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# Reaching Out

## The Oral Health America/CDA Partnership

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## DEPARTMENTS



## FEATURES

## FEATURES CONTINUED

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# Become Informed!

Jack F. Conley, DDS

Never before during our involvement in organized dentistry has there been an effort of the scope attempted by the American Dental Association this year. Never before has there been a perception that education of the entire ADA membership was so important. That belief led to the decision by the 1997 ADA House of Delegates to approve and pursue an educational initiative on a proposed National Public Awareness Campaign that will be considered by the 1998 ADA House.

Our purpose here is not to weight the merits or demerits of the proposed campaign. That is your task as an ADA member. By midsummer, each member of the American Dental Association should have undertaken the responsibility to make his or her individual evaluation of the awareness campaign and share that view through an ADA membership survey or with members of their 1998 ADA House delegation.

Instead, our intent is to discuss the background that led to the educational initiative so that members might better understand why it is being undertaken. I will also present a few facts that delineate what the campaign IS and what it is intended to accomplish.

The average ADA member is probably wondering why such an extensive educational effort is being mounted. The 1997 House, based upon recommendations from the Board of Trustees and Council on Communications, approved funding of $728,500 for development of the awareness campaign and the year-long membership education initiative. It approved another $69,300 for a membership survey. Why is a total of almost $798,000 being spent on membership education? Those of us who have served as delegates to ADA or state meetings or as members of boards, councils, or committees at the national, state, or local level have not infrequently felt a sting of criticism when questions arise about the rationale for decisions made on behalf of the entire membership. All too often, individual members express that they feel disenfranchised because a decision affecting an entire membership has been crafted by a board or committee of less than 50. Even a supreme decision-making body such as a House of Delegates – CDA's with 205 voting members and ADA's with 427 – has not been exempt from the criticism of large numbers of members. While those making leadership decisions are willing to take responsibility for those choices, the membership at large is not always comfortable in transferring that responsibility without the ability to question or second-guess the wisdom of their colleagues. We have frequently observed that criticism is often based upon inaccurate perceptions or incomplete or faulty information.

Every ADA member in California receives two ADA and two state publications per month, amounting to at least 40 opportunities in print this year that could be used to educate the membership about the public awareness campaign. However, there are several very important reasons why such a routine offering of information would be ineffective. First, the member must "see" the product that has been developed for the campaign. The TV spots cannot be effectively described without bias, even by those most familiar with them – they must be seen, along with the campaign strategy, by the individuals in the

membership group who will be asked to support their media airing with increased dues. The size of the membership dues increase of $300 per year for three years is very significant, thus making a review of the proposed product by the membership even more critical. Finally, to avoid the criticism discussed previously, a significant majority of the members of the profession must have their opinion about this campaign measured!

It is our belief that the advice of the Council on Communications and the ADA Trustees to the 1997 House was sound, leading to a properly crafted initiative to inform and, in turn, solicit member evaluation and assessment of their priorities. As good as our time-honored printed communication vehicles are, a far smaller segment of the profession than is desirable will normally review and evaluate an issue or a program placed before it in this fashion. The educational initiative, on the other hand, will compel a larger number of members to become familiar with the campaign and its strategy, so that their input can be collected by survey and by direct contact with delegates. The process should ensure that the 1998 House of Delegates is the best-informed ever, on one very important issue before it ... if a significant majority of members undertake four important responsibilities:

- Read all materials provided in regular publications about the awareness campaign so that they fully understand what it is.
- Make an effort to see a presentation of the TV spots at a state or component society meeting. Or, go to ADA Online (http://www.ada.org) to obtain campaign details and download the TV spots, print ads and in-office materials that will be part of the campaign.
- Fill out and immediately return the postage-paid ADA survey if they are one of the approximately 25 percent of the membership that receives it.
- Provide individual input to their local society leadership or a member of the California delegation to the ADA House. We need your input so that we can reflect your wishes in our vote.

Finally, it is important to understand that the campaign is not designed to bring new patients into the dental office. The purpose is to promote the importance of maintaining good oral health and to enhance the profession's image. Specifically, the message is "You have to take care of things, if you want them to last ... And your oral health is one of them." Relatively new preventive and cosmetic procedures were identified as being most marketable to consumers for this campaign. The TV spots encourage consumers to "see their ADA member dentist."

Beyond these facts, it is the responsibility of every member to make the effort to:

- Become informed;
- Develop their judgment as to whether the campaign and the materials that it comprises should be approved by the 1998 ADA House on behalf of the entire membership; and
- Convey their opinion to those who have the responsibility to make the decision on the campaign.

This important message has been our purpose.

## Does Laser "Revolution" Have Scientific Support?

By David G. Jones

Laser has an array of modern medical and dental applications, but its use is not free of controversy, and utilization of laser in a particular periodontic procedure has stirred debate.

Recent news articles, radio advertisements and television reports have touted the laser as a "revolutionary" procedure for performing subgingival curettage. But some experts say claims associated with use of lasers for that procedure lack the support of scientific evidence.

The controversy revolves around Los Angeles-based media reports featuring advocacy of the use of lasers instead of conventional periodontal procedures. The reports claim that the laser procedure is nearly painless, almost bloodless, and doesn't require sutures, making the laser an attractive alternative for periodontal work.

"These reports were very powerful and broadcast throughout the L.A. viewing area," says Gerald I. Drury, DDS, chairman of the Ethics Committee of the Western Los Angeles Dental Society. "It was very detrimental, and the stations wouldn't let us rebut it.

"There is little scientific evidence, regardless of what these reports claim, supporting the use of lasers for this purpose."

The American Academy of Periodontology's position paper on Lasers in Periodontics supports Drury, stating, "There are no research data that support the use of lasers for subgingival curettage."

A newspaper report said dentists using the procedure saw bone regrowth in 90 percent of their 400 patients, a claim another expert says also has no support from scientific research.

"There has been no referenced research to support these claims, despite research in this area since the late '70s," says Roger K. Rempfer, DMD, chairman of CDA's Council on Dental Care, and a laser user since 1984.

The laser's effective use in soft-tissue surgery has been well-established in research literature, but numerous scientific articles published to date relate to the potential harm lasers may cause to dental root surfaces.

"So while curettage is intended as a soft-tissue procedure, it is impossible not to interface with the root, particularly with the laser. Control is limited with the laser because of scattering of the beam," Rempfer says. "Indeed, significant damage to root surfaces using the pulsed Nd:YAG laser were documented in studies by numerous investigators, such as Cobb, Tarlovich, Morlock, Pippin, Killow, Rapley, Spencer, and others. These studies further demonstrated that subsequent root planing of root surfaces was required to restore the root surface morphology following use of the Nd:YAG laser. So why do two procedures when the literature supports the efficacy of scaling and root planing as a single procedure?"

The Food and Drug Administration recently cleared the pulsed Nd:YAG laser for use in subgingival curettage, a move that would seem to lend credibility to claims made through the media. But another expert questioned the value of the FDA's study after reviewing documents summarizing the agency's research.

"The results of this limited study indicated that both treatment groups (one receiving scaling and root planing alone, and the other scaling and root planing followed by the pulsed Nd:YAG laser curettage) obtained statistically the same result," says Douglas N. Dederich, DDS, an adjunct associate professor of periodontics in the University of Iowa's College of Dentistry. "In other words, the laser made no difference as detected by the clinical indices used. When you then take into consideration the risk of root surface damage and others, but not evaluated in the study, one cannot scientifically recommend laser curettage."

The FDA cleared laser for soft-tissue modalities in 1976, and it boasts several applications being used successfully in periodontics.

"The use of lasers in dental surgery supported by reproducible research includes excisional and ablative soft-tissue procedures, such as frenectomy, gingivectomy, biopsies, and removal of tissue pigmentation," Rempfer says.

Nevertheless, one laser user, who bought equipment in 1986, questions its value.

"I found not much reason to use it over the years when I can use other techniques that don't need as much preparation, don't need anti-reflective instruments, special evacuation systems, and so forth," says Richard Benveniste, DDS, a member of the Enforcement Committee of the state Board of Dental Examiners. "If it could do all the things the manufacturers can say it does, and all the things the marketing people say, it would be great. But there's no research to show this is true."

Even so, the American Academy of Periodontology position paper on Lasers in Periodontics states, in part, "This is an exciting field with many promising possibilities to be investigated, and represents an area that may ultimately prove to be rich with utility in periodontics. . . . Further research on the potential use of laser energy in periodontal therapy is indicated."

## UOP Basks in Alumnus' Generosity

Decades of work, good choices and shrewd investments brought the bless-

ings of good fortune to Dr. Arthur A. Molinari, whose dental practice and consistent, dependable presence lent pitch-perfect grace notes to the colorful symphony that is San Francisco.

An institution of sorts, Molinari, 98, practiced dentistry from the time he graduated from the College of Physicians & Surgeons (forerunner of the University of the Pacific School of Dentistry) in 1923 until he retired in 1987. He drove from his Marin County home across the Golden Gate Bridge to his office in the city six days a week until he called it quits – roughly 15,000 round trips.

He practiced dentistry with a passion and built a family and life with his wife, Ruth Markson Molinari, who died in 1992. He also played the stock market with skill, turning his earnings into a fortune.

Now Molinari has given to UOP School of Dentistry the largest gift the school has ever received and what is thought to be one of the most generous ever given to a dental school in the U.S. Molinari is February gave UOP $5 million. The money has been used to create a $1.5 million endowment to provide scholarships for needy and deserving students, and to create a $3.5 million building fund to support a major addition to the dental school.

"Dr. Molinari's generosity and caring provides the dental school with the resources that will guarantee our continued excellence," says dental school Dean Dr. Arthur A. Dugoni.

Both parts of the gift carry the names of Molinari and his wife, and their daughter, Joan Molinari Mibach.

"It makes me happy to know that dental students who receive a scholarship from our endowment will be reminded that my wife, Ruth Markson, daughter Joan, and I created a legacy for the future of dentistry," says Molinari, who will turn 99 in August. "One of the reasons that I created these funds was to perpetuate the Molinari and Markson family names."

## Medical Influence Found in Famous Folks

Celebrities can have a powerful effect on the public's health care choices, according to an article in the March 11 issue of the Journal of the American Medical Association.

Ann Butler Nattinger, MD, MPH, from the Medical College of Wisconsin at Milwaukee, and colleagues, studied the records of 162,287 women with local or regional breast cancer to determine the impact of former first lady Nancy Reagan's decision to undergo mastectomy rather than breast conserving surgery in October 1987.

The researchers found a 25 percent decrease in the number of women choosing breast conserving surgery in the six months following Reagan's surgery compared with women facing a similar decision in the three months before the surgery.

The authors write, "The effect of Mrs. Reagan's surgery was greatest among women who were demographically similar to her, white women aged 50 through 79 years, as opposed to older or younger women or nonwhite women. The effect was more prominent in the central and southern regions of the country, and in counties with lower levels of education and income."

They note that the sharp drop in breast conserving surgery in late 1987 was not associated with publications in the medical literature or lay press that would call into question its effectiveness.

Celebrities are thought to be capable of influencing health care behaviors. That perception has led to celebrity endorsements for promoting safe sex and avoiding illegal drugs. Aside from anecdotal information, there is little data to document that influence, according to the authors.

The authors project nationally that 3,400 fewer women underwent breast conserving surgery in the six months following Reagan's surgery than would have been expected based on previous rates of use.

They conclude that "medical care can be influenced substantially by the behavior of celebrity role models. The influence is strongest among persons who demographically resemble the celebrity, and those of lower income and educational status. One can sympathize with public figures facing difficult personal medical decisions, because they have to deal with the reality that their decision may very well influence the behavior of thousands of others. This study provides support for the concept of targeted celebrity role models as a strategy to influence public health behaviors."

## Lead, Decay May Be Linked

A mother's exposure to lead could be a contributing factor to tooth decay in her child, according to an article in the American Dental Hygienists' Association's Access, December 1997. The article cites University of Rochester dental researchers who conclude that exposure to high amounts of lead is likely one cause of the rates of tooth decay found among certain groups, such as children raised in the inner city.

Research suggests lead interferes with tooth development. Higher than normal amounts of lead stored in the bones for decades are released into a pregnant woman's blood and reach the fetus at a time critical to the development of teeth and salivary glands.

Lead is recognized as causing devel-

opmental and other problems and may be one reason cavities are still a major problem in some areas of the United States. Inner cities and the Northeast are the areas with the highest lead pollution as well the highest rates of tooth decay. Access reports that although about half of 12-year-olds are now cavity-free, 80 percent of the cavities in this age group are present in just one fifth of the children.

