lathes are cleaned and disinfected daily							
7. Case pans are cleaned and disinfected when visibly soiled and after each case is completed							
<b>Tuberculosis</b>							
1. The clinic has a written TB control plan							
2. All personnel have baseline tuberculin skin tests or chest x-rays							
3. Staff are trained to recognize the signs and symptoms of TB							

4. All patients are assessed for signs, symptoms, and history of TB							
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**A-acceptable, U-unacceptable, Ob-by observation, Int-by interview,  
Cor- corrected, Com-comments**

	A	U	N/A	Ob	Int	Cor	Com
<b>Infection Control Monitoring</b>							
1. Facility conducts periodic infection control monitoring							
2. Practices not in compliance with infection control standards are addressed							
3. All healthcare-associated infections are evaluated and any trends undergo formal evaluation							

## Appendix VII: Sample Letter

Date:

To: \_\_\_\_\_

Service Unit Director/Tribal Health Administrator

Attn: \_\_\_\_\_

Dentist/Program Personnel

From: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Location: \_\_\_\_\_ Area: \_\_\_\_\_

Subject: Scheduling and Preparation for Dental Quality Assessment Evaluation Visit.

As previous established in our telephone conversation, I plan to visit and evaluate your Dental Program on:

Date(s)\_\_\_\_\_ From time: \_\_\_\_\_to time:\_\_\_\_\_

For the convenience of those patients and staff involved, it will be desirable to observe the schedule outline as follows:

### Pre-evaluation conference with dentist

And/or appropriate staff Time:\_\_\_\_\_

Evaluation Time:\_\_\_\_\_

Post-evaluation Conference with Evaluatee Time: \_\_\_\_\_

Please contact me if any changes in this schedule need to be made. It is suggested that you review and become familiar with the evaluation criteria that will be reviewed prior to the evaluation. It would also be helpful if indicated file material, lists, data, and minutes of applicable meetings are collected prior to the evaluation visit.

The purpose of the evaluation is to assist you and your staff in the enhancement of dental care available to the local community, as well as identifying your dental program needs. It is meant to be an open and ongoing process contributing to the exchange of information.

I look forward to sharing this educational experience with you.

Name: \_\_\_\_\_

Evaluator

Title: \_\_\_\_\_

Location: \_\_\_\_\_

Additional comments or instructions:

## Chapter 8, Dental Clinic Efficiency and Effectiveness

### Table of Contents

- A. Introduction, Background, and Purpose
- B. Patient Flow and Control of the Appointment Schedule
- C. Data Indicators for Dental Clinic Efficiency and Effectiveness
- D. Relationship Between Dental Clinic Efficiency and Resource Requirements  
Methodology

### Appendices

- I. Controlling an Overloaded Appointment Schedule
- II. Dental Appointment Agreement
- III. Broken Appointment Rate and Walk-In Rate Worksheet (MS Word)
- IV. Patient Flow Questionnaire
- V. Efficiency and Effectiveness Data Indicators Worksheet (MS Word)

### Web Links

- #1 Broken Appointment Rate and Walk-In Rate Worksheet (Excel)
- #2 Efficiency and Effectiveness Data Indicators Worksheet (Excel)
- #3 Reference Value Calculations for Data Indicators (Excel)

### Introduction, Background, and Purpose

#### 1. Introduction

A key public health principle is to provide the most good for the most people with the resources that are available. It follows that the efficient and effective use of available resources is crucial in dental programs serving AI/AN communities, because most programs are insufficiently funded to provide adequate access for all persons who seek dental care.

#### Definitions

Efficiency: The degree to which (health) outputs are achieved in terms of productivity and resources allocated (source: United States Department of Justice)

Effectiveness: The extent to which an intervention achieves health improvements (source: Harvard School of Public Health)

### **Characteristics of an Efficient and Effective Dental Program:**

- Provides access to services for all persons who seek and need care
- Provides dental care that is appropriate, of high quality, cost-effective, and acceptable to patients
- Achieves smooth patient flow throughout the work day
- Promotes continuity of patient care, even when there is turnover of professional staff
- Meets consistently all regulatory requirements and standards of practice

## **2. Background**

Much of the information in this “Dental Clinic Efficiency and Effectiveness” manual was originally presented in an IHS training course manual entitled, “Dental Clinic Efficiency and Effectiveness Management Tools.” The latter was developed by the Clinical Efficiency Workgroup of the IHS Dental Services Delivery Committee that was in existence at that time. This manual was completed in July of 1995, but it was distributed only to IHS and Tribal dentists who took the “Dental Clinic Efficiency and Effectiveness” continuing education course offered by the IHS dental program. With this current revision of the IHS OHPG, a decision was made to include a “Dental Clinic Efficiency and Effectiveness” chapter available within the OHPG to make this information available to all dental staff and administrators.

Because evidence-based data on best practices to promote clinical efficiency and effectiveness in dental programs serving AI/ANs are almost nonexistent, this document has its basis in recommendations from recognized experts in the field. This includes the observations of numerous senior IHS clinicians with extensive experience working in I/T/U dental programs, as well as dental administrators and consultants working within the IHS dental program. Some of these clinicians and consultants have performed literally hundreds of dental program reviews in I/T/U programs, and the guidelines presented have been tested and modified over time. The list of recommendations has evolved somewhat since the 1995 manual was completed, both through the addition of new topics and the elimination of some seldom-used criteria, but the basic information remains unchanged.

## **3. Purpose**

The primary purpose of this document is to provide ways for local I/T/U dental programs to evaluate their own programs using various data indicators and scheduling/patient flow recommendations. This information can then be used to make improvements in clinical efficiency and effectiveness in their own programs. Although the provision of dental program reviews by consultants from IHS Area Offices and Dental Support Centers is not

as widespread as it was several years ago, this manual is also suitable for use by consultants to review and provide recommendations to I/T/U dental programs under their purview.

## **Patient Flow and Control of the Appointment Schedule**

### **1. Appointment Scheduling**

**Recommendation:** Appoint patients no more than three weeks ahead in the appointment schedule.

**Rationale:** Many programs have found that when appointments are made more than three weeks ahead of the designated appointment time, the broken appointment rate tends to be higher than if the schedule is restricted to a three-week maximum. Also, if the appointment schedule is filled too far ahead, there might be insufficient lead time to allow for the scheduling of meetings and other unforeseen events. Then when important events arise that must be attended by dental staff, patients must be rescheduled. Not only is this inconvenient for patients and staff, but it also results in the schedule being filled even further ahead, which compounds the problem.

**Implementation:** Ideally every patient who requests an appointment would receive one, as long as the book is filled no more than three weeks ahead. Few programs are able to do this, because of a high demand for dental care and limited resources. If a program has been giving appointments on demand (providing an appointment for every patient who asks for one), and if the schedule is filled only four or five weeks ahead, then it might be possible to bring the schedule back to the three-week maximum by implementing the patient flow suggestions that are described in this manual. If the patient load increases, or if the schedule is already filled far beyond the three-week level, then another appointment system should be considered.

If a program is overwhelmed with patients, which is the case at many I/T/U programs, a formal call-in system, such as a weekly call-in, is typically implemented. An alternative that is used less frequently is a formal waiting list system.

A more recent scheduling method that some clinics have adopted is the “walk-in clinic” concept. This scheduling technique is usually found in clinics that are entirely overwhelmed with patients, and often these clinics have high broken appointment (BA) rates. This system automatically takes care of the three-week limit that is recommended for scheduling, because patients are seen the day they walk in for treatment. It also has a dramatic effect on lowering the BA rate, because of the same-day appointments. Many variations of the walk-in clinic method exist, and many clinics schedule regular patients for part of the day or certain days of the week and have a walk-in clinic for the remainder of the hours or days available. A similar technique is the “same day call-in system.” All of the above appointment techniques are described in more detail in Appendix I, “Controlling an Overloaded Appointment Schedule.”

Approval should be obtained from Service Unit Director or Health Program Director and from the Tribal Health Committee or Tribal Council before making any significant changes in appointment policies. Having the endorsement of the health program administrators and the tribe is important so they can provide support for the new appointment policies in the event of complaints by patients. If feasible, patient surveys or focus groups can be conducted to determine what type of appointment system the patient population prefers. At a minimum, patients should be informed that a change in policy is coming.

## 2. Series of Appointments for Patients

**Recommendation:** In general schedule only one appointment at a time per patient, rather than setting up a series of appointments for the patient. One possible exception might be the scheduling of a series for denture patients who currently do not have an old denture to wear, with the time interval between appointments approximating the time it will take for the case to come back from the lab for each step of the treatment plan.

**Rationale:** Programs that provide a series of appointments for patients usually do so because they are scheduled well beyond the recommended three-week maximum. Often this is a response to patient complaints that the time interval between appointments is too long. However, providing a series of appointments only fills up the appointment schedule further ahead, which makes the problem worse. Also, when a patient misses an appointment in the series there is a question as to whether the program should wait to see if the patient will appear for the next one in the series or cancel all remaining appointments in the series. The experience of many programs has been that if one appointment in a series is missed, there is a good chance that the next one in the series will be missed too.

**Implementation:** Set a general policy of scheduling only one appointment at a time. If in a special case a series of appointments is deemed necessary (e.g., patient leaving the area for an extended time or an upcoming important event such as the patient's wedding), the patient should be informed that if any appointment in the series is missed, then the other appointments will immediately be canceled.

## 3. Time Allotted for Procedures

**Recommendation:** Schedule a range of times for various procedures, rather than scheduling the same amount of time for each patient. The amount of time scheduled should be commensurate with the amount of time usually needed for the type and number of procedures planned for that visit.

**Rationale:** Some programs schedule the same amount of time, usually one hour, for virtually all patients. This is inherently inefficient, because many procedures take less than an hour and some take longer.

**Implementation:** Determine how much time each type of procedure typically takes and schedule accordingly. Many programs have found it best to schedule more than one

column of patients for each dentist, with one column of patients scheduled for more time-consuming procedures and one or more columns scheduled for simpler procedures, such as exams, fluoride treatments, and application of sealants. If expanded functions dental assistants are used in the program and enough operatories are available, then two or three patients can be scheduled during the same period of time for routine restorative procedures.

#### 4. Selective Double-Booking of Patients

**Recommendation:** Double-book patients who have a history of broken appointments, unless a ready supply of emergency patients is available throughout the work day.

**Rationale:** Most programs have found that patients who have missed appointments in the past are likely to break them in the future. Providing an additional patient during the same time slot will ensure that the staff stay busy if the first patient breaks another appointment. In busy clinics that have emergency patients available at most times, the emergency patients can fulfill the need for replacement patients.