## Microcracks Reported With Coarse-Bur Use

Coarse diamond burs may weaken patients' teeth, say scientists at the National Institute of Standards and Technology in Gaithersburg, Md.

In a multicenter study assessing drill-related damage, researchers found that removing enamel with a coarse diamond bur produced subsurface cracks of 50 to 110 microns. Microcracks also occurred, which could combine with the longer cracks to weaken drilled teeth, reports the January NIST Tech Beat.

The study shows, however, that fine diamond burs can remove the areas damaged by coarser burs, which reduces the risk of fracture.

To minimize the risk of fracture in a drilled tooth, researchers suggest dentists use coarse diamond burs for partial drilling and finish the preparation with a fine diamond bur.

## Honors

Thomas Schiff, DMD, has been named chair of the Department of Radiology and Emergency Services at the University of Pacific School of Dentistry.

Ernest Newbrun, DMD, PhD, emeritus professor of oral biology and periodontology at the University of California at San Francisco School of Dentistry, has been awarded the honorary degree of Doctor of Dental Science by the University of Sydney, Australia.

Dr. Arthur A. Dugoni, dean of UOP School of Dentistry, has been selected as the 1997 recipient of the Dr. Irving E. Gruber Award. Because of a source error, the name of the award was incorrectly listed in the March 1998 issue of the CDA Journal.

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# A Year of Special Opportunity

By Teran J. Gall, DDS, and Stephen B. Corbin, DDS, MPH

**ABSTRACT** Based on the images and words on the cover of this Journal issue, you undoubtedly have deduced that something special is going on. This issue is a theme issue, which is not precedent-setting in itself; special issues of the Journal of the California Dental Association have been devoted in the past to such things as implants, halitosis, and managed care.

AUTHORS

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But this issue is not about new clinical techniques, disease, or the financing and administration of dental care. This issue is about a new approach to addressing some of the most challenging problems in preventing oral disease, promoting health, improving access to care, and making dental practice more personally rewarding for dental professionals. The climate is right for these efforts because concern for oral health has gained a higher profile over the past several years. It has even drawn the attention of former Surgeon General C. Everett Koop, who has said "You're not healthy without good oral health."

Over the past year, leaders of the California Dental Association have met several times with leaders from Oral Health America to discuss opportunities for collaboration. OHA, formerly known to many of us as the American Fund for Dental Health, has been striking a noteworthy profile, both nationally and at the state and local levels, in helping dentistry to deliver both the message and the opportunity for good oral health to increasing numbers of Americans. OHA's mission is to "develop resources for the improvement and promotion of the oral health of the American people." Among its strategic objectives is to "Enhance the involvement of the dental profession, dental industry, and public and private sectors as essential partners in promoting and optimizing oral health in America." These are purposes to which CDA subscribes.

CDA has been aware of OHA and its good works for many years, but it is only recently that the opportunity and need for closer collaboration and the value-added potential of such a partnership has become apparent. Dr. Bruce Lensch, a CDA past president and current chairman of OHA's Board of Directors, cites the new partnership as "one that was too good to pass up for both CDA and OHA, given the opportunities to improve the health of Californians." Current CDA President Kenneth Lange attended the September 1997 Oral Health 2000 National Consortium meeting in Atlanta to assess firsthand the specific collaborative opportunities between CDA

and OHA. Subsequently, the CDA House of Delegates passed Resolution 56-1997H:

Resolved, that the California Dental Association recognize and embrace the goals and objectives of Oral Health America as set forth in the directives of Oral Health 2000/Healthy People 2000, and be it further

Resolved, that CDA, its component societies, and its members at large rise to this challenge set forth and become active participants in community or in-office activities in response to this challenge, and be it further

Resolved, that CDA, its component societies, and its members at large cooperate in gathering pertinent data needed to verify the Oral Health 2000 goals, and be it further

Resolved, that this principle be incorporated in the association's Policy Manual, under the section entitled, "CDA Administrative Policies, General Policies/ Position Statements."

This action paves the way for closer collaboration between OHA and the CDA on program initiatives of great importance to CDA member dentists and the people of California. OHA brings a variety of initiatives that it is advancing through local action in many states and communities through partnering with dental associations and other groups. These include programs that have been developed directly by OHA and others that OHA has advanced through resource support and promotion. Examples of the former include the National Spit Tobacco Education Program, Oral Health 2000 National Consortium, and National Sealant Alliance. More recent additions include the Partnership for Tobacco Cessation and the Dental Enterprise Zones National Demonstration Program. Sponsored programs include Special Olympics, Special Smiles; the National Foundation of Dentistry for the Handicapped; and Kids in Need of Dentistry.

This issue of the Journal focuses on several areas that are important to OHA and CDA. Special Olympics, Special Smiles; spit tobacco prevention and cessation; and dental sealants are treated in original scientific articles. These issues are just three of many that organized dentistry and practicing dentists, hygienists, and assistants must become more fully aware of when given the opportunity to provide patient education. This need not occur only in clinical confines but also in the community in venues such as health fairs, civic service organizations, schools, and churches. Understanding of dental and oral disease is useful only when disease prevention programs and techniques are put to use. This issue of the Journal is meant to reinforce our charge as oral health professionals.

Accompanying these original scientific articles are advocacy pieces from Eunice Kennedy Shriver, founder of Special Olympics International; former Major League baseball player and announcer Joe Garagiola; and Olympic silver medalist Matt Ghaffari. These celebrities have recognized the value of working with OHA to achieve their personal and organizational objectives. CDA anticipates working directly with OHA in 1998 and the years ahead to advance these and other initiatives in California. One item to mark on your calendar is the Sixth National Oral Health 2000 Consortium and Nevin Lecture in Dental Administration to take place in San Diego, Sept. 11-13, 1997. CDA is cosponsoring this exciting meeting, which features such prominent individuals as Joe Garagiola, Dr. Gordon Christensen, and Dr. Donald Mayes.

It is important to recognize at the outset, though, that California is not a vacuum into which new programs are to be introduced. These is a rich tradition of local action and volunteerism among CDA member dentists individually and within programs that contribute to the health and well-being of Californians on a continuing basis.

Highlights from selected and representative efforts from CDA member and component activities will be discussed. Although they are not nearly inclusive of all the extraordinary and commendable efforts that exist in California, they do allow the reader to understand what is occurring in the community dental public health arena. Perhaps these articles will issue a call to action upon many more providers.

Community leaders and health professionals may further utilize these articles to demonstrate the viability of such endeavors in these communities, which may in turn catalyze such activities in their own. For example, the Children's Dental Health Center in San Diego was started as a grassroots effort by members of the San Diego County Dental Society in 1952 and is thriving and expanding today. In Santa Cruz, Dientes! Community Clinic was a vision of a few determined dentists who, in 1955, solicited seed money from the Monterey Bay Dental Society, which in turn allowed them to leverage matching funds from local business and government. That facility, through some trials and tribulations, has similarly done exceedingly well and is expanding to meet that community's needs.

A major theme in both these successful endeavors has been the establishment and nurturing of community collaboratives. Commitment to the cause can and should go beyond the dental health professional. Community participation can be a vital and necessary source of people, funding and recognition. For those of us who have experienced community participation in these ventures, we have found them not only to be essential for the aforementioned, but also for the sense of ownership and commitment that result.

As you see, these is a solid basis for success in improving the oral health of Californians, consistent with our nation's goals. CDA's new partnership with OHA can only serve to move us closer to these goals on a much expedited timetable.

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# Oral Health Status of Special Athletes in the San Francisco Bay Area

By Judy A. White, RDH, MPH; Eugenio D. Beltran, DMD, MPH, MS, DrPH; Dolores M. Malvitz, DrPH; and Steven P. Perlman, DDS, MScD

**ABSTRACT** A standardized oral health screening protocol was developed for assessing the oral health status of athletes participating in annual Special Olympics events at sites across the country. This paper reports on results at the San Francisco Bay Area Special Olympics event, where 385 athletes participated in the oral health screening. Trained dental screeners determined the presence or absence of edentulism, untreated decay, filled teeth, missing teeth, tooth injury, fluorosis and gingival signs, as well as treatment urgency. The frequency of mouth cleaning, having a mouth guard, use of tobacco, and presence or absence of pain were self-reported. Overall, child athletes 9-20 years of age had more untreated decay and substantially more missing permanent teeth than 9-20-year-old children represented in the 1986-87 National Institute of Dental Research Survey of U.S. School Children. Prevalence of missing teeth among adult athletes compared favorably with data from the Third National Health and Nutrition Examination Survey and the Behavioral Risk Factor Surveillance System Survey. Approximately one-third of child and adult athletes were determined to need dental care. Continued use of a standardized screening protocol could allow state-specific data to be available on the oral health status of this population; trends could be tracked; and needs could be identified, with strategies developed to meet those needs.

AUTHORS

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**Steven P. Perlman, DDS, MScD,** is an associate clinical professor of pediatric dentistry at the Boston University Goldman School of Dental Medicine and the founder and clinical director of Special Olympics, Special Smiles in Boston.

An estimated 7.5 million people in the United States have mental disabilities,[1] yet the oral health needs of this population have not been clearly identified. Assessing these needs is an important first step in establishing strategies to maximize this population's oral health. Studies published during the past 35 years, however, suggest that characterizing the oral health needs of this group may be difficult. In these studies, people identified with mental disabilities vary considerably in the type and degree of disability, living arrangements, and lifestyle factors that affect routine self-care and access to dental care. In addition, survey design and reporting methods have differed markedly among the studies, limiting comparisons of resulting data. Also, different comparison groups have been used (e.g., institutionalized or noninstitutionalized disability groups, the general population, or groups in other countries); even designation of people with mental disabilities in the studies has varied. This review considered only studies that included non-institutionalized people with mental disabilities and made comparisons

to the general population; the terms, "people with mental disabilities" or "mentally disabled" will be used.

Differences in oral disease prevalence in people with mental disabilities have occurred over time. In the 1960s and 1970s, dental caries prevalence among children and adults with mental disabilities and "physical and medical handicaps" was found to be no higher, and sometimes lower, than that of the general population.[2] Two reviews[3,4] generally affirmed lower caries prevalence in both primary and permanent dentitions of mentally disabled people. Most studies reported during the 1980s[5-7] found no significant difference in decayed, missing and filled teeth (DMFT) between mentally disabled and nonmentally disabled adults and children. One recent report from Singapore[8] showed lower DMFT values in mentally disabled children. Analysis of the different components of the DMFT in these studies provides more information on the oral health of people with mental disabilities. Some studies[5,6,9] have reported more untreated decay (D) among mentally disabled people than among nonmentally disabled people, while others[10,11] reported less untreated decay. In the 1990s, a Swedish study[12] assessed the oral health status of mentally retarded adults living in three increasingly independent settings. Although access to care was equal and all groups demonstrated lower caries prevalence than the general population, caries levels were higher as the independence of living arrangements increased. A study in India[13] reported that children with mental disabilities had a higher caries prevalence than children without mental disabilities. A feasibility study conducted at the New Jersey Summer Special Olympic Games in 1996 found that 19 percent of screened athletes had untreated dental caries.[14]

The type and degree of dental care among people with mental disabilities have also varied with the decade and country of the published report. In the 1960 and 1970s in the United States, less treatment was found among the mentally disabled than among the general population;[3] in some cases, no previous dental care was apparent.[4] The missing (M) component of DMFT was higher for the mentally disabled than for nonmentally disabled comparison groups in the United States and other countries.[3,4] In the 1980s, a study from North Carolina[5] reported fewer missing teeth among the mentally disabled adults than among nonmentally disabled comparison groups. British reports[6,9] showed fewer fillings and higher numbers of missing teeth among the mentally disabled than the nonmentally disabled; people with slight mental disabilities had more fillings than those with moderate or profound ones, but fewer fillings than nonmentally disabled controls.[9] In the New Jersey screening,[14] about one-third (32 percent) of athletes were found to have missing teeth.

Although two reviews[3,4] noted generally poor oral hygiene among people with mental disabilities, results were mixed when their level of oral hygiene was compared to that of the general population.[2] Brown and Schoedel[2] noted a higher prevalence of gingivitis among the mentally disabled than comparison groups, as well as correlation with poor oral hygiene. Three reviews[2-4] reported studies with high prevalence of periodontal disease in the mentally disabled; one[4] discussed contributing factors and noted mixed results in correlating levels of oral hygiene and periodontal disease. More recent studies have found poor oral hygiene among mentally disabled adults and children, whether or not compared to the nonmentally disabled.[9-11,15,16]

In summary, surveys generally report more missing and fewer filled teeth among the mentally disabled than among the general population as well as worse oral hygiene, more inflammation or gingivitis, and more periodontal involvement than in the general population. During the past 35 years, the oral health status of noninstitutionalized mentally disabled adults and children seems to have changed from being approximately equal to or slightly better than that of the general population in the 1960s and 1970s, to demonstrating more decayed teeth (but similar total DMFT) in the 1980s. Reports from the 1990s are few and mixed. Differences in survey design, reporting methods, and comparison groups – added to differences in the disabilities – make characterizing the oral health needs of people with mental disabilities a difficult task that produces contradictory results.

Special Olympics allows people with mental disabilities to compete in athletic events: More than 450,000 people participate in Special Olympics events in the United States each year. All special athletes must have been diagnosed as having mental retardation or a significant developmental disability that interferes with their ability to function;[18] athletes have varying levels of mental disability, as well as other disabilities. Although there is no upper age limit for participation, athletes must be at least 8 years old. Athletes come from all ethnic, racial, social, educational, and economic backgrounds.

Screening, as used in oral epidemiology, is an intraoral assessment and uses a simplified visual-only procedure to estimate the oral health status of a sample of the population and their treatment needs. Screenings are practical, rapid and non-intrusive.

Recently, a standardized screening method has been shown to provide valid information (in terms of sensitivity, specificity, and predictive value) when assessing the oral health status of population samples.[17] This method was adapted and pilot-tested among athletes participating in annual area or statewide Special Olympics events in New Jersey, California, and Massachusetts. When the standardized method is extended to other sites, state-specific and aggregated data can be used to characterize the oral health needs of these athletes and to make comparisons over time and among population groups with varying characteristics. This paper reports findings from use of the standardized screening method among participating athletes at the San Francisco Bay Area pilot site (June 1997).

## Methods

The Special Olympics Special Smiles site coordinator in San Francisco arranged for the recruitment, scheduling, and training of volunteer dental screeners, recorders, registrars, and oral hygiene educators. Dental professionals from the community and from area dental and dental hygiene schools participated. The Division of Oral Health at the Centers for Disease Control and Prevention developed the case definitions, screening protocol, all training materials, and the data form; CDC also trained the dental examiners, oversaw screenings at the sites, and compiled and analyzed the data. Screenings took place from 9 a.m. to 4 p.m. under a tent prepared by Special Olympics Special Smiles on-site personnel, located in the Olympic Village. Registrars at the tent entrance interviewed the athletes and recorded self-reported data on age, sex, dental history (frequency of cleaning the mouth [asked in this way to include all types of adaptive devices and including, but not limited to, brushing], having a mouth guard, and use of tobacco [chewed or smoked]).

Athletes were free to take part in the screening as they passed through the Olympic Village with their teams and coaches.

Before the clinical portion of the screening began, each athlete was asked to consent to the screening, and whether he or she was experiencing pain inside the mouth. Then screeners sequentially determined the presence or absence of the following:

- Edentulism;
- One or more primary or permanent teeth with untreated decay;
- One or more primary or permanent filled teeth;
- One or more permanent missing teeth (excluding premolars);
- Tooth injuries/sequelae;
- Two or more permanent homologous teeth with signs of dental fluorosis (Dean's mild or worse); and
- Gingival signs (moderate color and texture/contour changes surrounding three or more permanent teeth).

Precise, specific criteria (case definitions) for each condition were adapted from the National Institute of Dental Research diagnostic criteria.[19] The screening protocol was adapted from Beltrán et al.[17] and included using a flashlight and tongue blade to visually inspect the entire mouth rather than assess individual teeth or surfaces. Gloves were used and masks were available. Finally, from reported pain and observed clinical conditions, screeners evaluated treatment urgency, assigning one of three categories: maintenance, nonurgent, or urgent. That information was recorded on a "dental report card" and given to the athlete, with a gift bag that included a toothbrush and toothpaste.

Case definitions were sent to the screeners prior to the event. Training sessions for screeners were held on site before the screenings began and repeated as screeners were scheduled throughout the day. A total of 25 screeners were trained at this event. Each session included use of a manual, models, and posters to review case definitions, followed by an exercise with a question-and-answer period. Recorders were given a sheet of instructions and paired with a dental screener. Because the main focus of the one-day Special Olympics event is participation in physical activity, and screenings often occurred between events, athletes were not asked to participate in measures of intra- and interexaminer reliability for this pilot project.

Self-reported and clinical data recorded on paper forms at the site were entered into a customized Epi-Info program; data analysis was completed in SAS,[20] which calculated the percentages of athletes in the sample with each oral health indicator by age group. Results were compared to the 1986-87 NIDR Survey of United States School Children,[21] Healthy People 2000 progress data22 calculated from phase one of the Third National Health and Nutrition Examination Survey, the 1993-94 California Oral Heath Needs Assessment,[23] and data from the 1995 Behavioral Risk Factor Surveillance System Survey (BRFSS).[24] To compare findings with those of the 1986-87 NIDR children's survey, the NIDR dataset was reanalyzed (with appropriate weighting and design effects) to obtain similar epidemiologic estimators as those obtained in this study. For example, because the Special Olympics Special Smiles protocol excluded premolars in

**TABLE 1**

**Self-Reported Mouth Cleaning, Pain, Mouth Guard, and Tobacco Usage Among Child and Adult Athletes Participating in Special Olympics Special Smiles Program, San Francisco Bay Area, 1997.**

| | Athletes 9-20 Years Old N=107 (28.0%0 | Athletes 21-49 Years Old N=271 (72.0%) | All (N=378) |
|---|---|---|---|
| Frequency of Mouth Cleaning | | | |
| Greater/equal once/day | 62.9% | 74.9% | 71.5% |
| Two to six times/week | 36.2% | 23.6% | 27.1% |
| Once/Week | 0.0% | 1.1% | 0.8% |
| Pain | | | |
| Teeth | 6.9% | 4.0% | 4.8% |
| Other | 4.9% | 4.0% | 4.3% |
| Total | 11.8% | 8.0% | 9.1% |
| Has Mouth Guard | 13.3% | 8.7% | 10.0% |
| Smokes Tobacco | 4.7% | 4.1% | 4.3% |
| Chews Tobacco | 1.9% | 0.8% | 1.1% |

the assessment of missing teeth due to caries, these teeth were excluded from the analysis of the NIDR dataset.

## Results

Approximately 1,100 athletes participated in the Special Olympics event in the San Francisco Bay Area. Of an estimated 700 who came to the Olympic Village (the remainder competed at remote sites), 385 (55 percent) participated in the oral health screening. Most (67 percent) participants were male and ranged from 9 to 60 years of age, with a median age of 27; 107 (28 percent) were children 9-20, and 271 (72 percent) were adults 20-49. Because of their small number, seven athletes 50 or older were not included in the analyses; screening data are presented for 378 participants. To allow comparisons with existing data, nine 20-year-old athletes are included both in the 9- through 20-year-old group and in the 20- through 49-year-old group.

**Table 1** presents findings for children and adults on self-reported information. Overall, 72 percent reported cleaning their mouths at least daily (63 percent of children and 75 percent of adults), and 9 percent reported intraoral pain on the day of the Special Olympics event (12 percent of children and 8 percent of adults). Few athletes (10 percent) said they had mouthguards, and few reported smoking (4 percent) or chewing (1 percent) tobacco.

**Table 2** displays the percentages of child athletes by oral health indicator and age group. Overall, 15 percent had one or more missing permanent teeth and 29 percent had untreated decay. Among 15- through 17-year-olds, however, these values were 20 percent and 34 percent, respectively. Analysis of NIDR survey data found that among U.S. children aged 9-20, 3 percent had at least one missing permanent tooth, and 23 percent had untreated decay.[21] About one-third (34 percent) of those screened in California at the Special Olympics needed dental care: 12 percent required urgent care and 22 percent, nonurgent. Among 9- through 11-year-olds, however, 21 percent were judged to need urgent care. Findings for other indicators and for specific age groups are noted in **Table 2**.

**Table 3** displays the percentages of adult athletes by oral health indicator and age group. Overall, 34 percent had one or more missing teeth, and 18 percent had untreated decay. Among adults aged 25-29, however, 29 percent had one or more untreated decayed teeth. More than half of adults aged 40 or older had at least one missing molar or anterior tooth. More than one-third (36 percent) of adult athletes needed dental care: 7 percent urgent and 29 percent nonurgent. Findings for other indicators and for specific age groups are noted in **Table 3**.

## Discussion

Although preliminary and based on a convenience sample and small numbers, California screening data suggest that the prevalence of missing permanent teeth among child special athletes may be five times that found for school children represented in the 1986-87 NIDR survey (15 percent vs. 3 percent).[21] While these values reflect overall comparisons, individual age groups may fare far worse. For example, 20 percent of special athletes in two age groups (9-11 and 15-17) were found to have missing molars or anterior teeth. In the younger age group, still likely to have mixed dentitions, many of these missing teeth probably are first permanent molars, and the consequences of early loss of these important teeth will continue for the remainder of their lives.

When prevalence of missing teeth among adults is considered, participating athletes compared favorably with recent adult data. Among athletes aged 35-44 years, the 41 percent found to have at least one missing molar or anterior tooth were comparable to the 40 percent of Californians in that age group who responded (in a 1995 telephone survey conducted for the state health agency) that they had lost one or more teeth because of dental decay or periodontal

**TABLE 2**

**Indicators of Dental Caries, Filled Teeth, Missing Teeth, Caries Experience, Gingival Signs, Dental Injuries, Fluorosis, and Need for Treatment Among Child Athletes Participating in Special Olympics Special Smiles Program, San Francisco Bay Area, 1997.**

| | | | Age Groups (Years) | | | |
|---|---|---|---|---|---|---|
| **Children 9-20** | **N** | **9-11 N=21*** | **12-14 N=17*** | **15-17 N=37*** | **18-20 N=32*** | **All 9-20 N=107** |
| Percent of the sample: | | | | | | |
| With 1 or more untreated decay (prim. & perm. dent.) | 30 | 24% | 18% | 34% | 31% | 29% |
| With 1 or more filled teeth (prim. & perm. dent.) | 56 | 48% | 41% | 63% | 53% | 53% |
| With 1 or more missing teeth (perm. dent.) | 16 | 20% | 0% | 20% | 16% | 15% |
| With 1 or more decayed/ filled or missing teeth | 74 | 62% | 53% | 81% | 69% | 69% |
| With gingival signs (perm. dent.) | 35 | 19% | 24% | 46% | 31% | 33% |
| With injuries (perm. dent.) | 11 | 5% | 6% | 17% | 10% | 11% |
| With fluorosis (perm. dent.) | 7 | 5% | 18% | 9% | 0% | 7% |
| With urgent treatment needs | 12 | 21% | 6% | 15% | 6% | 12% |
| With nonurgent treatment needs | 22 | 11% | 18% | 18% | 34% | 22% |

* N reflects total number of participants in the age group; all indicators were not recorded for some athletes, so the denominator varied by indicator. Missing values for indicators ranged from 0-6, with a median of 3.

disease.[24] Both values remain well less than the 68 percent of this age group found to have one or more missing teeth in a 1988-91 clinical examination conducted on a nationally representative sample.[22] Given the differences in data collection and sample selection methods for these three reports, however, comparisons require caution. In a self-report format,[24] recall can be poor: Respondents may underestimate or overestimate their own tooth loss. In addition, this current screening considered only loss of molars and anterior teeth; those criteria avoided bias from misclassifying teeth removed for orthodontic purposes but probably underestimated slightly – and to an unknown degree – actual prevalence of missing teeth.

Among athletes aged 9-20 who participated in this screening, the prevalence of untreated decay was 26 percent higher than that calculated for U.S. school children of those ages in 1986-87 (29 percent vs. 23 percent).[21] When these current findings are compared with data reported for the 1993-94 California Oral Health Assessment,[23] the prevalence of untreated decay among adolescents appears to be lower – 34 percent of athletes aged 15-17 vs. 45 percent of children aged 15 in the state. These figures are substantially higher than both the objective established for untreated decay by Healthy People 2000 (15 percent) and the 1992 progress value (24 percent).[22]

Several factors suggest caution with all these comparisons. First, the prevalence of untreated decay for athletes in this study is based on only 37 people aged 15-17, while the California needs assessment included 898 10th-graders, and the NIDR survey examined 2,771 adolescents aged 15 (representing 3.5 million in the United States). Second, samples were chosen in different ways. Athletes were volunteers, while schools attended by participants in the California assessment were chosen by established characteristics. NIDR sample selection used a complex, three-stage method employing random selection and permitting generalization to all U.S. schoolchildren. Third, because this current screening used a visual-only assessment, reported prevalence of untreated decay was more likely to underestimate the true figure than would California or NIDR data, which are based on a tactile – as well as visual – examination. Finally, athletes came largely from Northern California; thus, the characteristics of that region (e.g., urban or rural location, water fluoridation status, access to dental treatment) affected findings to an unknown degree.