**Implementation:** Determine which patients have a history of broken appointments and routinely double-book those patients, unless emergency patients are typically available throughout the day. If dental charts are not available when appointments are made, it is more difficult to determine which patients have a history of broken appointments. However, dental receptionists and assistants who have been with the program for a number of years can usually identify patients who have missed several appointments in the past.

#### 5. Mix of Services for Double-Booked Patients

**Recommendation:** If Patient A obtains an appointment through the normal mechanism but has a history of BAs, resulting in double-booking with Patient B, then Patient B should be one who requires treatment that is not dentist-intensive, such as an exam, fluoride treatment, toothbrush prophylaxis, or application of sealants.

**Rationale:** Dentist-intensive procedures are procedures that require significant blocks of time for the dentist with little opportunity to leave the dental chair, such as long surgical procedures, complex restorative procedures, endodontics, and prosthetic procedures. Dentist-intensive procedures are not a good choice for double-booked patients, because both patients might appear for their appointments. Procedures that do not take a large amount of dentist time are preferred.

**Implementation:** Train staff to schedule procedures that are not dentist-intensive for double-booked patients. Exams provide the most flexibility. If the original patient does indeed break his or her appointment, then both an exam and some treatment can be provided for the backup patient. If both patients appear for their appointments, then the backup patient's appointment can be limited to an exam only.



## 6. Quadrant Dentistry

**Recommendation:** In general perform quadrant dentistry whenever possible. This includes treating multiple quadrants when treatment needs are minimal.

**Rationale:** The IHS has always recommended quadrant dentistry as an efficient way to perform restorative treatment, as opposed to restoring one tooth at a time. Operatory setup and cleanup time, greeting and dismissing the patient, and waiting for anesthesia take about the same amount of time whether one tooth or a quadrant is restored.

**Implementation:** Plan restorative procedures by quadrant whenever possible and schedule an appropriate amount of time for quadrant dentistry.

## 7. Short-Notice Call List

**Recommendation:** Maintain a list of patients who can appear on short notice to fill gaps in the appointment schedule.

**Rationale:** Having a list of patients who can respond on short-notice enables programs to fill canceled appointments (when there is adequate notice prior to the scheduled appointment time) and in some cases broken appointments (if the original appointment was long enough to allow for a less time-consuming procedure to be provided for the short-notice patient). This helps to eliminate “down time” in the dental clinic.

**Implementation:** Develop a short-notice call list consisting of patients who were not able to obtain a regular appointment. The list might include people who could not get an appointment through a call-in appointment system or people who are on a waiting list but would like to come as soon as possible. It is a good idea to discard the list periodically, such as weekly or monthly, so that it remains current. Patients should be informed that this is a temporary list and there is no assurance that they will be called through this mechanism. They should also be encouraged to continue to seek a regular appointment using the clinic’s standard appointment system. To enhance the effectiveness of the short-notice list, some programs also write a time on the appointment slips that is 10 minutes earlier than the actual appointment time. This provides them with an extra 10 minutes to determine that a patient has failed an appointment and fill the time slot with a short-notice patient.

## 8. Considerations for Dental Emergency Patients

The treatment of dental emergency patients, or walk-ins (WIs), is a significant part of most I/T/U dental programs. Following are four recommendations that many programs have found helpful with regard to emergency care:

- Ask emergency patients to call back for their follow-up exam and treatment, rather than providing an appointment at the conclusion of the emergency visit. See “Scheduling of Follow-up Appointments for Emergency Patients” below.

- After emergency patients call back for a follow-up appointment, an exam and basic preventive and restorative treatment should be provided prior to more complex treatment such as root canal treatment (RCT), crowns, bridges, and removable prosthetics (Levels of Care guidelines). See “Type of Follow-up Appointment for Emergency Patients” below.
- If the emergency patient has an abscessed tooth, the dentist should explain the sequence of treatment necessary to save the tooth so the patient can decide if he or she is willing to go through the required steps. See “Early Determination of Feasibility of RCT” below.
- In general perform the necessary emergency treatment at that emergency visit whenever possible, rather than providing only pain medication and asking the patient to return on another day. Exceptions to this would be patients with advanced infections requiring antibiotics, where providing definitive treatment would be inadvisable on the first visit.

## 9. Need for Designated Emergency Time for WI Patients

**Recommendation:** The decision as to whether or not a program should have a special time set aside to treat WIs should be based on an analysis of available data, rather than arbitrarily. The alternative to a designated WI time is to work emergency patients into the schedule between other patients.

**Rationale:** It is important to treat WI patients efficiently, both to meet the needs of the emergency patients and to minimize disruption of appointments for scheduled patients. If the program has only a few WI patients per day on average, then having a designated emergency time will result in “down time” that could have been used to treat scheduled patients. If the program has enough WI patients to warrant a designated WI time, then it is important to allow the proper amount of time, based on the average emergency load. Too little designated time results in disruption of the appointment schedule, while too much designated emergency time cuts into the amount of time available for scheduled appointments.

**Implementation:** The first step is to determine the average number of WI patients per day, the usual range in the number of WIs per day, and the average number of BAs per day in the clinic. There are two ways to approach the question of whether to designate a special emergency time in the schedule:

Option #1: Divide the average number of WI patients per day and the usual range in number of WIs per day by the number of dentists available to see emergency patients (e.g., 5 WI patients per day, with a range of 0 to 8, and a staff of 2 dentists = 2.5 emergencies per day per dentist, with a range of 0 to 4 emergencies per day per dentist). If the average number of WIs per day per dentist is three or less, then a special emergency time is probably not necessary. Other variables might also influence the decision to assign or not assign a special emergency time in the schedule, such as if the usual range is very wide (which can result in days when the dentists are overwhelmed

with WIs), if the BA rate is very low (which allows little time to squeeze in the emergency patients), or if the BA rate is very high (which provides plenty of time to see emergency patients).

**Option #2:** An alternative method is to compare the BA rate with the WI rate to determine whether a dedicated emergency time is necessary. If the average number of BAs per day exceeds the average number of WI patients per day, especially if the discrepancy is large, then adequate time should exist during the day to see WI patients without setting aside a special emergency time or emergency team. If the average number of BAs per day is less than the average number of WIs per day, then a dedicated emergency time is probably necessary. If the discrepancy is large, then more time should be set aside to treat emergency patients than if the discrepancy is small.

If a special emergency time is necessary, it is important to ensure that the amount of provider time dedicated to the treatment of dental emergencies is not excessive. If the providers are not kept busy during the entire emergency time, then consideration should be given to shortening the WI time in the schedule or decreasing the number of providers assigned to treat emergency patients.

## 10. Scheduling of Follow-Up Appointments for Emergency Patients

**Recommendation:** In general, emergency (WI) patients should be asked to call back for a routine appointment following dental emergency treatment, rather than providing patients with a follow-up appointment as they leave the clinic following their emergency visit. An exception would be patients with severe infections who need a follow-up appointment to monitor progress on the emergency condition.

**Rationale:** Although the following is anecdotal information only, many I/T/U dental programs have reported that a large proportion of emergency patients (on the order of two out of three) who are given a follow-up appointment as they leave the emergency visit will fail that appointment. The reason is that many emergency patients are episodic users who typically appear at the dental clinic only if they are in pain or have some other dental problem. If offered a follow-up appointment at the conclusion of the emergency visit, episodic users will almost invariably accept the appointment, but many of them will fail to appear at the appointed time.

**Implementation:** Emergency patients should be asked to contact the clinic for a follow-up appointment in the same way that other patients seek an appointment. If a call-in system or waiting list system is used, patients should be instructed to call in at the designated time or asked to sign up for the waiting list. If the program has a walk-in clinic for routine dentistry, the emergency patient can be asked to return during a future walk in time. If the program gives appointments on demand, a diplomatic way to instruct the emergency patients to call back is to ask them to phone the clinic in a day or two to let the dental staff know how they are doing following the emergency treatment, and they will be given a follow-up appointment when they call. Many programs have found that

patients who follow through and contact the clinic to make an appointment are more likely to keep the appointment.

## 11. Type of Follow-Up Appointment for Emergency Patients

**Recommendation:** In most cases the first follow-up appointment for an emergency patient should be for a complete exam, in order to determine the patient's overall oral health status and treatment needs. This follows the Levels of Care guidelines that have long been recommended for I/T/U dental practices.

**Rationale:** Although there is some controversy about this, most senior clinicians in I/T/U programs prefer to complete the dental exam before continuing with treatment that was started during the emergency visit. For example, if a molar is opened for root canal treatment during an emergency visit, the next visit would normally be for a complete dental exam, not continuation of the RCT. The reason is that often an exam reveals other carious lesions that need to be treated before they progress to the stage where they might also need root canal therapy. As mentioned in the previous recommendation, an exception to the "exam first" guideline would be an emergency patient who has a severe infection that needs immediate follow-up treatment. In that case the patient would already have a follow-up appointment from the emergency visit.

**Implementation:** When an emergency patient contacts the clinic for a follow-up appointment as they were instructed to do, schedule an exam appointment for the patient. If time allows, basic treatment can also be provided at that appointment, following the Levels of Care guidelines.

## 12. Early Determination of Feasibility of RCT

**Recommendation:** If an emergency patient requires endodontic treatment to save a tooth, the dentist should have a frank discussion with the patient prior to initiation of treatment to allow the patient to determine whether RCT is feasible for him or her.

**Rationale:** RCTs are often initiated without adequate discussion with the patient as to what will be involved to save the tooth. For example, after the dentist accesses a molar for RCT, it is not unusual for the patient to fail to call back for an exam or miss an appointment for basic treatment and subsequently fall out of the system. Then he or she typically returns for emergency treatment after the tooth becomes symptomatic again. If at that second emergency visit the necessary treatment sequence is explained more thoroughly, the patient will sometimes state that if he had known so much was involved he would have chosen to have the tooth extracted at the first visit.

**Implementation:** The dentist should explain the sequence of treatment necessary to save the tooth so the patient can decide if he or she is willing to go through the required steps. This sequence is based on Levels of Care, and the patient should be informed that basic treatment will be provided prior to completion of the RCT, and then a final restoration will be needed to protect the tooth receiving RCT. If the sequence is accepted by the patient, the tooth is opened for RCT during the emergency visit. If the patient is unable or

unwilling to commit to the treatment sequence, an alternative is extraction at that emergency visit so the patient will not have to endure any more pain needlessly. If the patient is not interested in receiving an exam and basic treatment first, another alternative is to seek RCT privately, at the patient's expense. If the patient is "on the fence" when deciding how to proceed, then it is best to err on the conservative side and open the tooth for RCT. If this patient fails to seek follow-up appointments and presents again with a toothache in the same tooth, then the options should be presented again. Usually at this visit the patient will find it easier to make a decision, and that decision is often to choose extraction. No one likes to see patients lose teeth, but in the case of episodic users it is often the choice that patients find most feasible for themselves.

**Note:** These discussions should be documented in the progress notes for risk management reasons. Some programs use an endodontic information sheet or consent form that discusses the pros and cons of endodontic treatment and the necessary sequence of treatment, with documentation in the progress notes that an information sheet was provided or a consent form was signed.

### **13. Addressing the BA Problem**

BAs are an almost universal problem in I/T/U dental programs. Following are some basic recommendations that many programs have found useful in dealing with BAs. The recommendations are divided into two categories: preventing BAs and compensating for BAs once they occur.

#### **Preventing BAs**

- Schedule patients no more than three weeks ahead in the appointment book or computerized appointment system.
- Routinely ask emergency patients who need a follow-up exam appointment to call back for that appointment, rather than scheduling it at the conclusion of the emergency visit. Many emergency patients are episodic users who will accept a follow-up appointment but then fail to keep it. An exception would be patients with severe infections that need to be scheduled for follow-up to prevent serious consequences.
- Have a BA policy in the form of a BA agreement or "contract" that is signed by the patient or parent/guardian, and give a copy of this agreement to the patient (Dental Appointment Agreements are discussed below in more detail).
- Use patient reminders such as phone calls, letters, or email messages to remind patients of their appointments.

#### **Compensating for BAs**

- Maintain a short-notice call list and use it to fill gaps in the appointment schedule.

- Double-book patients who have a history of BAs. It works best if the extra patient is for a simple procedure such as an exam, in order to provide flexibility in case both patients appear for their appointments.
- Use emergency patients to fill BAs whenever possible.
- Consider asking patients who have a history of BAs to come in 10 minutes before their scheduled appointment time. Then if the patient has not appeared by the actual appointment time, the staff can start looking for a short-notice patient.
- Follow the Levels of Care guidelines so that basic preventive and restorative services are provided first in the treatment plan, prior to the provision of more complex treatment such as RCT, crowns, bridges, and removable prosthetics. See explanation in “Following Levels of Care Guidelines” below.

The rationale and implementation of some of these recommendations have already been addressed earlier in this manual. Details on the remaining recommendations are provided below.

#### **14. Dental Appointment Agreement (BA Contract)**

**Recommendation:** Have a Dental Appointment Agreement or BA contract that is signed by the patient or parent/guardian, and give the patient a copy of the agreement.

**Rationale:** The use of BA policies has been in place in most I/T/U dental programs for many years. More recently several programs have gone beyond simply having a BA policy and have developed a Dental Appointment Agreement or BA contract that is signed and dated by the patient or parent/guardian. Proponents of the contract format have reported that it has helped to reduce the BA rate. Some patients have even stated upon arrival in the clinic that they were going to skip their appointment, but then they remembered the form they signed and thought they had better keep the appointment.

**Implementation:** The first step is to seek approval from the Health Director, Tribal Health Committee, and any other pertinent Tribal entities before adopting a Dental Appointment Agreement. As with other changes in appointment policies, having the endorsement of the health program administrators and the tribe is important so they can provide support for the new appointment policies in the event of complaints by patients. The written contract begins by stating the BA policy, e.g., if two appointments are missed within a six-month period, then the patient is eligible only for emergency care for the next six months. At the bottom of the form there is a place for the patient or parent/guardian to sign and date the form to confirm that he or she understands the BA policy and agrees to the terms of the agreement. Then a copy of the form is provided to the patient or parent/guardian so he/she can refer back to it in the future. Ideally this would be a copy of the signed form, but if a copy machine is not readily available in the dental clinic then a copy of the blank form will suffice. The original of the form is placed in the dental chart. Appendix II is a sample Dental Appointment Agreement.

Some clinics have also reported that the contract format seems to help reduce the BA rate even if the policy is not rigorously enforced. Other programs enforce the policy strictly, some to the point of requiring patients to come in for a talk with a designated “BA Manager” after missing a single appointment. If the policy is enforced, it is important to enforce it equitably and without favoritism. Having the Health Director and Tribal Council behind the policy is important in cases where certain patients who are denied an appointment immediately complain to the council (every clinic has them).

## 15. Appointment Reminders

**Recommendation:** Consider using patient reminders, such as phone calls, letters, or email messages, to remind patients of their appointments.

**Rationale:** Although some programs have found that reminders make no difference in the BA rate, other programs have found that they have substantially reduced BAs. Many I/T/U programs currently do remind patients of their appointments. This is usually done via a phone call a day or two prior to the appointment. In cases where the patient does not have a phone, letters are typically mailed a week ahead of the appointment. Reminders might not be practical in clinics that have no receptionist, especially if patient care would suffer when the person making the calls is needed in the clinic. Also, there is a school of thought that suggests that reminders not be used at all, because patients become too dependent on them. The theory is that if for some reason reminder calls cannot be made for a period of time, the BA rate might actually increase. For these reasons, the use of appointment reminders is optional, depending on the program’s preferences and the perceived results following the use of reminders.

**Implementation:** The dental receptionist or other designated staff member is assigned to make the phone calls and/or mail the reminder letters. The widespread use of answering machines and cell phones in recent years has complicated the use of phone reminders. If a message is left on an answering machine, there is no assurance that the patient checks messages or that another family member has not erased the message before the patient hears it. Also, if the clinic is given a land phone line number but the patient uses a cell phone for most calls, then he or she might never receive the call. It is a good idea to ask patients for their cell phone numbers if that is the phone they usually use.

## 16. Adjusting Time on Appointment Slip

**Recommendation:** Consider listing a time on the appointment slip that is 10 minutes earlier than the actual appointment time, at least for patients who have a history of BAs or who are chronically late. An alternative is to ask patients to appear 10 minutes in advance of their appointment time for updating of paperwork.

**Rationale:** While not in widespread use, some programs routinely list a time on the appointment slip that is 10 minutes earlier than the time designated in the appointment book or computerized schedule. Other programs do the same thing, but only for patients who have a history of BAs or who are chronically late. In both cases, if the patient has

not appeared by the actual appointment time, the staff can be reasonably certain a BA has occurred and can start looking for a short-notice patient to fill the empty slot in the schedule.

Still other programs might choose not to follow this practice because doing so sets somewhat of a double standard. That is, if the program is asking the patient to arrive at a certain time, the program has an obligation to see the patient at that time as well. For these programs the alternative of asking the patient to appear 10 minutes in advance of the appointment to update paperwork might be more acceptable. This is likely to be most effective if the appointment slip includes a written request to arrive 10 minutes prior to the listed time, as opposed to expecting patients to remember this instruction.

**Implementation:** As has already been mentioned, among programs that use these techniques some use them for all patients, while others use them only for patients who have a history of BAs or who are chronically late for their appointments. The actual act of adjusting the appointment time or including a statement on the slip to come in 10 minutes prior to the listed time is self-explanatory. If asking patients to come in early is a standard practice in the clinic, and if the clinic uses a BA contract (see #14, above), then the contract should state the clinic's policy.

## 17. Following Levels of Care Guidelines

**Recommendation:** Follow the Levels of Care guidelines when scheduling patients so that basic preventive and restorative services are provided first in the treatment plan, prior to more complex treatment such as RCT, crowns, bridges, and removable prosthetics.

**Rationale:** There are many reasons to apply Levels of Care principles, and one of them relates to BAs. Many patients who miss appointments, especially episodic users, will do so early in the treatment plan. Because exams and basic services are by nature less time-consuming than complex services, having a BA for a short appointment impacts the schedule less than a BA for a long appointment.

**Implementation:** Write treatment plans with Levels of Care guidelines in mind and follow the sequence of treatment written in the plan.

## 18. Tracking Broken Appointment Rate

**Recommendation:** Programs should track their BA rate over time to determine whether the rate is increasing, decreasing, or staying the same.

**Rationale:** Knowing the BA rate is helpful for making decisions on scheduling, improving access to dental care, and other program management issues. As changes are made in the dental program, such as making scheduling changes, the effect of these changes on the BA rate can be determined. Also, if the BA rate changes over time, it might be necessary to adjust the dental emergency time, as previously described.



**Implementation:** Select a method for determining the BA rate and assign a staff member to collect the necessary data and monitor the BA rate over time. It is helpful to have this information presented at dental staff meetings on a periodic basis, such as monthly or quarterly. For those familiar with QI data analysis techniques (see chapter 7, pages F-9 through F-11 of the OHPG), the use of a run chart or control chart is a simple visual technique to present the data.

## 19. Determining Broken Appointment Rate

Following are three methods for determining the BA rate:

### 1. Tracking the BA rate on a daily basis

Some clinics have assigned the receptionist or a dental assistant to track the number of patients scheduled and the number of BAs at the end of each work day (see Appendix III for a sample Microsoft Word tally sheet, “Broken Appointment Rate and WI Rate Worksheet (MS Word).”

Although not needed to calculate the BA rate, the number of WI or emergency patients is also included to enable the program to calculate the average number of WIs per day and the BA/WI ratio.

As an alternative, the data can be entered into an Excel spreadsheet with embedded formulas for calculating the BA rate, WI rate, and BA/WI ratio (Web link #1). To gain access to the Excel spreadsheet, click on “Broken Appointment Rate and Walk-In Rate Worksheet (Excel)” in the table of contents. Some programs prefer a paper worksheet and some prefer the electronic method, just as some programs prefer a paper appointment book and others choose an electronic appointment system.

The BA rate is calculated by dividing the number of BAs by the number of patients scheduled that day (excluding WI patients) and multiplying by 100. This provides a BA rate as a percentage of number of patients scheduled. Example: 3 BAs in a day divided by 14 patients scheduled equals .214, or a BA rate of 21.4 percent.

Tracking the BA rate daily typically takes only a few minutes per day of the receptionist’s time and is the most accurate way to calculate the BA rate, because it includes every clinic day and does not depend on the quality of data entered into the RPMS Dental Data System. Using this method, the BA rate can also be calculated for any time period needed if the BA worksheets are saved in a file or if the electronic spreadsheets are saved in a folder.

**Note:** Some programs also track “Canceled but Unfilled” appointments and add these to the BAs when calculating the BA rate. Most programs define a “canceled appointment” as one where sufficient notice is given by the patient to enable the staff to find a replacement patient prior to the

appointment time. If a canceled appointment is not filled with another patient, then the effect on patient flow is the same as for a broken appointment.