**TABLE 2**

**Indicators of Dental Caries, Filled Teeth, Missing Teeth, Caries Experience, Gingival Signs, Dental Injuries, Fluorosis, Edentulism, and Need for Treatment Among Adult Athletes Participating in Special Olympics Special Smiles Program, San Francisco Bay Area, 1997.**

| | Age Groups (Years) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **People 20-49** | **N** | **20-24 N=62**** | **25-29 N=55**** | **30-34 N=58**** | **35-39 Nn=58**** | **40-44 N=32**** | **45-49 N=15**** | **All n=280** |
| Percent of the sample: | | | | | | | | |
| With 1 or more untreated decay | 50 | 19% | 29% | 17% | 9% | 19% | 15% | 18% |
| With 1 or more filled teeth | 226 | 77% | 73% | 89% | 89% | 97% | 85% | 84% |
| With 1 or more missing teeth | 94 | 16% | 29% | 38% | 33% | 55% | 69% | 34% |
| With 1 or more decayed/ filled or missing teeth | 253 | 82% | 80% | 91% | 90% | 97% | 100% | 88% |
| With gingival signs | 132 | 39% | 49% | 52% | 45% | 53% | 53% | 47% |
| With injuries | 31 | 18% | 6% | 13% | 13% | 7% | 0% | 11% |
| With fluorosis | 16 | 7% | 14% | 6% | 4% | 0% | 0% | 6% |
| Edentulous | 1 | 0% | 0% | 0% | 0% | 0% | 0.39% | 0.39% |
| With urgent treatment needs | 18 | 5% | 6% | 7% | 9% | 6% | 8% | 7% |
| With nonurgent treatment needs | 74 | 32% | 31% | 37% | 17% | 19% | 39% | 29% |

* Seven people of 50 years of age or older were not included in the calculations.

** N reflects total number of participants in the age group; all indicators were not recorded for some athletes, so denominator varied by indicator. Missing values for indicators ranged from 0-23, with a median of 16.

In spite of all these factors, if the prevalence of missing teeth truly is higher among child special athletes than that found in the NIDR child survey (and the magnitude of the difference suggested it), conjecture remains the only way to explain this finding. Do children with mental disabilities have greater or reduced access to dental care than did cohorts of such children 20-30 years ago, when institutionalization may have been more common? Would regular dental attention provided through an institution ensure that incipient disease is found and treated, thus reducing the need for removal of teeth (and affecting the prevalence of missing teeth among current adults)? Have current efforts to mainstream or deinstitutionalize made dental care more or less available to people with mental disabilities? If the latter, has reduced availability resulted in less frequent visits and thus more limited treatment options? Or do adults with mental disabilities with their own earned incomes have better access to care? Have changes in diet and supervision of self-care associated with less regimented living arrangements affected levels of disease and thus treatment outcomes? How might changes in Medi-Cal policies on covered services affect the prevalence of missing teeth and untreated decay among children and adults?

There are no firm answers to these – and many other – questions arising from the data. In this screening, athletes were not asked about their most recent dental visit or their eligibility for Medi-Cal dental services; it was thought that many responses would be unreliable and that a parent or guardian would need to provide such information. Certainly, missing teeth reflect the lack of timely dental care in the past; untreated decay and reported intraoral pain suggest current deficiencies. Associations among specific oral health indicators, as well as their relation to the receipt of dental services, remain important topics for future investigations.

Even so, the current findings raise issues for discussion regarding preventive and treatment services for people with mental disabilities. For example, more than one-third (36 percent) of the child athletes and more than one-fourth (25 percent) of the adults reported that they did not clean their mouths at least once per day. Since this group of people with mental disabilities is considered to be high-functioning, one might expect that these values would be higher among lower-functioning people with mental disabilities. The importance of oral hygiene procedures should be reinforced wherever possible, particularly

during appointments for dental care. Any instruction should include group home managers and other guardians to encourage appropriate supervision of recommended procedures and reinforcement of their importance at home. Further, the preventive benefits of early and regular dental attention – before problems arise – should be stressed with athletes, guardians, and group home managers. Primary preventive measures such as dental sealants and chemotherapeutic rinses should be used when individual evaluations determine that people with mental disabilities are at elevated risk of dental caries and periodontal diseases.

## Conclusions

Although interpretations of the data presents difficulties and limitations, they represent the first California-specific information on the oral health needs of people with mental disabilities who participated in Special Olympics. The findings regarding missing teeth and untreated dental decay indicate that these athletes had a substantial unmet need for dental preventive and treatment services. Approximately one-third of child and adult athletes were judged to need dental care. If the standardized screening protocol and case definitions are repeated in future screenings at Special Olympics events, trends in oral health indicators can be tracked and answers sought to questions about the effect of policy changes on the oral health needs of this subset of people with mental disabilities. In addition, further analysis of the data or comparisons among Special Olympics sites may reveal associations that could prove useful in characterizing the oral health needs of special athletes, in developing public policies or privately sponsored programs to meet those needs, or in monitoring their levels of risk for oral diseases.

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# A Clean Bill of Health for All Our Country's Citizens

By Eunice Kennedy Shriver

AUTHOR

**Eunice Kennedy Shriver** is the founder and honorary chairman of Special Olympics International.

As the next century approaches, the leaders, lawmakers, health care providers, and citizens of this country are wondering and worrying about the future of health. How do we – as a compassionate, caring, great nation – provide access to quality care for all Americans? Not simply the patients who have a lot of money. Not simply those who are the easiest to treat. Everyone.

The face of health care – and oral health care – in this country is changing dramatically. Donna Shalala, secretary of Health and Human Services, has said that government alone cannot solve the problems of access to necessary oral health care. She is right. To ensure that everyone has access to dental health services – every man, woman, and child, rich and poor – we need to be proactive and creative. We need to make oral health care a priority to our state legislators. We have to work in concert with one another. Only by developing grass-roots coalitions between health care providers, business, government agencies, and volunteers can we – together – meet the oral health challenges of the 21st century.

Happily, the Special Olympics Special Smiles program, with its wide range of dedicated partners and supporters, is an excellent example of successful coalition building at work. Oral health problems have long been among the most significant health problems confronting the 7.5 million Americans with mental retardation. This is due to a variety of factors, not the least of which is the severe financial constraints facing many disabled patients' families, 25 percent of whom live below the poverty level.

These extremely distressing facts become all the more distressing when you think about how much oral health affects our total health and our whole life. Imagine trying to run a race with a throbbing toothache. Or applying for a job with poor teeth or missing teeth, bad gums, or bad breath. None of us are at our best when our oral health is failing.

Additionally, it is a sad fact that many dental professionals have shied away from treating patients with special needs. Too often, patients with mental retardation have been perceived as someone else's problem. But "someone else" wasn't offering solutions either.

To respond to this unfair reality, Special Olympics formed a groundbreaking partnership with Boston University School of Dental Medicine, Oral Health America, and the Academy of Dentistry for Persons with Disabilities. Our collective goal was to improve access to dental care for people with mental retardation, and, in doing so, to improve every aspect of their lives. At the same time, we aimed to raise awareness within the dental community and the general public about this vitally important problem.

Today, I am proud to report that as a nationwide oral screening, educational, and referral initiative in its fourth season,

Special Olympics Special Smiles is making marvelous progress. By routinely providing dental screenings and educational programs at Special Olympics events, we have shown our athletes that someone cares about their total health and well-being. In places including Atlanta, Baltimore, Chicago, Kansas City, Los Angeles, Miami and New York, thousands of Special Olympics athletes have been the beneficiaries of free quality oral health consultations and referrals.

At the 1995 Special Olympics World Summer Games in New Haven, Conn., more than 3,500 athletes received instruction on proper oral hygiene, nutritional counseling, and dental screenings. At the 1997 World Winter Games, more than 1,000 Special Olympics athletes also received these services.

High school, college, and professional athletes have always worn mouth guards to protect their jaws and teeth during practice and games. For the first time, through Special Olympics Special Smiles, our athletes have this much-needed equipment to protect their grins and lift their spirits while training and competing.

Educational initiatives have also been launched through Special Smiles to increase the knowledge of family members and dental professionals about the specific oral health problems of people with mental retardation. Special Smiles: a Guide to Good Oral Health for Persons With Special Needs was published last year for caregivers of people with mental retardation. Now families understand how they can help with dental hygiene and care. This groundbreaking booklet was not only distributed at Special Olympics events, but throughout the entire dental community in this country.

Our continuing education programs for dental professionals are also achieving success. In 1997, for-credit programs were held in 12 cities to instruct dental professionals on treating patients with mental retardation. Because of the widespread interest generated from these courses, the number of cities participating is expected to rise to 16 or more next year.

Our list of partners and supporters is also rapidly expanding, helping address this issue from all angles. The Centers for Disease Control and Prevention came on board this year to help develop a mechanism to obtain quality standardized data that can be presented to the scientific community on the oral health care needs of people with mental retardation. Some of these data are presented in this issue of your CDA Journal. The American Dietetic Association has also joined forces with Special Olympics Special Smiles to illustrate the impact of diet on the oral health of special needs patients and encourage eating habits that foster total health and nutrition. In addition, the California Dental Association recently passed a resolution in support of Special Olympics Special Smiles.

These strides on behalf of people with mental retardation are very impressive, not only because they provide such a valuable service, but also because they demonstrate the power of pulling together, the power of sharing the energy and resources of numerous partners, sponsors, agencies, and volunteers.

But let us not rest on our successes.

In a recent study of group homes in Florida that investigated access to care for people with mental retardation, 40 percent of caregivers reported difficulty finding dentists willing to take patients with mental retardation.

A landmark 1995 study, funded by a grant from Oral Health America, presented similarly disturbing statistics. The largest ever of its kind, the study queried 774 supervisors of group homes in seven states, responsible for a total of more than 18,000 clients. Seventy-two percent of the caregivers said there were not enough dentists in their communities willing to take on patients with special needs – but there was certainly no shortage of dentists! Even more disturbing, 47 percent said their clients were refused treatment within the previous 12 months.

The study also found that 80 percent of the clients – the very same who were denied access to care – were people who required complete or partial assistance even for brushing!

Clearly, there is still more to do. And everyone can help.

Recently a bipartisan bill was signed into law that may provide increased access to oral health care for children. The Child Health Insurance Act, sponsored jointly by Sens. Orrin Hatch and Ted Kennedy, provides health care to children of families who cannot afford it, but do not qualify for Medicaid. The act is unique in that it gives a great deal of flexibility to individual states on whether oral health care benefits will be among those covered.

Make your voice heard. Contact your local child advocacy groups and state legislators. Let them know you want every child – no matter what his or her parents' income is – to have quality oral health care. Spread the word about Special Olympics Special Smiles. Talk to your colleagues, local dental societies, and businesses. Get them involved.

Every time we help one person gain access to the care he or she needs and deserves, we are saying, "you matter" – to us and to our country. Every time we forge a new partnership, share our ideas, volunteer, or educate ourselves, we are making a difference – now and for the future of our country. I believe if we truly work together, we can achieve our health care goals for the next century.

That will surely bring a smile to all of our faces.

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# Prevalence of Spit Tobacco Use Across Studies of Professional Baseball Players

By John C. Greene, DMD, MPH; Margaret M. Walsh, MS, EdD; and Mark A. Letendre, ATC

**ABSTRACT** The use of spit tobacco among professional baseball players continues to be alarmingly high in spite of efforts to make players aware of the harmful effects of such use. Approximately 35 percent to 40 percent of professional baseball players still use spit tobacco, and about half of those have associated oral lesions. Efforts of the National Spit Tobacco Education Program are expected to result in a significant reduction in spit tobacco use in the next decade.