2. Using a sample of days from the appointment schedule

This method involves using either a random sample of 20 or 30 days or selection of a typical month or two from the appointment schedule, whether it is an actual appointment book or day sheets from a computerized appointment schedule. The number of scheduled appointments and the number of BAs are determined from the sample, and then a percentage is calculated as in the preceding example. The accuracy of this method depends on whether the sample chosen is representative of the total number of days that patients are treated. As in the preceding method, some programs might choose to include canceled but unfilled appointments with the BAs. Either Appendix III (MS Word) or Web Link #1 (Excel) version of the “Broken Appointment Rate and Walk-In Rate Worksheet” can be used to calculate the BA rate from the appointment schedule sample.

3. Using the Annual Basic Measures Report from the RPMS Dental Data System

The clinical efficiency data indicators contain a formula for calculating the BA rate using data from the Compiled Statistical Reports (RCST) in the RPMS Dental Data System. The Annual Basic Measures component of the Compiled Statistical Reports provides the data needed to calculate the BA rate. The formula is as follows:

$$\text{BAs} / (\text{Dental Visits Past 12 Months} + \text{BAs} - \text{Emergency Visits}) \times 100$$

Example: From Annual Basic Measures Report, Broken Appointments = 1426, Dental Visits Past 12 Months = 8164, and Emergency Visits = 2319, which when plugged into the formula results in the following calculation:

$$1426 / (8164 + 1426 - 2319) \times 100 = 1426 / 7271 \times 100 = 19.6 \%$$

This method relies on the accuracy of the procedure codes that have been entered into the RPMS DDS. If the data entries are complete and accurate, results obtained with this method should compare favorably with the other methods. If data are missing or entered inaccurately, then this method will be less reliable. The advantages of this method are ease of calculation and the ability to compare current BA rates with those of previous years.

## 20. Clinic Opening Time vs. Time First Patient is Seen

**Recommendation:** In general the first patient should be seated and seen within 15 minutes of clinic opening time.

**Rationale:** The most efficient I/T/U dental programs typically see the first patient either at the clinic opening time or within 15 minutes thereafter. However, in some other programs a significant amount of time passes between the clinic opening time and the time when the first patient is actually seen. In extreme cases the discrepancy is an hour or more, such as when providers work 10-hour days and the auxiliary staff are on eight-hour days. Excessive amounts of set-up time before the first patient is seen generally results in wasted time, and there is a tendency for some providers to routinely appear late for work because patients will not be seen immediately after the clinic opens.

**Implementation:** Schedule and see the first patient either at or shortly after the designated clinic opening time. Ideally, one staff member should have flexible hours to allow him or her to start work before regular clinic opening time, so that x-ray film processors can be started, dental units turned on, etc. This will enable the providers to start seeing patients exactly at the designated time when the clinic opens or very soon thereafter. The staff member who comes in early usually is allowed to leave work before the close of the clinic day to avoid an overtime situation.

## 21. Time Last Patient Completed vs. Clinic Closing Time

**Recommendation:** Schedule patients late enough in the day so the last patient is typically completed no more than 30 minutes prior to the designated clinic closing time.

**Rationale:** Clean-up time is needed at the end of the day to process instruments and clean the operatories, but the amount of time should not be excessive. While the auxiliaries are performing clean-up duties, it is assumed that the providers will be using this time to complete all unfinished dental charts for the day.

**Note:** Ideally progress notes are completed immediately following each patient's treatment, but they should always be completed by the end of the day.

**Implementation:** Receptionists and assistants who schedule patients can fine-tune their scheduling practices over time so that the last patient of the day is typically completed within 30 minutes of, but not beyond, the clinic closing time.

## 22. Alternative Work Schedules

**Recommendation:** If a program changes from standard eight-hour work days to an alternative work schedule, such as nine-hour days or 10-hour days, productivity and access to dental care should be maintained at least at levels present prior to the change.

**Rationale:** Many programs have adopted alternative work schedules, which typically involve working four 10-hour days each week with one day off, working nine-hour days

with a day off every two weeks, or some variation of these methods. Alternative work schedules are sometimes initiated because a program has an adequate number of dental staff members but is short of dental operatories. In that case, expanding the number of hours a clinic is open in effect increases the number of operator hours available per week. In other cases, extended hours are used if the staff have extremely long distances to travel from their homes to the clinic, which results in fewer commutes per week. In most cases, however, alternative work schedules are adopted as a perk for employees to give them three-day weekends either every week or every other week. In some programs that have perpetual staff vacancies, alternative work schedules are perceived as the only way the program can attract candidates to fill the vacancies. Whatever the reason for the adoption of alternative work schedules, it is important that former levels of productivity and access to care are maintained.

**Implementation:** Prior to initiating alternative work schedules, programs should determine baseline levels for access to dental care, broken appointment rate, and standard productivity measures. Then after adoption of the alternative schedules programs should monitor these indicators to ensure that access to care and productivity are maintained at least at prior levels. Maintaining productivity is a concern in many programs that use alternative work schedules, because of the fatigue factor inherent in performing technical procedures for many hours, problems with broken appointments early and late in the day, coordination with medical records and pharmacy if they are on different hours, and other factors. Prior to adopting alternative schedules, special consideration should be given to ensuring that providers and assistants are available to work with each other throughout the work day. This might seem obvious, but in programs that offer free choice among several work schedules, it is not unusual to have most of the providers working 10-hour days and most of the dental assistants working eight-hour days. This sometimes results in two hours per day that are entirely non-productive, because no assistants or few assistants are available early or late in the day. These issues should be discussed prior to initiating alternative schedules, and staff should be made aware that choices in schedules might be restricted to ensure that patient care is not adversely affected. As with any major change in program policy, alternative schedules must be approved by the health program director.

### 23. NonClinical Activities for Providers

**Recommendation:** The non-clinical activities of providers should be kept at the minimum level possible and should correspond to the provider's billet/job description and level of responsibility.

**Rationale:** The amount of provider time that must be spent in non-clinical activities will depend on the size and complexity of the program, the provider's position in the program, and other factors, such as whether or not the clinic is accredited (resulting in required attendance at various committee meetings). The amount of time spent in non-clinical activities should be kept to the minimum possible in order to maintain clinical efficiency and access to dental care.

**Implementation:** Schedule an amount of administration time for providers that is the minimum necessary for non-clinical activities and commensurate with the level of responsibility of the provider. For example, a dental chief in a complex program will need more time for non-clinical activities than a staff dentist in the same program. Administration time needed for the dental director of a small to medium-sized program should fall somewhere between these two extremes.

## **24. Scheduling Multiple Patients Per Time Block Per Dentist and Using Multiple Operatories**

**Recommendation:** Each dentist should routinely schedule more than one patient at the same time, either by using two or more columns in the appointment book/computerized schedule or by scheduling at least two patients per time block in one column.

**Rationale:** Assuming that each dentist has at least two dental operatories and two dental assistants available, it should be possible to schedule multiple patients per unit of time. If expanded functions restorative is performed in the clinic, one dentist can treat as many as three patients simultaneously using three chairs and three expanded functions assistants. If expanded functions are not utilized, then one column can be reserved for restorative treatment and one or more columns set aside for exams and simple treatment procedures.

**Implementation:** It is important to schedule a mix of patients that is conducive to good patient flow. Dentist-intensive procedures, which require that the dentist remain at one chair for an extended period of time, should be offset with procedures that do not require a large amount of dentist time. This would include exams, preventive treatments that could be performed by a dental auxiliary (e.g., toothbrush prophylaxis and topical fluoride treatments), and other procedures that take a minimum amount of dentist time.

## **25. Standardization of Operatories and Tray Setups**

**Recommendation:** Operatories and tray setups should be standardized so that providers and auxiliaries who move from one operatory to another can easily find necessary supplies and materials.

**Rationale:** Time is wasted if staff members cannot readily find necessary instruments, supplies, and materials.

**Implementation:** The dental manager and staff should examine all operatories and make necessary changes to make sure the drawers are standardized to the extent possible. Two possible exceptions to this rule include operatories used exclusively by a dental hygienist and operatories that are used exclusively for specialty treatment (usually pertains only to large clinics).

## **26. Unit Dose Concept**

**Recommendation:** The unit dose technique should be used for tray setups, both for efficiency and for infection control.

**Rationale:** When trays are used that contain all items normally required to treat the patient, including disposable items that are added to the instrument pack such as cotton rolls, floss, cotton applicators with topical anesthetic, and gauze squares, the staff are able to function more efficiently. There are also likely to be fewer breaks in infection control if the countertops are kept free of cotton roll dispensers, anesthetic dispensers, cotton applicator jars, and floss dispensers. The unit dose technique makes it possible to eliminate these and similar items from the operatory counters, because the items are added to the trays prior to initiation of treatment.

**Implementation:** Place all unnecessary items that traditionally were stored on the countertops under cover to prevent contamination and add these items to the tray setups prior to starting a patient's treatment.

## 27. Use of Expanded Functions Dental Assistants (EFDAs)

**Recommendation:** If the use of EFDAs is feasible, based on applicable dental practice laws and regulations, dental assistant qualifications, the number of dental assistants available, and the number of operatories available, then expanded functions should be used.

**Rationale:** The provision of expanded functions restorative and periodontal treatment by dental assistants trained to provide these services can significantly improve clinical efficiency and access to care in a dental program.

**Implementation:** If the program already has trained EFDAs but they are not being utilized, the reason for non-utilization should be identified. Some common reasons for lack of EFDA utilization when trained assistants are available include having dentists in the program who lack experience with expanded functions or question its efficacy, lack of desire among the EFDAs to perform the duties (even though their pay grade might be based on EFDA designation), or regulatory issues (such as if tribal programs decide to follow state dental practice act requirements). With the exception of regulatory issues, these reasons should not be beyond the ability of the program to change.

In clinics with adequate numbers of operatories and trained expanded function (EF) restorative staff, an "EF Clinic" is encouraged, in which dentists prepare the teeth and the restorations are placed by EFDAs for a series of scheduled restorative patients. An efficient EF Clinic functions best with at least three operatories and three EFDAs committed to expanded functions. In clinics with an inadequate number of dental operatories or dental auxiliaries for a true EF Clinic, there are cases where some EF can still be performed. For example, if the dentist has another patient waiting and has an EFDA available, then the EFDA can place the restoration while the dentist sees the other patient.