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The 1986 Surgeon General's Report on the Health Consequences of Using Smokeless Tobacco[1] called national attention to the health risks of using this form of tobacco (now called "spit" tobacco because the term "smokeless" incorrectly suggests that it is harmless). The report expressed concern about the fact that about 6 million people in the United States used spit tobacco one or more times per week in 1985. The report also pointed out that use was increasing, particularly among male adolescents and young male adults. In the preface to the report, then-U.S. Surgeon General C. Everett Koop expressed alarm about the combination of the increasing use of these products and the strength of the association between their use and such conditions as oral cancer, oral leukoplakias, and other oral problems.

A report from a National Institutes of Health Consensus Development Conference concluded that "observations in humans provide convincing evidence for an increased risk of oral cancer as a result of the use of smokeless tobacco."[2] Case reports and epidemiologic studies in humans have documented this association, and laboratory studies have demonstrated that carcinogenic compounds present in high levels in spit tobacco produce cancer in laboratory animals. One epidemiologic study estimated that the risk of oral and pharyngeal cancer in humans is four times higher in those who use snuff (a form of spit tobacco).[3] Furthermore, this case-control study found that long-

term chronic users of snuff have nearly a fiftyfold increased risk of developing cancers of the gingiva and buccal mucosa.

A 1994 report estimated that the number of current users of spit tobacco in the United States had increased to 7 million.[4] The most common form of spit tobacco used today is moist oral snuff or "dip," which is finely ground or shredded tobacco sold in round tin cans. A pinch of the moist snuff is placed and held between the lower or upper lip or cheek and the gingiva. Chewing tobacco is loose, coarse strands of tobacco sold in pouches and placed in wads between the cheek and the gingiva. For convenience, both forms are referred to as spit tobacco to differentiate them from smoked tobacco.

To learn about the health effects of spit tobacco use, special attention has been paid to professional baseball players because of their traditional heavy use of spit tobacco and their high public profile. Because of the findings from these studies, increasing efforts are now being made to reduce spit tobacco use in this high-profile population for its own sake and to help decrease spit tobacco use in the general population that tends to emulate its behavior.

This report presents available published and previously unpublished data from studies of professional baseball players conducted by the authors' group at the University of California San Francisco with similar data published by other authors, to show how the prevalence of spit tobacco use in this population may have changed during the period 1985 to 1997. This is the period for which data are available and are presented here as a group even though they are not directly comparable, due to differences in definitions of current user and study participation rates.

## Methods

A Medline search was conducted using the key words "tobacco" and "baseball" to locate published English-language reports of studies of spit tobacco use by baseball players.

The search yielded six publications[5-10] that appeared in the literature subsequent to the surgeon general's report in 1986. These publications were examined to obtain findings related to the prevalence of spit tobacco use and the prevalence of associated oral lesions among the users. These studies were conducted at different times by different investigators and used somewhat different methods. Since this report compares data collected in these studies, a short description of the methods employed in each one follows.

Cummings and colleagues[6] studied one minor-league team during the 1985 regular season. Players were asked whether they were current spit tobacco users and their self-reports were verified by bioassays of their saliva. Oral examinations were conducted on 25 players using a flashlight and tongue blades.

Connolly and colleagues[5] surveyed members of seven major-league baseball teams during spring training in 1987. Anonymous questionnaires were used to gather information about spit tobacco use patterns and were completed by 265 players. Players were asked whether they were current spit tobacco users. Brief oral examinations were performed on some of the players to verify self-reports of "sore mouths" associated with spit tobacco use.

Wisniewski and Bartolucci[7] provided questionnaires about spit tobacco use to the head athletic trainers of all major league teams prior to spring training in 1987. These, in turn, were distributed to the players, who completed them during the 1987 preseason/season. Players were asked if they were currently using spit tobacco. These confidential questionnaires were collected by the head athletic trainers from 25 of the 26 major-league teams then in existence and returned directly to the principal investigator for analysis. Oral examinations were not conducted.

Ernster and colleagues[8] studied players attending spring training camps of seven major-league clubs and their associated minor-league teams during spring training in 1988. The Ernster report presents data on the first of a three-year study of these teams. Questionnaires asking for information about spit tobacco use were completed by 1,109 players. Players were asked if they had ever used spit tobacco and whether they had used it in the past month, week, or day. Current-month users were those who had used more than once in the past month. Oral examinations, using a full complement of portable equipment, were conducted by trained examiners as a portion of the players' regular medical examination (**Figure 1**).

In this study and in all of those conducted by the UCSF group, oral leukoplakia was defined clinically as any white opaque, leathery-appearing, slightly raised, and irregularly corrugated changes in the oral mucosa that were not characteristic of another white lesion such as lichen planus or spongy nevus.[11] For convenience, oral mucosal changes characteristic of oral leukoplakia are referred to as "oral lesions" (**Figure 2**).

Greene and colleagues[9] reported on data from the second and third years (1989 and 1990) of the study that was conducted by the same team, using the same study methods as in the Ernster report. The data reported in this portion of the study are from 894 players attending major- and minor-league training camps in 1989 and 1990 who were

**Figure 1.** Looking for tobacco-associated oral lesions.

**Figure 2.** Tobacco-associated oral leukoplakia.

not included in the first-year report. The majority of the 894 players were from the minor-league camps since each major-league camp had approximately 60 players and the associated minor-league camp had about 125 players. Players were considered to be current users if they reported using spit tobacco in the prior week.

The 1992 study reported by Greene and colleagues[10] was conducted during the regular baseball season and included 128 of the 262 rostered players from 10 major-league teams who consented to participate. Players who reported using spit tobacco during the prior week were considered current users. Oral examinations were conducted using portable equipment.

In addition to the published data cited above, data that were previously collected by the authors' group at UCSF but have not been published before are presented in this report to help identify trends that might be occurring in spit tobacco use or in the prevalence of associated oral lesions. These include data for 1987, 1995, 1996, and 1997.

The first study of this group was a pilot study conducted by Greene and colleagues in 1987 and involved 61 players attending one major-league team's spring training camp. Oral examinations, using portable dental equipment, were conducted by specially trained and calibrated dentists as a part of the regular medical examination. Standardized questionnaires were used to elicit tobacco use histories. Players were classified as current spit tobacco users if they reported use in the prior week.

Greene performed oral examinations on players attending one major league team's training camp in the springs of 1995 and 1996 using the same methods and definitions as those described in the publication by Ernster and colleagues.[8] Specially trained dentists, using portable dental chairs and lights, conducted the examinations as a part of the regular medical examinations. Players were classified as current users if they reported using spit tobacco in the prior month, based on information obtained by questionnaire.

In 1997, Greene and Walsh conducted a study of 99 players attending two major-league teams' spring training camps and on 205 players attending their associated minor-league training camps. Spit tobacco use information was obtained by questionnaire. Again, specially trained dentists using portable dental equipment conducted oral examinations as a part of the regular medical examinations. Players were classified as current users if they reported using spit tobacco in the prior month.

## Results

**Table 1** presents previously reported and unreported data for major-league players. The observed prevalence of spit tobacco use among players attending major-league spring training camps during the 10-year period from 1987 to 1997 ranges from a high of 46 percent in 1987 to a low of 35 percent in 1997.

**TABLE 1**

**Studies of Spit Tobacco Use Among Major-League Baseball Players (1987-97)**

| Author | Year of Study | N(%)[a] | Current Users (%) | Lesions (% of users) |
|---|---|---|---|---|
| Greene et al. | 1987 | 61 (98) | 36 | 27 |
| Connolly et. al. (5) | 1987 | 265 (63) | 34 | na |
| Wisniewski and Bartolucci(7) | 1987 | 528 (35) | 46 | na |
| Ernster et al. (8) | 1988 | 290 (72) | 44 | 49(b) |
| Greene et al.(9) | 1989/1990 | 879 (c) (85) | 40(c) | 48(c) |
| Greene et al. (10) | 1992 | 128 (49) | 35 | 53 |
| Greene | 1996 | 54 (90) | 41 | 50 |
| Greene and Walsh | 1997 | 99 (83) | 35 | 54 |

(a) Number of players examined or who returned questionnaires (percent of group studied, based on anticipated attendance of 60 at spring training camps and 26 players per team during the season. Greene et al. 1987 is based on actual attendance of 62).

(b) Includes 804 minor-leaguers.

(c) Includes minor-leaguers.

**TABLE 2**

**Studies of Spit Tobacco Use Among Minor-League Baseball Players (1985-97)**

| Author | Year of Study | N (%)[a] | Current Users (%) | Lesions (% of users) |
|---|---|---|---|---|
| Cummings et al. (6) | 1985 | 25 (93) | 68 | 18 |
| Ernster et al. (8) | 1988 | 804 (92) | 42 | 49 (b) |
| Greene et al. (9) | 1989/1990 | 879(c) (85) | 40 (c) | 48 (c) |
| Greene | 1995 (d) | 69 (100) | 30 | 57 |
| Greene and Walsh | 1997 | 205 (82) | 29 | 59 |

a. Number of players examined (percent of group studied, based on 25 players per minor-league team. cummings et al., 1985 is based on reported size of 27).

b. Includes 290 players attending major-league spring training camps.

c. Majors and minors combined.

d. Major-league players strike year. Sixty-nine minor-leaguers and walk-ons attended "major-league" camp.

The prevalence of associated oral lesions in the same group varies from a low of 27 percent to a high of 54 percent. **Table 1** also presents for each study the percent of the population studied that returned questionnaires or received oral examinations.

**Table 2** presents similar spit tobacco use data for players attending minor-league spring training camps for 1985, 1988, 1989 and 1990, 1995 and 1997. Recorded spit tobacco use ranges from a high of 68 percent to a low of 29 percent, and associated oral lesion prevalence ranges from 18 percent to 59 percent of those who use spit tobacco.

## Discussion

The high prevalence of spit tobacco use among young males reported in the surgeon general's report in 1986 stimulated widespread interest in this subject. As a result, several groups began to study spit tobacco use among professional baseball players, where use traditionally has been high. Published data from these studies are consistent with the public perception that many baseball players use spit tobacco.

The prevalence of spit tobacco use among players attending major-league spring training camps was high in 1987, when three different assessments were made. The highest of these, 46 percent, was reported by Wisniewski and Bartolucci.[7] This study involved 528 players on 25 of the 26 teams that existed at that time. This use rate was based on an average of only about 21 respondents per team during the "preseason/season." Since as many as 60 players may attend each team's spring training camp, the 528 responses probably represent only about 35 percent of the players in attendance (**Table 1**). Thus, the reported 46 percent use rate should be viewed as an estimate with some unknown margin of error.

The study by Connolly and colleagues, 5 also in 1987, reported a spit tobacco use rate of 34 percent based on questionnaire responses from players attending seven major-league spring training camps. The response rate for this study was higher, since the average number of respondents reported per team was 36 as compared to 21 in the Wisniewski study. Also, using 60 as the anticipated attendance figure for each camp, this would be a 63 percent response. Therefore the 34 percent use rate reported in this study may be more representative of the actual situation at that time.

The 36 percent spit tobacco use rate in the third 1987 study by Greene and colleagues, included 61 of 62 players (98 percent) attending only one major-league team's training camp out of 26 in existence at that time. While that use rate certainly represents that one team, the question is, how representative was it of all attendees at major league training camps that year. Also, the Greene study considered current users to be only those who reported using spit tobacco in the prior week whereas the Wisniewski and Connolly studies considered current users to be those who said they were "current users" on the confidential questionnaires. Each of these studies has an unknown margin of error, since it is not known how well they represent all of the players attending major league training camps that year. It seems reasonable to assume, however, that the prevalence of spit tobacco use in 1987 was between 34 and 40 percent.

The kind of qualifications discussed above apply to each of the reported data sets when generalizing from them to all of professional baseball or when comparing one study with another. However, taken together, they are informative and indicate that the prevalence of spit tobacco use among professional baseball players was and still is alarmingly high. In assessing the representativeness of the data in these studies, unless the actual numbers are known, it is assumed for this report that 60 players attended each major-league team's spring training camp. For the study that was conducted during the regular season,[10] a roster size of 26 players per team was assumed.

The studies conducted in 1988, 1989, and 1990 by Ernster[8] and Greene[9] and colleagues provide the most comprehensive information on the largest number of professional baseball players available

today (**Table 1**). These studies obtained information on the prevalence of spit tobacco use and associated oral lesions on players attending the spring training camps of seven major league clubs. Study staff assisted players in filling out their questionnaires, and oral examinations were conducted by specially trained dentists as a part of the regular medical examination. This way all players were expected to participate in the oral examinations, and most did. Thus, the data regarding the prevalence of spit tobacco use should be very close to reality for those seven teams and probably for the other 19 teams then in existence. The data for 1988 presented in **Table 1** are for 72 percent of the players attending the seven major-league training camps in that year.

The data for 1989 and 1990 represent 85 percent of the players from the same major-league camps and their associated minor-league camps as in the Ernster study, who were not examined previously. The information is presented for both years and both camps because it was not possible to separate the data by year and into major- and minor-leaguers retrospectively as was possible for 1988. The major-league spit tobacco use rate of 44 percent for 1988 should be particularly dependable. However, the 1989, and 1990 rate of 40 percent is so diluted by the large component of minor-league data that it is probably lower than the actual spit tobacco use rate among major-league players at that time. Furthermore, current users in this report were those who used spit tobacco in the past week and, thus, does not include those who used it in the past month but not in the past week.

The spit tobacco use rate of 35 percent found in 1992 (**Table 1**) probably is considerably lower than what actually existed at that time. Only 128 of 262 (49 percent) rostered players on the 10 teams presented themselves for examination. It is unknown how many users did not choose to participate. The fact that this study was conducted during the regular season on game days when the players were quite busy preparing for competition probably decreased participation in this project. Only players who indicated on their questionnaire that they had used spit tobacco in the previous week were considered to be current users. Because this pilot study of spit tobacco cessation methods took place during the regular season and had such a low participation rate, it is not comparable to the others included in this publication. Thus, the 35 percent spit tobacco use rate should only be considered as the minimum for that year.

The 1996 spit tobacco use rate of 41 percent (**Table 1**) is based on staff-administered questionnaires and oral examinations as a part of the regular medical examinations, as was done in the Ernster studies. However, because the study involved 90 percent of the players attending only one major-league club's spring training camp, there is no way to determine how representative it was of the other camps.

The 35 percent spit tobacco use rate recorded for 1997 (**Table 1**) represents the lowest and most recent spit tobacco use information for major-league players. The 1997 data were obtained from 83 percent of the players attending two major-league spring training camps as a part of the regular medical examinations, as was done in the Ernster[8] and Greene[9] studies. There still is the question of how representative this spit tobacco use rate was of all major-league training camps, but the number of study subjects is respectable and the lower use rate is consistent with the authors' observations.

Thus, it appears that the use of spit tobacco among major-league baseball players probably was around 34 percent to 40 percent in 1987 and may have increased slightly to 40 percent to 44 percent in the 1988-90 period and then declined to about 35 percent by 1997, about the same level that existed at the beginning of the decade. It is remarkable that there apparently has been so little change during this decade, particularly since so much attention has been drawn to this issue during the past few years.

Data regarding the use of spit tobacco among players attending minor-league spring training camps are more scarce than for the majors. The study by Cummings and colleagues(6) in 1985 (**Table 2**) involved only 25 players (93 percent) on only one minor-league team during the regular season and found an unusually high spit tobacco use rate of 68 percent. Since this rate is so high and involves so few players, it does not appear to be comparable with the other observations in this report.

**Table 2** also presents minor-league player spit tobacco use data for 1988 (42 percent), 1989 and 1990 (40 percent), 1995 (30 percent), and 1997 (29 percent). If these figures are indicative of what has been happening among all minor league players, it is very encouraging. As can be seen in **Table 2**, each of the studies involved a large percentage of the groups being studied. The 1988 data came from 804 (92 percent) of the players on 35 minor-league teams associated with seven major-league clubs. Each of the minor-league teams has about 25 players attending spring training. The 1989 and 1990 data are from 85 percent of the players attending both major- and minor-league camps that were not examined in 1988. The 1995 data are from 69 (100 percent) of the minor-league players and a few "walk-on" players attending one "major-league" training camp in the year of the major-league players' strike. The

data collected in 1997 are from 205 (82 percent) of the players on 10 minor-league teams associated with two major-league clubs who attended minor-league spring training. The decrease in spit tobacco use from 42 percent in 1988 to 29 percent in 1997 among minor-league players probably reflects the ban on spit tobacco use during minor-league games that went into effect in 1993. But the fact that the use rate is still nearly 30 percent indicates how difficult it is to effectively implement a ban of an addictive substance, especially when it is done without providing concurrent help with cessation.

The prevalence of tobacco-related oral lesions in professional baseball players continues to be very high among current users, regardless of their major- or minor-league status. The prevalence of spit tobacco-related oral lesions in professional baseball players reported in the studies during the past 12 years has ranged from 18 percent to 59 percent (Tables 1 and 2). No definition of what was considered a tobacco-associated lesion was given in the study reporting the 18 percent prevalence, and it was based on a very small number. Nevertheless, dividing the number of current spit tobacco users examined in this entire group of studies by the number of players found to have tobacco-related oral lesions yields an oral lesion prevalence of 49 percent of the spit tobacco users.

It would be very helpful if, in the future, a standard definition of current user of spit tobacco could be adopted so data from local and national studies would be more directly comparable. For example, it would be desirable to adopt either current-week user or current-month user, together with a standard definition of which one is chosen.

Data from these studies do not tell the entire story of what has been happening with regard to the spit tobacco issue. When the authors first began to look into this problem in 1986, major-league locker rooms were well-stocked with free samples of dip and chewing tobacco provided by the tobacco companies. These have been replaced by non-nicotine substitutes, and warnings about the dangers of using spit tobacco are posted in prominent places. Players used to say when learning of the harmful effects of spit tobacco, "Why didn't someone tell me this before I got hooked on this stuff?" That was often followed by a request for help in quitting. No longer heard are claims of ignorance of tobacco being harmful, and more players are asking for help in kicking the addiction.

Given the apparent knowledge among professional baseball players today about the harmful effects of spit tobacco use and the anti-tobacco policies of Major League Baseball, why hasn't there been a greater reduction in spit tobacco use? It must be remembered that an attempt is being made to change the social norms of an essentially closed society where spit tobacco use has been commonplace and condoned for many years. That is not a simple task. It took nearly 20 years following the first surgeon general's report on the harmful effects of smoking before a significant change in the smoking habits of the people in this country began to show up. It is important, too, to realize that most of the attention for the first half of this decade was devoted to documenting the nature and extent of the spit tobacco problem in professional baseball and identifying the best approach to helping players overcome their addiction. Serious attention has been placed on decreasing spit tobacco use among professional baseball players only in the past few years.

Several very important developments have occurred in the past three or four years that should help to accelerate what may be a decreasing use of spit tobacco by both major- and minor-league players. Among them is the ban on the use of spit tobacco in the minor leagues that was instituted in 1993. This may account in large measure for the encouraging trend that appears to be developing in this population. Perhaps the most significant development is the formation of the National Spit Tobacco Education Program (NSTEP) headed by Joe Garagiola. Garagiola is a former major-league baseball player and a Hall of Fame television broadcaster who has been speaking out on this issue for more than 15 years. The NSTEP program, which began operating in 1994, is funded by grants from the Robert Wood Johnson Foundation and is operated by Oral Health America, American's Fund for Dental Health. Under Garagiola's leadership, NSTEP has carried the spit tobacco message to every major-league club and to millions of baseball fans. Garagiola's NSTEP team is currently working with the baseball commissioner's office to establish a network of trained professionals to provide an effective spit tobacco cessation program for all of professional baseball. That program will need support from the dental profession in detecting oral lesions caused by spit tobacco use and in motivating and helping users overcome their addiction. Studies have now shown that dentists and hygienists working together can be very effective in the cessation process.[12-15]

During the 1997 spring training oral examinations, the UCSF study team was encouraged by the observation that more players seemed proud to say either that they had never used spit tobacco or that they had quit. Spit tobacco users were more reluctant to admit that they

were regular users and more anxious to obtain help to quit. The authors' believed they were witnessing a real change in attitudes towards spit tobacco use in this population of professional baseball athletes. With NSTEP now in high gear and with the active involvement and encouragement of Major League Baseball, the Major League Players Association, the Professional Baseball Athletic Trainers Society, and team employee assistance program personnel, there is good reason to anticipate a major reduction in the use of spit tobacco among professional baseball players during the next decade. If this happens among these high-profile athletes, one can also expect a reduction in spit tobacco use among young males throughout the country instead of the continued growth that is occurring today.

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# A Dental-Based, Athletic Trainer-Mediated Spit Tobacco Cessation Program for Professional Baseball Players

By Margaret M. Walsh, EdD; John C. Greene, DMD, MPH; James A. Ellison, DDS, MPH; Mark A. Letendre, ATC; and Ned Bergert, ATC

**ABSTRACT** During 1997 spring training, the National Spit Tobacco Education Program provided a spit (smokeless) tobacco intervention program to 16 professional baseball clubs. The program consisted of an awareness-raising presentation and an opportunity to discuss quitting spit tobacco use with an expert cessation counselor. For two clubs, however, a more extensive intervention was pilot-tested for feasibility and acceptability among their major- and minor-league teams during their regularly scheduled health examinations at the beginning of spring training. The intervention included an oral exam by a dentist who advised spit tobacco users to stop and pointed out any spit tobacco-associated lesions in the player's mouth, brief cessation counseling by a specially trained dental hygienist, and ongoing support and follow-up by the certified athletic trainer to promote cessation. Findings from this pilot study indicate that this intervention, which is dependent upon involvement of dental professionals, was feasible to implement during spring training and appeared to be well-received by the athletes. Dental professionals are in an excellent position to advise and help spit tobacco users to quit and can have an important role in helping youth overcome this rapidly growing addiction.

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During spring training in 1997, the National Spit Tobacco Education Program (NSTEP), funded by the Robert Wood Johnson Foundation and operated by Oral Health America, collaborated with the athletic trainers in professional baseball to provide a spit tobacco intervention program to 16 professional baseball clubs, eight in Arizona and eight in Florida. The goals were to generate awareness about the hazards of spit tobacco and to motivate players to quit tobacco use. These awareness-raising sessions were presented by Joe Garagiola, Baseball Hall of Fame broadcaster, former major-leaguer, and national chairman for NSTEP; Bill Tuttle, former major-leaguer and victim of a spit tobacco-related oral cancer; and Tuttle's wife, Gloria Tuttle. Following their presentations, all major- and minor-league athletes on these 16 clubs were offered an opportunity for individual counseling with an expert spit tobacco cessation counselor, and the athletic trainers were provided with a brief in-service training on nicotine replacement therapy, self-help cessation strategies, and a toll-free telephone number for follow-up consultation with an

expert cessation counselor as needed.

For two clubs in Arizona, however, a more extensive trainer-mediated, dental-based intervention was provided to members of their two major-league teams and their 10 associated minor-league teams over a period of 11 days. This extended intervention was offered to these two clubs as a pilot test to determine the feasibility of its implementation and its acceptability to athletes and athletic trainers. The intervention consisted of an additional training component for the athletic trainers, to prepare them to assume a more active role in helping athletes with their cessation efforts, and a dental component. The dental component included an oral mucosal examination by a dentist who pointed out spit tobacco-associated tissue damage in a user's own mouth and advised him to quit his tobacco use, a brief cessation counseling session by a dental hygienist on ways to get ready to quit and to cope with cravings and situations that trigger spit tobacco use, and ongoing support and follow-up by the athletic trainer. This article describes this pilot athletic trainer/dental component and reports the results.

## Methods

### Recruitment and Training

In January 1997, the head certified athletic trainers of the San Francisco Giants and the Anaheim Angels major-league baseball teams agreed to collaborate with researchers from the University of California at San Francisco in providing an oral cancer screening examination by a dentist and brief spit tobacco cessation counseling by a dental hygienist for all club members during their regularly scheduled health examinations at the beginning of spring training in Arizona. All certified athletic trainers associated with each club received additional training on site in behavioral methods and nicotine replacement therapy to assist an athlete's quit attempt. Athletic trainers were encouraged to provide ongoing support and motivation during the quitting process and were given the toll-free telephone number of an expert cessation counselor as a resource in the event that an athlete needed more intensive problem-solving and supportive treatment.

To deliver the dental component, two Arizona-based dentist and dental hygienist teams were recruited. They were trained in a two-hour session on the negative health effects of spit tobacco use, how to identify and assess the severity of spit tobacco-associated oral lesions, the oral exam protocol (**Table 1**), the common elements of spit tobacco cessation counseling, an overview of how the nicotine patch system and nicotine gum work, indications and contraindications for use of nicotine replace therapy, instructions for use of the therapy, how to assess signs and symptoms of nicotine withdrawal and toxicity, and side effects of therapy and what to do when they appear. Throughout the training, the importance of confidentiality and the need to ignore the celebrity status of individual athletes (i.e., no autographs or photographs) were emphasized.