If the program desires to begin the use of expanded functions but does not currently have trained EFDAs, assistants can be selected for basic EFDA training, which includes follow-up clinical work. This can be followed by advanced EFDA training at a later time.

Another alternative is to try to find a dental assistant who has already received EFDA training from the IHS, but assistants with this training who are looking for work are difficult to find.

**Note:** The definition of “expanded functions dental assistants” as used here refers to IHS-trained EFDAs. Basic EF Restorative enables assistants to place permanent restorations in teeth that have been prepared by a dentist. Many states have EF designations for dental assistants, but the duties that these state-defined EFDAs are authorized to perform are typically much more limited than duties performed by IHS EFDAs.

## 28. Delegation of Duties to Auxiliaries

**Recommendation:** Auxiliaries should be delegated duties that are in line with their level of training. However, auxiliaries should not be assigned duties above their level of training, e.g., assistants who have not had EFDA training should not be expected to perform EFDA duties. Conversely, assistants should not be expected to perform basic housekeeping duties if housekeeping staff are available, especially if these extra duties diminish patient care.

**Rationale:** Optimum use of auxiliaries relieves dentists of duties that hygienists, assistants, and other staff can perform, which leaves the dentists free to perform duties that only they can perform. Likewise, hygienists and EFDAs can be utilized more efficiently if they perform predominantly hygiene and expanded functions duties, as opposed to basic dental assisting duties.

**Implementation:** Delegate duties along the guidelines stated above.

## 29. Cross-Training for Receptionists

**Recommendation:** Small programs that are short of dental assistants but have a receptionist should consider cross-training the dental receptionist to perform at least some basic chairside dental assisting duties.

**Rationale:** Small programs, which typically have one dentist and two dental assistants, are at a distinct disadvantage when one assistant is out of the office. This is a critical problem in those few programs that have only one assistant. Working with only one chairside assistant adversely affects clinical efficiency, and if the schedule is booked for a staffing pattern of two assistants, the clinic is likely to run behind schedule when one assistant calls in sick or cannot be at work for some other reason. For programs that have only one dental assistant, the loss of that assistant for a day is a major problem, because the dentist has to work alone. If the dental receptionist has been cross-trained to take radiographs, perform basic chairside duties, clean operatories, and process instruments, moving the receptionist into the clinic when needed can help the program to function more efficiently. The receptionist will get behind in his or her duties, but in a small program it is probably more important to have the services of an assistant rather than a receptionist for that day. In large programs with multiple dentists, moving the receptionist

out of the front office is probably not feasible in most cases, because of the complexity of the program and heavier patient load.

**Implementation:** In small programs provide on-the-job training in basic assisting duties for the receptionist.

### 30. Range of Recall Intervals

**Recommendation:** Recall systems should be based on individual disease rates, not arbitrary time intervals, and the range of recall intervals in the program should be sufficiently wide to accommodate patients with high rates of dental disease to very low rates of disease.

**Rationale:** The IHS dental program has long recommended having a recall system, at least for high-risk patients. Even though they might have a large backlog of patients, some programs employ a relatively small range of time intervals for the recalls, such as three months for patients at high-risk for caries or periodontal disease to six months for all other patients. This follows the narrow range of recall intervals used in many private practices, but for which there is no solid scientific basis.

The IHS has typically used a much wider range of recalls, from three months for high-risk patients to one year or longer for low-risk patients. In programs where it is difficult for patients to obtain access to routine dental care, having a sufficiently wide range of recall intervals will enable the program to treat more patients with the limited resources available.

**Implementation:** In programs where appointments cannot be given on demand without filling the schedule more than three weeks ahead (which includes the vast majority of I/T/U programs), patients should be identified who have low enough disease rates that they can be recalled at one-year or longer intervals. Patients with high disease rates should still be recalled at three-month or six-month intervals, but moving low-disease patients into longer intervals will open up appointment slots for other patients.

In response to patients who have low rates of disease but who still want to come in for a six-month checkup and prophylaxis, they can be informed that they are taking such good care of their mouths that they only have to come in every year (or longer) and that this opens up space for people who are not now able to receive routine dental care in the clinic. Furthermore, they can be informed that if they have any problems during the interim, they can come in as emergency patients.

### 31. Patient Flow Questionnaire

Appendix IV, “Patient Flow Questionnaire,” is a worksheet or questionnaire relating to scheduling and patient flow issues. It can be used either by program managers for self-review or by dental consultants as a pre-site visit questionnaire to facilitate a dental program review. When the recommendations in this “Patient Flow and Control of the Appointment Schedule” section are compared with current practices as stated in the



questionnaire, the program manager or reviewer should be able to identify and provide solutions to scheduling and patient flow problems.

## **Data Indicators for Dental Clinic Efficiency and Effectiveness**

### **1. Introduction**

Several data indicators are available to I/T/U programs for analyzing clinical efficiency and effectiveness. Most of these indicators are based on the RPMS DDS software that is available at most, but not all, I/T/U programs. For programs that use RPMS, it is possible to calculate numerous workload and access to care measures that when taken together provide an excellent overview of the efficiency and effectiveness of local programs.

A special data report has been developed within the RPMS DDS to provide the specific data that are needed to calculate these workload indicators. This is the BMR, which is a component of the RCST. The RCST provides permanent retrospective reports for observing local program trends over time. While the RCST reports separate data for Indian patients and non-Indian patients, they do not separate workload totals by care provider or by reporting facility. Therefore, in service areas with multiple facilities, it is not possible to separate data for separate facilities or individual providers. Other reports, such as the Service Minute/Level of Care report (RSVC), provide separate data by dentist and by facility and can be used to make rough allocations of BMR data within the service area.

**Note:** As a compiled statistical report, the BMR has its data compiled automatically by RPMS Taskman on the 10th day following the end of each quarter. Therefore, if a program has fallen behind on data entry, some data might not be entered until after that quarter's statistics have been compiled. That means, for example, that the number of broken appointments on the BMR might be lower than the number found on the Visits by Facility and Dentist Report (RDEN) for the same period of time, because the RDEN statistics are not compiled until the user runs the RDEN report.

**Subnote:** In some programs the RPMS site manager has made the decision to “turn off” the automatic compilation of RCST reports by Taskman. In that case, the dental program staff at that site should manually compile the RCST report on a quarterly basis, and the concern mentioned in the above note will not be an issue.

Other data indicators do not depend on the availability of RPMS DDS data. This includes number of dentists, total number of dental staff, and number of dental operatories available in the program. Another important data element is patient population, which can be determined either with the RCST report or by non-RPMS means, such as tribal enrollment numbers.

These data indicators have been incorporated into two versions of a worksheet for applying the various indicators to specific dental programs, either via self-assessment or as part of a formal dental program review. Appendix V is the MS Word version of the “Efficiency and Effectiveness Data Indicators Worksheet.” Web link #2 is an Excel

spreadsheet version of the worksheet that contains embedded formulas for automatic calculation of the indicator values. To gain access to the Excel spreadsheet, click on “Efficiency and Effectiveness Data Indicators Worksheet (Excel)” in the table of contents.

## **2. Dental Clinic Efficiency Indicators**

### **Program Resources and Staffing Patterns:**

Many of the clinical efficiency indicators require knowing the extent of resources that are available in a local program to provide services during the period being evaluated, as follows:

- Annual patient population count
- Number of dentists in FTEs
- Number of total dental positions in FTEs, including dentists, dental hygienists, assistants, receptionists, billing clerks, laboratory technicians, etc.
- Number of dental operatories available, including the overall total and the number of operatories available for dentists only

Once these resources have been identified, calculations can be made for several indicators, as follows:

#### **1. Patient Population to Dentist Ratio and Patient Population to Dental FTE Ratio**

Data Elements: Facility Users Past 36 Months/# of Dentists and Facility Users Past 36 Months/# of Dental FTEs

These are rough but widely-accepted measures used by many federal, state, and local public health agencies to compare the health resources available in underserved areas. In order to provide adequate access to dental care for the population being served, an adequate number of dental providers and auxiliary staff must be available.

Recommendation: The IHS recommends a ratio of 1,200 patients per FTE dentist and 500 patients per FTE dental position.

Even though most I/T/U programs currently exceed the desired ratios, some by a substantial amount, these recommendations serve as guidelines for programs that are making plans to expand current dental clinics or build new facilities.

#### **2. Number of Dental Operatories Available per Dentist**

Data Elements: # of Clinic Operatories/# of Dentists

**Recommendation: At least two dental operatories should be available per dentist, excluding operatories used primarily by a dental hygienist.**

If the ratio of dental operatories to dentists is less than 2:1, the clinic is likely to experience bottlenecks in patient flow, because the dentists must routinely wait for an empty operatory before treating the next patient. A ratio of 2.5 to 3.0 operatories per dentist will enable the program to function at peak efficiency. If EF restorative services are routinely provided in the clinic, 3.0 chairs should be available per dentist for the EF part of the program.

### 3. Number of Dental Assistants Available per Dentist

Data Elements: # of Dental Assistants/# of Dentists

**Recommendation: At least two dental assistants should be available per dentist, with a ratio of three assistants being more appropriate for expanded functions restorative programs.**

If there are fewer than 2.0 assistants available per dentist, the clinic is likely to experience difficulty in maintaining smooth patient flow. Having an insufficient number of dental assistants means that multiple operatories cannot be used efficiently, because the dentist will invariably find himself or herself working alone at times when it would be more efficient to have a chairside assistant. As with the number of dental operatories, clinics utilizing EF will typically need 3.0 EF assistants per dentist for the EF portion of the program.

**Note:** Combining the ratios from this recommendation and the preceding one results in an overall recommendation to provide at least two operatories and two assistants per dentist, exclusive of dental hygiene operatories. This also translates to a ratio of one assistant per operatory.

### Workload Indicators Using RPMS Dental Data System:

The RPMS DDS reports described earlier, especially the BMR, can be used in conjunction with facility data, staffing data, and patient population to calculate several workload indicators, which are listed below.

Programs are encouraged to apply these workload indicators to their own local data and to track the indicators over time to identify changes in productivity within the program. However, for programs that have not tracked their own data in the past and programs that do track their own data but want to know how their productivity compares with that of

other programs, rough productivity guidelines are available in this document. These guidelines are known as Reference Values.

### **RVUs and Reference Values**

Some of the workload measures are expressed in RVUs, which are a productivity measure that recently replaced a previous measure known as Service Minutes (SM). SMs were used by the IHS for more than 30 years, and nationwide IHS program and tribal program averages were calculated for each of these workload indicators. These nationwide averages were known as Reference Values and provided clinicians and program managers with a way to determine whether productivity at a program was high, low, or average compared to other programs.