During delivery of the intervention, the dentist-hygienist teams were paired on site with an experienced dentist-hygienist team from UCSF. This was done to provide on-site mentoring to ensure quality control and efficiency in implementing the program and to begin to establish an infrastructure of Arizona-based dentists and hygienists who could help sustain the program if it became institutionalized by professional baseball for subsequent spring trainings.

### Program Protocol

Participation in the program was voluntary and in accordance with UCSF and federal human subjects guidelines. All athletes who agreed to participate completed a consent form; a confidential health history; and a brief two-page questionnaire to assess their spit tobacco use status and, for users, their patterns of use, their previous attempts to quit and methods they used, their interest in receiving help to quit, and their interest in using nicotine replacement therapy. After these baseline assessments, each athlete was given a brief dental inspection to identify those in obvious need of professional dental care so as to avoid major dental problems during the season. Athletes who appeared to be in need of dental care were identified to their athletic trainers.

This brief dental inspection was followed by an oral cancer screening examination. All athletes screened, regardless of spit tobacco use status, were informed orally and in writing of any oral mucosal lesions and were scheduled for follow-up by the athletic trainer and/or club dentist. Nonusers of spit tobacco were encouraged to remain tobacco free and asked to be supportive of teammates trying to quit. For each user, the dentist pointed out in the athlete's mouth any problems associated with spit tobacco use. The athlete was actively involved in this examination process as a way to increase his personal involvement in the health effects of his behavior. Spit tobacco-using athletes without oral problems were shown pictures of other athletes' mouths showing spit tobacco-related oral disease. Emphasis was placed on the similarity of the subject in the picture to the athlete being examined and on the action-consequence relationship. To maintain his involvement, each user was given a disposable mouth mirror to

**TABLE 1**

| Protocol for Dental Component |
|---|
| **Ask** about spit tobacco use status and patterns of use and examine mouth for lesions. |
| **Advise** all users to stop.<br>• Give clear cessation message (i.e., "I think it is important for you to stop suing spit tobacco now to protect your current and future health."<br>• Link use to his present or potential symptoms (e.g., point out oral lesions in his mouth or in photographs of mouths of other athletes) and/or his family situation.<br>• Discuss health, short-term benefits.<br>• Show graphic pictures. |
| **Assist** in cessation effort.<br>• Provide self-help materials.<br>• Ask all users, " If we give you some help today, are you willing to try to stop?"<br>• Refer to dental hygienist to set a quit date and for brief counseling. |
| **Arrange** follow-up one week later for re-evaluation of oral lesions andwith athletic trainer for quit progress, if athlete seeks help to quit spit tobacco. |
| Adapted from Smoking Cessation: Clinical Practice Guidelines. USDHHS, AHCPR Publication No. 96-0694. |

watch for signs of disease. In addition, the dentist advised the athlete to quit using all forms of tobacco, offered assistance with the spit tobacco quitting process on that day, and provided each user with a copy of a printed self-help guide to quitting spit tobacco use titled either "Beat the Smokeless Habit – Game Plan for Success"[1] or "Enuff Snuff."[2]

After the oral cancer screening examination, the dentist sent all spit tobacco users who wished to quit their tobacco habits to the hygienist on site for personal instruction on setting a quit date and developing a plan to get ready to quit and to cope with cravings and triggers for use. They were also given self-help guides and sample oral non-tobacco substitutes, and were screened to determine their eligibility for nicotine replacement therapy in the form of nicotine gum and/or a nicotine patch system. For those who were eligible for replacement therapy, the hygienist explained the purpose, methods, risks, and benefits of using the therapy; answered questions; provided the athlete with a toll-free telephone number for follow-up consultation with an expert spit tobacco cessation counselor; and referred him to the athletic trainer for additional help with and monitoring of his quit attempt. An expert cessation counselor was present during the oral exam and brief counseling program to observe and provide support if needed.

After completing the dental component, the dentist and hygienist, along with the expert cessation counselor, met with the athletic trainers to identify those athletes who had oral lesions in need of follow-up and those who had decided to quit their spit tobacco use, set a quit date and had a plan for getting ready to quit and for coping with the quitting process. Quit date and copies of the quit plan were shared with the certified athletic trainers so they could provide ongoing support and encouragement.

At the end of the season, the certified athletic trainers of both clubs reported on the number of players who actually quit their spit tobacco use and provided feedback regarding aspects of the program that were perceived as most helpful.

## Results

### *Prevalence and Patterns of Spit Tobacco Use*

A total of 304 athletes (99 major-leaguers and 205 minor-leaguers) of the two professional baseball clubs participated in the program, representing about 87 percent of the available club members present at spring training.

Based on self-reports, there were 95 current spit tobacco users (31 percent), 22 former users (7 percent), and 187 nonusers (62 percent). Among the current users, 61 (64 percent) were daily users, 20 (21 percent) were weekly users, and 14 (15 percent) reported using two to three times a month. The weekly and monthly spit tobacco users were combined for analysis into "social" users, since they reported use of spit tobacco more than once a month, but not every day. **Table 2** shows the characteristics of users overall and stratified by daily and social users. Overall, 56 percent of current spit tobacco users had used it for five or more years, and 14 percent for more than 10 years. The median duration of use was five years. More than half of the users (53 percent) reported using spit tobacco seasonally rather than year-round.

Most spit tobacco users (71 percent) reported using snuff exclusively. When all current users were asked what brand they usually used, most (47 percent) reported Copenhagen, a high-nicotine brand of snuff. About two-thirds of users (71 percent) reported keeping a dip or chew in their mouth for more than 10 minutes at a time, and 24 percent reported using spit tobacco at least five times a day.

Compared to social users, daily users were more likely to be year-round users, to use spit tobacco more than five times a day, to keep the tobacco in their mouth for more than 20 minutes at a time, to

**TABLE 2**

**Characteristics of Daily, Social, and All Spit Tobacco Users**

| | Daily% (N=61) | Social % (N=34) | All % (N=95) |
|---|---|---|---|
| **Type** | | | |
| Snuff exclusively | 82 | 50 | 71 |
| Chewing tobacco Exclusively | 5 | 29 | 14 |
| Both | 13 | 51 | 16 |
| **Duration of use in years** | | | |
| < 4 | 21 | 65 | 37 |
| 5-6 | 34 | 18 | 28 |
| 7-9 | 18 | 6 | 14 |
| > 10 | 18 | 6 | 14 |
| Missing | 8 | 6 | 7 |
| **Amount used/day** | | | |
| <1 | 0 | 41 | 15 |
| 1-4 | 61 | 38 | 53 |
| 5-6 | 25 | 3 | 17 |
| 7-8 | 12 | 0 | 7 |
| Missing | 3 | 18 | 8 |
| **Minutes in mouth/use** | | | |
| <10 | 13 | 18 | 15 |
| 11-20 | 44 | 47 | 45 |
| 21-30 | 25 | 6 | 18 |
| >30 | 7 | 12 | 8 |
| Missing | 12 | 18 | 14 |
| **Use Pattern** | | | |
| Year round | 66 | 9 | 45 |
| Seasonal | 31 | 91 | 53 |
| Missing | 3 | 0 | 2 |
| **Brand** | | | |
| Copenhagen | 61 | 24 | 47 |
| Other dip | 28 | 38 | 32 |
| Chew | 3 | 35 | 15 |
| Missing | 8 | 3 | 6 |
| **Mean uses/day** | 4 | 1 | 3 |
| **Means years of use** | 7 | 3 | 5 |

have used for five or more years, and to report use of Copenhagen.

### *Prevalence of Oral Lesions*

Although all 304 athletes completed the questionnaire, only 253 of them agreed to have an oral examination. Among the 95 spit tobacco users examined, 53 (56 percent) had spit tobacco-associated oral mucosal lesions. Of these athletes, 41 (77 percent) were daily users, and 12 (23 percent) were social users.

### *Interest in Quitting*

Strategies used in previous quit attempts by the 95 current users included "cold turkey" (55 percent), use of oral substitutes such as mint snuff (33 percent) or gum and seeds (28 percent), use of the nicotine patch (6 percent), and use of nicotine gum (5 percent). Almost half of all spit tobacco users (47 percent) reported at least one previous quit attempt (**Table 3**). Fewer than half (45 percent) expressed on the baseline questionnaire that they would like help quitting that day. Immediately after the oral exam, however, 71 percent (N=68) actually sought cessation counseling with the hygienist. Almost half of those athletes who were counseled (49 percent) set a quit date. About a third of all spit tobacco users (N=31) expressed interest in the nicotine patch to aid them in their quit attempt, and 18 percent (N=17) wished to learn about the nicotine spray. More daily users than social users had previously tried to quit (54 percent vs. 35 percent), expressed a desire for help to quit prior to the oral exam (58 percent vs. 24 percent), wanted to learn more about nicotine replacement therapy (patch: 41 percent vs. 18 percent; spray: 25 percent vs. 6 percent), actually sought counseling (82 percent vs. 50 percent), and set a quit date (48 percent vs. 15 percent).

**TABLE 3**

**Distribution of Spit Tobacco Users by Characteristics Associated With Interest in Quitting.**

| | Daily % (N=61) | Social % (N=34) | All % (N=95) |
|---|---|---|---|
| **Stated prior to exam wanted help to quit** | | | |
| Yes | 58 | 24 | 45 |
| No | 26 | 52 | 50 |
| Missing | 16 | 24 | 5 |
| **Interested in nicotine patch** | | | |
| Yes | 41 | 18 | 33 |
| No | 49 | 82 | 61 |
| Missing | 10 | 0 | 6 |
| **Interested in nicotine nasal spray** | | | |
| Yes | 25 | 6 | 18 |
| No | 54 | 82 | 64 |
| Missing | 21 | 12 | 18 |
| **Previous quit attempts** | | | |
| Yes | 54 | 35 | 47 |
| No | 26 | 53 | 36 |
| Missing | 20 | 12 | 17 |
| **Sought counseling** | | | |
| Yes | 82 | 50 | 71 |
| No | 18 | 50 | 29 |
| **Set a quit date** | | | |
| Yes | 48 | 15 | 35 |
| No | 34 | 35 | 36 |
| **Missing** | 18 | 50 | 29 |

### *Motivating Factors*

Overall, the most commonly mentioned reasons for trying to quit given by users who sought counseling immediately after the oral exam were concerns about health (21 percent), family (10 percent), and addiction (5 percent).

During cessation counseling, users identified situations that increase risk of using spit tobacco. Use "after a meal" and "when waiting around bored" were the two trigger situations most often cited. Situations mentioned solely by daily users were "before going to bed," "first thing in the morning," and "driving in a car." Use of nontobacco oral substitutes was the most common coping strategy identified by users during counseling (58 percent) and the only one mentioned by social users. Daily users also cited nicotine replacement (18 percent), tapering down use (10 percent), doing something else such as exercising or reading (6 percent), using toothpicks or after dinner mints (4 percent) after a meal, chewing on cups or straws (4 percent), and use of a support group (2 percent).

### *Athletic Trainer Feedback*

Of 67 users who sought counseling after the oral exam, 6 (9 percent) were reported by their athletic trainers at the end of the season to have quit. The certified athletic trainers for both clubs studied cited feedback from the oral exam, nicotine replacement, support from team players and family, and use of alternative behaviors to avoid high-risk situations as quitting techniques that seemed to be particularly useful. They mentioned, however, a need for nicotine replacement products in the clubhouse and for information on the use of other pharmacologic treatments. They also cited the motivational message presentation, the oral examination by the dentist, and the expert counselor's meeting with players as the most helpful parts of the NSTEP program for helping players quit spit tobacco.

## Discussion

To counteract the link between baseball and spit tobacco use, Major League Baseball has participated in a variety of activities to decrease use in professional baseball. For example, in 1990 Major League Baseball joined forces with the Professional Baseball Athletic Trainers Society (PBATS), the National Cancer Institute, and the Fox Chase Cancer Center in a full-scale educational campaign to teach professional baseball players and team personnel about the long-term hazards of using spit tobacco.[3] They worked together to publish Beat the Smokeless Habit1 (a 16-page guide tailored to baseball athletes to help users break their spit tobacco addiction), an athletic trainer's cessation manual,[4] and clubhouse posters. These materials were distributed to all major- and minor-league players early in the 1991 baseball season. In 1993, a formal ban against spit tobacco use in minor-league baseball was instituted,[5,6] but no consistent program to help individual professional baseball athletes trying to quit was put into place. During 1995 and 1996, major-league players working with the NSTEP partner, Romano and Associates, appeared in antitobacco public service announcements. Moreover, under the leadership of Joe Garagiola, the national

chairman of NSTEP, NSTEP has provided awareness-raising presentations on the health risks of spit tobacco use to every professional baseball club since 1996. Nevertheless, spit tobacco use is still viewed in televised Major League Baseball games and in ballparks.