The last time these nationwide averages were calculated for the IHS dental program dates back to fiscal year 1994. Obviously, the Reference Values have been in need of updating for many years. More recently, the conversion from SMs to RVUs dictates that the Reference Values now be expressed in the new RVU productivity units. Since 1994 the downsizing of IHS Headquarters and Area Offices and other factors have made the collection and calculation of national averages difficult, if not impossible. Because of the difficulty in obtaining nationwide averages, a decision was made to use Reference Values from a representative IHS area for which these data were available. This area consists of I/T/U dental programs. Note: The one exception to using the representative Area for Reference Values is for the Annual Access to Dental Care indicator, which is based on the actual nationwide average for I/T/U programs.

Reference values from the representative area are not available for all of the workload indicators in this document, but they are available for the following measures:

- Total Visits per Dentist
- Total Visits per Operator
- RVUs per Patient Visit
- RVUs per Dental FTE
- RVUs per Dentist
- RVUs per Operator
- RVUs per Patient

Reference values are not included in the written descriptions of the workload indicators below, but they are included in the Data Indicator Worksheets that are included in this manual. The Excel spreadsheet that was used for calculating these reference values is included as Web link #3, which can be obtained by clicking on “Reference Value Calculations for Data Indicators (Excel)” in the table of contents.

**Note #1:** When reference values were last calculated from 1994 productivity data, separate levels were listed for IHS-managed programs and Tribal programs. At that time

average productivity levels for IHS-managed programs were higher than for Tribal programs for many of the indicators, primarily because IHS programs were typically larger and more likely to utilize expanded functions dental assistants in their programs. However, in the representative IHS Area that is being used for the current Reference Values the relationship between productivity in IHS and Tribal programs has reversed, with the Tribal programs being more productive than the IHS programs. In this Area the Tribal programs tend to be larger than those in most other Areas, and due to the availability of expanded functions training programs within the Area, expanded functions are utilized by many of the Tribal programs in that Area. In an attempt to consolidate and simplify the reference values, only the overall averages for I/T/U programs are provided on the worksheets.

**Note #2:** Because of the widespread use of expanded functions in both IHS and Tribal programs in the representative area, the reference value levels for many of the workload indicators might be difficult to achieve in programs that do not utilize expanded functions. In those programs, perhaps the best way to evaluate efficiency and productivity would be to monitor the workload indicators over time to determine an acceptable range of productivity levels. Ideally, all IHS areas would collect these data and use them to develop area-wide productivity expectations. This would be especially useful in areas where most programs do not utilize expanded functions, which makes the reference values in this manual less applicable. As a starting point for developing efficiency/productivity expectations in areas that do not typically utilize expanded functions, a “ballpark” estimate might be to use approximately 75% of the current reference values as initial benchmarks for workload indicators that are the most dependent on expanded functions, such as RVUs per dentist.

**Note #3:** For senior IHS and Tribal staff who are familiar with productivity measures in terms of SM but who are not yet accustomed to using RVUs, there is a way to make a rough estimate of RVU values in terms of the old SMs. In many programs, especially those that focus on basic services rather than specialty services, RVU production is approximately 10% of SM production.

For ease of use, the terms used to describe the workload indicator data elements are expressed in the exact wording found in the BMR.

## 1. Visits per Dentist

Data Elements: Dental Visits Past 12 Months/# of Dentists

This indicator measures the average number of patient visits per dentist for the period being evaluated. Because most programs track the number of dental visits, this measure is also likely to be available even in programs that do not have access to RPMS data. In that case it becomes an important measure, because it might be the only workload indicator that the program can easily obtain.

## 2. Visits per Operatory

Data Elements: Dental Visits Past 12 Months/# of Operatories

This indicator provides a general measure of how efficiently resources are being utilized to provide access to care. The number of dental operatories serves as a stable common denominator across all programs. Indicator values reflect the effects of local appointment policies, broken appointment management, and other patient flow and efficiency issues.

3. Relative Value Units per Patient Visit

Data Elements: Relative Value Units/Dental Visits Past 12 Months

This indicator measures how much dental treatment was provided per visit, on average.

4. Relative Value Units per Dental FTE

Data Elements: Relative Value Units/# of Dental FTEs

This indicator measures productivity per dental employee, without regard to the employees' positions. Programs that utilize expanded functions tend to have higher RVU/FTE values, so this measure is most useful when comparing like programs with regard to EF usage.

5. Relative Value Units per Dentist

Data Elements: Relative Value Units/# of Dentists

This indicator measures dental team productivity without regard to the number and type of auxiliary staff available. If programs with dental hygienists are compared with programs without hygienists, it is most meaningful if the RVUs provided by hygienists are excluded from the calculation. This is not as easy to do as it might seem, because the RPMS-DDS software reports all dental hygiene services under a dentist's name, with the hygienist listed as an auxiliary provider.

6. Relative Value Units per Operator

Data Elements: Relative Value Units/# of Dental Operatories

This indicator provides a common denominator for comparing productivity across all programs.

7. Dental Program Effectiveness and Access to Dental Care Indicators

An important aspect of dental program effectiveness is the level of access to dental care, or the ability of patients to obtain needed dental treatment when they request it. In general the goal is to provide at least the same

level of dental access to AI/AN communities as is available to most communities in the United States. These goals are based upon the assumption that most individuals will be better able to maintain good oral health if they are able to see a dentist regularly, e.g., at least once per year.

Any calculation of dental access requires as accurate an estimate of the user population as possible. The RPMS DDS Basic Measures Report provides data on “Facility Users Past 36 Months,” which traditionally has been a widely-accepted measure of user population. This measure represents an unduplicated count of patients who had at least one appointment in any portion of the medical facility during the past three years. If programs prefer to use other measures of patient population, they have the option to use them.

### **Access to Care Indicators Using RPMS Dental Data System:**

#### **1. Proportion of Population Served Annually (Annual Access to Dental Care)**

Data Elements: Dental Users Past 12 Mo. / Facility Users Past 36 Mo.  $\times 100$

This indicator measures population penetration or utilization rate, which is the proportion of the community or population base that has gained access to dental services during the preceding year. Annual access to dental care has been a GPRA objective for the IHS dental program for many years. Typically only Indian user counts are included in both the numerator and denominator of this indicator in order to measure access for AI/AN people.

#### **2. Proportion of Patients Treatment Planned**

Data Elements: Patients Treatment Planned / Dental Users Past 12 Mo.  $\times 100$

This indicator measures the proportion of patients who receive a treatment plan annually, based on a count of routine exam codes (0150 + 0120).

#### **3. Proportion of Patients Completed**

Data Elements: Pts. Planned Tx. Completed / Pts. Tx. Planned  $\times 100$

This indicator measures the proportion of patients who have received an exam/treatment plan who actually had at least their basic (Levels I to III) treatment completed (Code 9990). This measure is reliable only if programs routinely use the 9990 code when a patient is completed.

#### **4. Relative Value Units per Patient**

### Data Elements: Relative Value Units/Dental Users Past 12 Months

This indicator measures how much dental treatment was provided per patient, on average. In programs where comprehensive care is the rule, the number of RVUs per patient will obviously be higher than in programs where treatment is limited primarily to emergency care and basic care.

## Relationship Between Dental Clinic Efficiency and Resource Requirements Methodology

Even though dental clinic efficiency can be enhanced with good scheduling techniques and other effective management practices, there are limits to what can be accomplished if the clinic is too small or if the program is short-staffed. In clinics that are overwhelmed with patients, the only realistic and lasting solution is to combine efficient clinical practices with adequate resources in the form of facility size and dental staff. Below is the Resource Requirements Methodology chart that has been developed by the IHS to provide programs with an estimate of resource needs based on the program's service population.

If a program's current service population calls for a clinic size and number of dental staff that are well beyond what is currently available, then in addition to improving clinic efficiency programs should pursue all available options for expanding the clinic and staff to levels that better match the population.

**Table 9: Dental Staff and Facility Recommendations Based on Service Population**

Population Range	Dentists	Auxiliaries	Total Staff	Operatories
0 - 700	0	0	0	0
701 - 906	1	2	3	3
907 - 1284	1	3	4	4
1285 - 1789	1.5	5	6.5	5
1790 - 2421	2	7	9	6
2422 - 2673	2	8	10	7
2674 - 2926	2	9	11	8
2927 - 3431	3	10	13	9
3432 - 4042	3	12	15	10
4043 - 4547	4	13	17	11
4548 - 5052	4	15	19	12
5053 - 5557	4	17	21	13
5558 - 6063	5	18	23	14
6064 - 6315	5	19	24	15
6316 - 6821	6	20	26	16
6822 - 7073	6	21	27	17
7074 - 7578	7	22	29	18
7579 - 7831	7	23	30	19



<b>Population Range</b>	<b>Dentists</b>	<b>Auxiliaries</b>	<b>Total Staff</b>	<b>Operatories</b>
7832 - 8336	8	24	32	20
8337 - 9094	8	27	35	21
9095 - 9600	9	28	37	22
9601 - 10,105	9	30	39	23
10,106 - 10,610	9	32	41	24
10,611 and over	Revert to the beginning of the chart to identify additional resources required to meet need in excess of 10,610 population			

It is recommended that no dental clinic contain more than 24 operatories. Larger clinics tend to be inefficient, and they can present access problems for dispersed populations.

**Note:** Auxiliaries include dental assistants, dental hygienists, receptionists, and clerks.

## Appendix I: Controlling an Overloaded Appointment Schedule

- Goal** To schedule patients no more than three weeks in advance of their appointments.
- Tip #1** Ask emergency patients to call back for a regular exam appointment rather than scheduling the appointment at the end of the emergency visit. Virtually all emergency patients will accept a routine appointment if it is offered, but in most programs a large proportion of these emergency patients are episodic users who will not appear for the appointment. Asking them to call back will help you to screen out those patients who are not really interested in routine care. This will save you several slots in the appointment schedule as well as lower the broken appointment rate.
- Tip #2** Instead of using six months as the “standard recall interval” for patients with low to moderate disease rates, extend the interval to one year or longer. You should still recall patients at high risk for periodontal disease or caries on a more frequent basis, e.g., every three months to six months, but patients at low to moderate risk for dental disease can be recalled less frequently. Historically, the standard recall interval in most I/T/U dental programs nationwide has been one year. The dental literature does not support the need for six-month recalls for patients with relatively low disease rates. From a public health standpoint, if you have patients who must wait a long time for an appointment, you will do more good for your population if you will use a 12-month recall for most patients and save the three-month, four-month, and six-month recalls for those patients with high disease rates. Extending the standard recall interval also will save you slots in the appointment schedule.
- Tip #3** Schedule only a patient’s next appointment, rather than the full treatment series. Programs sometimes trap themselves by giving a patient a whole series of appointments at once, in order to decrease the patient’s waiting time between appointments. If you are booked ahead no more than three weeks, scheduling a series of appointments is generally not necessary, especially for routine restorative dentistry. If you are booked beyond three weeks, giving patients multiple appointments will only fill up the schedule further ahead.
- Tip #4** If your appointment schedule is still booked too far ahead after adopting Tips #1, #2, #3, consider using a call-in system or waiting list system. Both systems can work, but most programs prefer the call-in method rather than a waiting list, assuming that most patients have access to telephones. Whichever system you use, make sure that the system has been approved by your Program Director and Tribal Health Board or Tribal Council to provide you with support for the policy.

### **Recommendations that Apply to Both Call-In and Waiting List Systems**

1. To start either system, you need to “bite the bullet” and stop appointing new patients until your schedule is down to the three-week maximum. Patients needing exam appointments should be told that you are starting a new appointment system and cannot make any new appointments at this time. Then give them an estimate as to when you expect to start making appointments again.
2. With either system, once a patient receives a dental exam he or she should be given subsequent appointments until at least basic treatment has been completed. In other words, the patient does not need to go through the call-in or waiting list mechanism again for follow-up preventive treatment, restorative appointments, simple endodontic treatment, etc. It will be the decision of your program as to whether you will also complete the patient’s specialty treatment (such as molar root canal treatments, crown and bridge, partial and full dentures, etc.) as part of this appointment sequence or whether you will defer these types of procedures to a specialty treatment waiting list.
3. The number of new exam patients that you can appoint each week from the weekly call-in system or from the waiting list will be approximately the number of patients whose treatment you have finished during the previous week. For example, assume that it is the first week of August. Your appointment book is full for the first two weeks of August, and the third week of August is partially filled with patients needing subsequent appointments. There should be some slots available during the third week approximately equal to the number of patients that you finished during the last week of July. Note: If your staff members go to a meeting and the clinic is closed for a week, then you would not add any new patients until your appointment book once again reaches the three-week level.
4. The total number of patients scheduled for the slots available will include patients from the recall system and patients from the call-in system or waiting list system. This will be addressed later, under “Recall Appointments.”

### **Specifics for Call-In System**

1. A designated time is selected during which new patients (including emergency patients who need to call back for complete exams) can make appointments by telephone. This is usually done once per week at a time that is convenient for the dental staff and for patients. For example, you might want to have people call in at 8:00 AM every Tuesday in order to avoid the problem of Monday holidays and the large number of emergency patients typically seen on Mondays.

2. Do not begin taking calls until *exactly* the designated call-in time. If you start taking calls at 7:45 or 7:55 when your designated time is 8:00, it is going to be difficult to explain to people who call in at 8:00 why all the slots are already full.
3. When the number of slots available for call-in patients has been filled, tell subsequent callers that the book is full and that they can try again next week. It is also a good idea to ask these callers if they would like their names to be placed on a short-notice call list in case someone cancels an appointment during the week. Even though the chances of patients getting in this way might be slim, it does give them some hope.

### **Specifics for Waiting List System**

1. When patients (including emergency patients needing a complete exam) ask for an appointment, their names are placed on a waiting list. The list should include columns for the date the name is entered, the date the letter is mailed telling the patient that his/her name has come up on the waiting list, and the date that the patient responds to the letter. The list can either be in written form or maintained as a computer spreadsheet or word processing document.
2. The patient is asked to address an envelope (to ensure that the correct current address is listed on the envelope). If the patient calls in, the receptionist can fill in the name and address from information gained over the phone. The envelope is then filed until the patient's name comes up on the waiting list.
3. When the patient's name is reached on the list, a notification letter is generated and mailed to the patient. The letter should *not* include an appointment time. It should merely state, "Your name has come up on the waiting list. Please call the dental clinic by August 12, 2007 (for example) to set up an appointment time." If the patient is late in responding because he or she was out of town for several days, you might want to go ahead and provide an appointment when he/she calls. Late responses usually are not so common as to be a problem.
4. It will take some experience with the system to determine how many letters to send out to get enough responders to fill the slots available in the appointment schedule. Not everyone who is sent a letter will respond. You might start by mailing twice as many letters as you have slots available, and then adjusting the number from there.

### **Recall Appointments**

Recall patients will be competing for available appointments with the call-in or waiting list patients. One way to handle this is to schedule the high-risk patients when they

respond to the recall notice, because of their high priority. Fortunately, some of these high-risk patients will need only a prevention appointment with an assistant or hygienist, which takes pressure off the dentist's schedule. If a call-in system is in place, low-risk to moderate-risk patients can be sent a letter reminding them that it is time for them to seek an appointment via the call-in system. If a waiting list system is being used, low-risk to moderate-risk patients can be instructed to sign up for the waiting list in a certain number of months, depending on the length of the list. The idea is to time the patient's name coming up on the list with the desired recall time. The program might choose to send a letter at the appropriate time to remind patients to sign up for the list.

### **Alternative Scheduling Methods**

Some programs are so overwhelmed with patients seeking appointments that nothing seems to work satisfactorily, resulting in high levels of frustration for both patients and dental staff. Some of these programs have explored new methods for appointing patients, including the WI Clinic concept and the Same Day Call-In appointment system.

#### ***Walk-In Clinics***

The WI Clinic concept typically involves setting aside either a certain amount of time each day or certain days each week to treat walk-in patients. This is similar to the WI time that many programs set aside for emergency care, but it goes beyond that to provide basic restorative and preventive care on a WI basis. Most programs using this method are large programs with several dentists on staff, but some smaller programs have also found the technique useful for at least some of the treatment time available.

Programs that provide WI appointments for routine care vary in the operating details, especially in how the patient is supposed to contact the clinic. Following are two examples of ways that a WI Clinic can be managed:

1. Some programs require patients to appear in person when the clinic first opens in the morning, so they can request a walk-in appointment. Then they are given an appointment time to return later that day. When all available slots are full, additional patients who arrive are asked to return for the next scheduled WI Clinic.
2. Other programs require patients to appear in person either first thing in the morning or first thing in the afternoon to sign up for WI Clinic, but a specific appointment time is not given to each patient. Instead walk-in patients are asked to remain in the facility until it is their turn, much like the manner in which emergency time is handled in many programs. When the maximum number of WI patients that can be treated during the time available have signed up, subsequent patients are asked to return for the next scheduled WI Clinic.

In some programs the WI Clinic is the only method available to patients for obtaining routine care. In other programs the WI Clinic is only one

way to receive basic dental care, with other options available for some of the appointment slots, such as a call-in system. In almost all programs specialty care is scheduled via regular appointments, because of the time-consuming nature of these procedures.

#### Advantages of Walk-In Clinics:

- Broken appointments for the WI Clinic are few in number or almost non-existent.
- Persistent patients are rewarded with good access to dental care. In some cases motivated patients are able to receive all of their basic care within a few days.
- The number of complaints from people who could not obtain a routine care appointment in the past might be reduced, because they can get in for treatment the next day if they appear early enough in the morning.

#### Disadvantages of WI Clinics:

- Busy patients who have demanding jobs or other commitments might find it virtually impossible to stand in line in the morning and perhaps be required to remain in the clinic for many hours.
- Patients are required to access the WI Clinic for each subsequent appointment to complete basic care, instead of accessing the system only once as in more traditional appointment systems.
- Because of the large number of WI patients who might appear every day (especially in large programs), adequate numbers of receptionists and/or assistants are required to handle the rush of patients.
- On some days there might not be enough patients to fill all of the available walk-in appointment slots (especially in smaller programs). This requires that a short-notice call list be available to fill in the gaps.

### ***Same Day Call-In System***

In the Same Day Call-In System, patients are asked to call the clinic first thing in the morning, at which time each patient is given an appointment time for later that day (or in some programs for the following day). When all available slots are full, other patients who call are asked to call again the next day. Aside from calling rather than walking in to access the clinic, this type of system functions like a typical WI Clinic.

#### Advantages of Same Day Call-In System:

- The BA rate is typically very low.
- Motivated patients who are persistent have good access to dental care.

- Complaints from patients might also be reduced, depending on how busy the clinic phone lines are and how difficult it is to get through by phone.

Disadvantages of Same Day Call-In System:

- For patients the main disadvantage is finding the time to spend on the phone while trying to reach the clinic over phone lines that might be jammed with calls.
- The call-in process must be repeated for each subsequent basic care appointment.
- An adequate number of receptionists or assistants must be available to take phone calls every morning.
- The staff members who take calls might be faced with upset patients who finally got through by phone only to find that all appointment slots have been taken.
- Staff members must deal with the problem of what to do with patients who walk into the clinic and demand an appointment instead of calling. A determination must be made as to whether walk-in patients can also receive an appointment and, if so, whether phone calls or walk-ins will have priority for appointment slots.

### ***Summary of Alternative Scheduling Methods***

In general, WI and same-day call-in systems seem to function best in programs where the alternative system is not the only way for patients to obtain an appointment for routine dental care. People with demanding jobs and other commitments tend to be more satisfied with traditional appointment systems in which they have to access the clinic once per year for an exam but then receive follow-up appointments for basic care without having to “jump through hoops” for each subsequent appointment. People who have the time to wait might prefer just showing up on the day they desire treatment. The ideal blend for very busy programs might be to provide some appointment slots for standard basic care appointments and others for walk-in or same day call-in patients. This can be accomplished either by scheduling separate days for each type of appointment or designating different times of day for each type, such as having a WI Clinic in the morning and regular scheduled appointments in the afternoon.

### **Dealing with Complaints about a New Appointment System**

Keeping the time interval between appointments at a reasonable length is important to most patients. If patients complain when you initiate a call-in or waiting list system, inform them that once they get into the system, the new method will decrease the length of time between appointments. In the long run, they will probably finish their treatment sooner than if the schedule continued to be booked a month or several months ahead. In the case of walk-in or same day call-in systems, patients can be informed that if they are

willing to appear in the clinic or call the clinic early in the morning, they will have a good chance of being seen that same day.



## **Appendix II: Dental Appointment Agreement**

It is important for patients to keep their dental appointments, because broken appointments result in lost time that could have been used to treat other patients.

### **Rescheduling Appointments**

The dental staff understand that sometimes situations arise that require rescheduling of your appointment. If you need to reschedule, please call the dental clinic as soon as you know that you will not be able to keep the appointment, preferably at least 24 hours before the appointment time.

### **BAs**

If you miss a scheduled appointment or cancel it at the last minute, a BA will be recorded in your dental chart. If you are more than 10 minutes late for an appointment, a BA will also be recorded, and you may have to be rescheduled if there is not enough time to complete your procedure. It is not fair to keep other patients waiting because someone showed up late.

If you have two BAs during the past six months, you will not be able to make a regular appointment for a period of six months from the date of the second BA. You are still eligible for emergency dental care during that time.

I understand the Dental Appointment Agreement and agree to follow the terms of the BA policy.

---

Patient Name (please print)

---

Date

---

Patient or Parent/Guardian Signature

**Appendix III: Broken Appointment Rate and Walk-In Rate Worksheet**

Day #	# WIs	Date	# Patients Scheduled	# BAs
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
<b>TOTAL</b>				

**Calculations for Broken Appointment Rate and Walk-In Rate**

BA Rate = Total # BAs/Total # Pts. Scheduled  $\times 100 =$     /     $\times 100 =$  \_\_\_\_\_ %

Avg. # Walk-Ins per Day = Total # Walk-Ins/Total # of Days =    /    = \_\_\_\_\_/Day

Range in # of Walk-Ins per Day = Least # per Day to Greatest # per Day = \_\_\_\_\_ to \_\_\_\_\_

Ratio of BAs to Walk-Ins = Total # BAs/Total # Walk-Ins =    /    = \_\_\_\_\_ : 1

## Appendix IV: Patient Flow Questionnaire

Facility: \_\_\_\_\_

Date: \_\_\_\_\_

### Appointment Scheduling (Routine Dental Care)

1. How many weeks ahead is the appointment book filled with patients?
2. When an eligible patient asks for an appointment for a dental checkup, is your program able to schedule the patient immediately (appointments on demand)?
3. If your program is not able to provide appointments on demand, are patients asked to call back at a certain time, at which time a limited number of appointments are given out to the first people who call (call-in system)?

If so, describe the mechanism:

Approximately how many appointments are given out at each call-in time?

4. If your program is not able to provide appointments on demand, are patients asked to place their names on a waiting list and told they will receive an appointment at a later date (**waiting list system**)?

If so, describe the mechanism for giving an appointment to people on the list:

5. Does your program have a **walk-in clinic or same day call-in system for routine dental care**, in which patients who need non-emergency treatment are asked to walk in or call in early in the morning to obtain an appointment for later that same day or the next day?

If so, describe the mechanism:

6. Are there exceptions to your appointment policy that gives priority to certain patients (such as **prenatal patients, diabetics, or children**)?
7. Once a patient gets into your appointment system, does the patient receive follow-up appointments for all routine treatment without needing to go through a call-in system or waiting list system for each new appointment?
8. Other than denture patients, is more than one appointment ever scheduled for a patient at one time for routine treatment, instead of giving the patient one appointment at a time?

If so, why is a series given?

If a series is given and the patient misses one appointment in the series, what happens to the remaining appointment(s)?

9. Is virtually every patient given the same amount of time in the appointment book (such as one hour), or is there a range of times, depending on the procedure(s) to be performed?

What is the range in times given for appointments?

10. Is a short-notice call list in place to fill canceled appointments?

If so, how often is the list actually used to fill openings in the schedule?

11. Are treatment plans completed in as few appointments as is feasible, e.g., is quadrant dentistry provided most of the time?
12. Are **Levels of Care** principles followed in individual treatment plans (emergency care, preventive care, and routine restorative completed before specialty care)?

### **Emergency Patient Flow**

1. Is a special emergency time set aside to treat emergency patients, or are all emergency patients worked in between other patients?

If there is a special emergency time, what are the emergency hours?

If there is a special emergency time, how many dentist-hours are set aside each day to provide emergency dental care?

2. Instead of having a walk-in emergency clinic, are emergency patients asked to call the clinic and given a scheduled emergency appointment during the same or the next day?
3. For patients receiving emergency treatment, are those patients who need a follow-up exam and other treatment given the follow-up appointment as they leave the clinic after the emergency visit?
4. If emergency patients are not given a follow-up appointment as they leave from the emergency visit, how do they obtain an appointment?
5. If a molar tooth is opened for root canal treatment during an emergency visit, when the patient obtains a follow-up appointment is the next appointment typically for an exam or for root canal treatment?

### **BAs**

1. If your program has a high broken appointment rate, do you routinely overbook patients to compensate for missed appointments?

If so, how many extra patients per day are scheduled?

2. Does your program routinely double-book patients who have a history of BAs?

If so, is the additional patient scheduled for an exam or other simple procedure to provide flexibility, in case both patients keep their appointments?

3. Are patient reminders used, such as phone calls, cards, or letters?

If so, describe the mechanism:

What is the staff's impression of their effectiveness?

4. Is a BA policy in effect?

If so, is the policy in the form of an agreement or “contract” that is signed and dated by the patient?

Is the patient provided a copy of the BA agreement?

If a BA policy is in place, is it rigidly enforced?

### **Use of Provider Time and Operatories**

1. Morning Time Management

What time does the clinic open in the morning?

What time is the first patient scheduled in the appointment book?

What time is the first patient actually seen on average?

Are all staff, including the dentists, typically at work at the clinic opening time?

2. Lunch

What is the starting time and ending time of the scheduled lunch break for the dental staff?

3. Afternoon Time Management

What time is the first afternoon patient scheduled to be seen?

What time does the clinic close in the afternoon?

What time is the last patient of the day scheduled to be seen?

What time is the last patient for the day typically completed?

4. Do all members of the dental staff work the same hours, or are there alternative work schedules?

If alternative schedules are in place, list the types of schedules available at the clinic and which staff are on which schedule?

5. Does the dentist(s) have a specified time set aside for administrative activities?

If so, how much time and when?

6. How many dental providers (dentists and dental hygienists) work at your clinic?

Dentists=                      RDHs=                      Total=

7. How many chairside dental assistants does your program have?

Dental assistant (DA)/Dentist ratio=

8. How many front office staff (receptionists, dental billing clerks, etc.) does your dental program have?

9. Operator Utilization

How many operatories are available in the clinic?

How many operatories are used by a dentist?

How many operatories are used by a dental hygienist?

Operator/Dentist ratio (exclusive of RDH operatories) =

Are there operatories that stay empty a significant amount of time?

If so, why are the operatories not used?

10. Standardization and Unit Dose

Are operatories standardized (drawers in one operatory set up the same as drawers in the other operatories, except for specialty chairs, hygiene chairs)?

Are tray setups standardized?

Is the unit-dose technique used for setting up trays?

11. If the number of staff members is small, especially if there is only one DA, is the receptionist cross-trained to perform dental assisting duties?

### **Recall System**

1. Is a recall system in place, at least for the highest-risk patients?  
  
Which patients are included in the recall system (ex. all patients, prophylaxis patients only, periodontal patients only, or patients at high risk for caries)?
2. Is the recall interval individualized for each patient's needs?
3. What is the range of recall intervals used at the clinic for various patients (shortest recall interval and longest recall interval)?  
  
At what interval are most patients recalled?

### **EFs**

1. Have any of the dental assistants received training in EF restorative (place restorations) or EF periodontal (perform prophylaxis)?  
  
If so, which assistants have received which training?  
  
If your program has EF-trained assistants, to what extent are they performing EF duties?  
  
If your program has EF-trained assistants and they are not performing EF duties routinely, what is the reason for EF not being utilized?

### **Recordkeeping and Data Analysis**

1. Are all entries in the dental record completed and all charts securely filed by the end of each workday?
2. Who writes the procedure codes in the Dental Progress Notes?
3. How soon after a patient visit are procedure codes for that visit entered into the Dental Progress Notes?
4. Who enters the procedure codes into the RPMS Dental Data System?
5. What is the length of the time interval between treatment of the patient and entry of the data into RPMS?
6. Are RPMS workload reports printed periodically and used to aid in the management of the dental program?  
  
If so, which reports are used?

RDEN (First Visits and Revisits)?

RSVC (Services, Relative Value Units, and Levels of Care)?

RCST (Compiled Statistical Reports, incl. Three-Year User count)?

SCOM (Tracking of specific procedure codes, age groups)?

Does your program desire assistance in gaining access to and printing any of the reports listed above?

**7. Current Dental Staff**

Please list the names of the current members of your dental staff and their positions in the space below (note: for part-time employees, please list which days they work).

Name

Position



## Appendix V: Efficiency and Effectiveness Data Indicators Worksheet

Facility: \_\_\_\_\_ Date: \_\_\_\_\_

*Instructions: Use data from the RPMS DDS BMR for the previous 12 months or most recent fiscal year.*

	Reference Values
<b>1. Population to Care Provider Ratio</b> Facility Users Past 36 months/# of dentists = 1,200:1 Facility Users Past 36 months/# of FTEs = 500:1	
<b>2. Operatories per Dentist</b> # of Clinic Operatories/# of Dentists = 2:1 or more	
<b>3. Dental Assistants per Dentist</b> # of DAs/# of Dentists = 2:1 or more	
<b>4. Visits per Dentist</b> Dental Visits Past 12 Months/# of Dentists = 2:1 or more	
<b>5. Visits per Operatory</b> Dental Visits Past 12 Months/# Operatories = 658	
<b>6. Relative Value Units per Patient Visit</b> Relative Value Units/Dental Vists Past 12 Months = 5.3	
<b>7. Relative Value Units per Dental FTE</b> Relative Value Units/# of FTEs = 2,697	
<b>8. Relative Value Units per Dentist</b> Relative Value Units/# of Dentists = 10,146	
<b>9. Relative Value Units per Operatory</b> Relative Value Units/# of Operatories = 3,467	
<b>10. BAs per Scheduled Visit (% BA Rate)</b> BAs/(Dental Vists Past 12 Months = BAs–Emergency Visits) × 100 = <i>Not Available</i>	
<b>11. Proportion of Population Served Annually (Annual Access to Dental Care)</b> Dental Users Past 12 Months/Facility Users Past 36 Months × 100 = <i>Goal = 60%</i>	
<b>12. Proportion of Patients Treatment Planned</b> Patients Treatment Planned/Dental Users Past 12 Months × 100 = <i>Not Available</i>	
<b>13. Porportion of Patients Completed</b> Patients Planned Tx Completed/Patients Treatment Planned × 100 = <i>Not Available</i>	
<b>14. Relative Value Units per Patient</b> Relative Value Units/Dental Users Past 12 Months = 10.9.	