Findings from this pilot study are encouraging in that they indicate that it is feasible to include an oral exam with feedback, advice to quit, and brief cessation counseling as part of the annual physical exam provided to professional baseball players at the beginning of spring training. Moreover, having done so was acceptable to both players and athletic trainers in the two clubs studied. The unknown is how representative these two clubs are of the 30 in existence, since the athletic trainers in the pilot study were knowledgeable about the hazards of spit tobacco use; willing to help implement the dental component; and motivated to provide support, encouragement, and nicotine replacement therapy to those athletes attempting to break their tobacco addiction. It seems reasonable to assume, however, that they do resemble other professional athletic trainers in baseball, since PBATS has sponsored many speakers over the years to increase professional baseball's awareness of the negative health effects of spit tobacco use;[7-9] and, in 1995, PBATS representatives provided testimony before the U.S. House Subcommittee on Health and the Environment about the addictive nature of spit tobacco.[10]

The finding on the baseline questionnaire that 45 percent (N=43) of the athletes expressed interest in quitting their tobacco use and 47 percent (N=45) reported a previous quit attempt is consistent with reports from a 1992 survey of four rookie and short-season single "A" leagues (N=905) indicating that 63 percent of users reported they wanted to quit and 40 percent said they had tried to quit unsuccessfully.[11] These data indicate that many baseball athletes want to quit but need help with the process.

The fact that 71 percent (N=67) of spit tobacco users in this pilot study sought cessation counseling with the hygienist immediately after the oral exam suggests that the exam procedure motivated additional athletes to seek help to stop their tobacco use. This finding is consistent with three recent studies of spit tobacco cessation interventions delivered by dental professionals in the course of routine care,[12] at college athletic facilities,[13] and at professional baseball stadiums during the season on a game day.[14]

In the first study,[12] dental patients who used spit tobacco daily were randomly assigned either to usual care or to usual care plus intervention – which consisted of an oral mucosal examination with special attention to oral lesions, cessation advice, a self-help manual, a nine-minute videotape, a brief counseling session with the dental hygienist, setting a quit date, a follow-up telephone call, and follow-up mailings. Compared to subjects in the usual-care group, more subjects in the intervention group reported abstinence from spit tobacco at three months (32 percent vs. 21 percent, $P<0.01$) and at 12 months (18 percent vs. 13 percent, $P<0.01$).

In the second study,[13] a similar spit tobacco cessation intervention delivered by a dentist-hygienist team was tested among male college baseball and football athletes in a randomized controlled trial conducted in 16 California colleges. Unlike the previous study,[12] this study included spit tobacco users who reported regular but relatively low frequency of tobacco use (two to three times a month) in addition to daily users. The intervention included an oral exam and advice to quit by a dentist who pointed out spit tobacco-associated oral lesions in the athlete's mouth or in pictures of the mouths of similar-aged athletes, showed graphic pictures of facial disfigurement due to oral cancer, and provided a self-help guide;[1] a single 15- to 20- minute cessation counseling session with a hygienist; and a follow-up telephone call. At one year, prevalence of cessation in baseball and football teams combined was 35 percent in the intervention colleges vs. 16 percent in control colleges ($P<0.01$). Subjects reported that viewing graphic photographs of oral cancer-related disfigurement of the face and mouth and receiving a mouth examination with feedback relating oral tissue damage to spit tobacco use were the most helpful components of the intervention.

A third dental-based study[14] was conducted at a baseball stadium on a game day during the baseball season. The study objective was to determine the relative effectiveness of two spit tobacco interventions to promote cessation among baseball players. Specifically, an oral examination by a dentist with explanation of spit tobacco-related findings, advice to quit, and photographs showing spit tobacco-related dental problems with and without brief counseling by a dental hygienist on how to quit were tested to determine their effectiveness to help 97 major league baseball athletes stop their spit tobacco use. Group assignment to either the extended or minimum intervention group was determined by alternating among the teams according to the order in which they played their first series in the San Francisco Bay Area. Of these athletes, 54 received follow-up assessments at the ballpark about three months after the intervention (28 of these spit tobacco users were in the

extended intervention group and 26 in the minimum intervention group). At follow-up, prevalence of cessation was 19 percent in the extended intervention group and 0 percent in the minimum intervention group ($P < 0.001$), suggesting the importance of the counseling by the dental hygienist. However, the most important components of the intervention cited by the subjects were the photographs of spit tobacco-related dental problems and seeing changes in their own mouths.

Other reports[15,16] have shown that dental patients who use spit tobacco expect the dentist and dental hygienist to provide information on the risks of negative health effects associated with use, but only 50 percent of the time did they report receiving advice to quit.

In a survey of male college athletes, spit tobacco users were asked to indicate the three most important items out of a list of 11 that might influence them to stop using. Out of 473 users, 63 percent indicated "seeing changes in my teeth and gums due to spit tobacco use" and 61 percent indicated "a dentist advising me not to use."[17] In a survey of male dental patients, approximately 40 to 67 percent of the spit tobacco users reported interest in cessation assistance from the dentist, and among subjects who received a dental-based intervention, 71 percent indicated that the advice received from either the dentist or the dental hygienist significantly influenced their serious consideration of quitting.[12]

The fact that in this pilot study 35 percent (N=33) of the spit tobacco users set a quit date and only 6 percent (N=6) quit indicates a need for more intensive problem-solving and supportive treatment to be available for users. Although many athletes report quitting their tobacco habit abruptly using the "cold turkey" method, Many users have a hard time quitting because of a combination of physiological addiction to nicotine, a psychological dependence on spit tobacco, and a behavioral component that links their tobacco use with specific activities. Moreover, for baseball athletes, there is a unique environmental component that supports spit tobacco use as the social norm; and this provides a special challenge for cessation. An effective cessation program addresses all four of these dimensions. Currently, at the mandate of the Players Association, Major League Baseball plans to include an oral cancer screening exam as part of the annual health exam for players at the beginning of spring training. Moreover, NSTEP is consulting with Major League Baseball to facilitate the establishment of an infrastructure that involves not only the athletic trainers and a dental professional, but also team physicians and the Employee Assistance Program staff to provide different levels of ongoing spit tobacco cessation services for players.

In this pilot study, 39 percent (N=37) of spit tobacco users reported "being bored while waiting around," (e.g., on the field, in the dugout, or in the airport) as a high-risk situation for triggering use. In developing a quit plan with a spit tobacco user, it is important to have him identify such events or internal states that might cause him to use, and then to help him decide what he is going to do instead in the future to cope with these situations.

The majority of spit tobacco users in this pilot study reported daily use. Compared to social users, these daily users tended to be users of longer duration, to use snuff more exclusively, to use it more frequently and with more intensity (as measured by the number of minutes they kept their dip in their mouth), and to have a higher prevalence of oral lesions associated with their tobacco use. This is of concern since long-term, frequent, intense use of spit tobacco, particularly snuff, has been strongly associated with oral cancer in many studies.[18] Also, because of their nicotine dependence, daily users most likely will require use of nicotine replacement therapy to mitigate withdrawal symptoms. In addition, such plans should present basic information about the nature and time course of withdrawal, the addictive nature of spit tobacco, and the fact that even a single dip increases the likelihood of full relapse.[19]

Findings from this pilot study suggest that dental-based spit tobacco interventions can have a significant impact. Dental professionals are in an excellent position to advise and assist users to quit, and users appreciate the help. It is important to remember that quitting tobacco is not a process that takes place all at once. Cessation appears to occur along a continuum of change[20,21] in which an individual moves from a precontemplation stage where he has no thought of quitting, to a contemplation stage where he thinks he should quit someday but not now. Eventually he arrives at the readiness stage, where he has a sincere desire to quit and needs encouragement and support. Next comes the action stage, where he has made a commitment to stop using permanently, has selected a quit date, has terminated his tobacco use on that day, and is using a cessation plan to stay abstinent. In the maintenance stage, he has been tobacco-free for six months and is learning and practicing new ways of coping. Sometimes there is a relapse stage, when tobacco behaviors have resumed and may even reach higher levels than before. Many spit tobacco users try two or three times to quit before they finally succeed. During

all stages, the most important thing is to remain supportive and nonjudgmental, to watch for and reinforce any signs of quit readiness, and then to provide ongoing motivation to help the user create and maintain a positive, self-confident attitude about his cessation efforts. Even when advised to quit by a dental professional, many spit tobacco users will not be ready to quit. However, it is important for dental professionals not to become discouraged, as this pilot study has shown that their advice can move users closer to the readiness stage.

## Conclusion

Clearly, dental professionals can have an important role in helping young people in California to overcome this rapidly growing addiction. It is hoped that dentists and dental hygienists will incorporate the key components of the intervention described here into their clinical practice. Additionally, local dental and dental hygiene societies may wish to provide volunteers to work with college athletic trainers to provide oral exams and brief spit tobacco cessation counseling to athletes in local colleges during their mandated annual health screenings prior to their athletic seasons.

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# Dentistry's Role in Ending Spit Tobacco Use

By Joe Garagiola

AUTHOR

**Joe Garagiola** was inducted into the broadcaster's wing of the Baseball Hall of Fame in 1991, after 30 years of announcing baseball games. He also played for the St. Louis Cardinals for five seasons, including their 1946 championship year.

As professionals in the field of oral health, you know the dangers of spit tobacco. You've seen what it can do, and you know that many users are paying with their lives. Given that youngsters are quickly becoming the majority of spit tobacco users, it's clear that now is the time to take action against this potentially deadly drug.

Bob Leslie's tragic story is typical of what spit tobacco can do. A young high school baseball coach from Sonoma County in California, he started using spit tobacco when he was 13 and was diagnosed with oral cancer at 27. Radical surgery to remove the tumor was all that could save him; and Bob has lost his chin, bottom teeth and bottom gums. Now 30 and fighting for his life, Bob is helping us spread our message so that what happened to him doesn't have to happen to anyone else.

NSTEP, the National Spit Tobacco Education Program, was founded for just this purpose. Established in 1994 as a program of Oral Health America, NSTEP seeks to alert everyone to the dangers of spit tobacco. We want people to understand that spit tobacco is more than a habit. For many, it's an addiction. NSTEP wants to help people beat that addiction, and we believe that education is the key to success in this effort.

The one-on-one contact that you have with your patients could be an invaluable educational tool. You have the opportunity to alert more users and potential users at the grassroots level than we can ever hope to. NSTEP would like to work hand-in-hand with you in an effort to provide your patients with the information they need to protect themselves. With the help of the Robert Wood Johnson Foundation, we've been able to develop a variety of educational materials – including posters, brochures and videotapes – designed for children, young adults, parents and coaches. Materials are available through Oral Health America, and they can be contacted at (312) 836-9900.

Without your help, we're fighting an uphill battle that we can't win. Together, we can make a difference, and maybe one day put an end to spit tobacco addiction and the devastation it causes. At NSTEP that's our dream, and it's Bob Leslie's dream as well. Hopefully you can help us make that dream come true.

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# A Contemporary Perspective on Dental Sealants

By Jayanth V. Kumar, DDS, MPH, and Mark D. Siegel, DDS, MPH

**ABSTRACT** In spite of significant improvements in the oral health of Americans, dental caries still affects a majority of school-aged children. Its distribution is uneven, with a small proportion of the children experiencing a greater burden of the disease. In addition, caries in children's permanent teeth is predominantly a disease of the pits and fissures. The use of dental sealants has the potential to significantly reduce the disease burden. Although sealants are safe and effective, their use continues to be low. Efforts are needed to make sealants a covered benefit under all insurance plans and to encourage their appropriate use. This paper provides a review of the changes in the prevalence and distribution of dental caries, the effectiveness of sealants, and guidelines for the appropriate use of sealants in public health programs and private practice.

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The oral health of Americans has never been better as evidenced by the declining trends in oral diseases, notably dental caries in children.[1,2] Edentulousness in the elderly has steadily declined, and most adults are retaining their natural teeth.[3] A Michigan study showed how these disease trends are reflected in the mix of services provided to an insured group. While preventive services and periodontal care have increased, extractions and restorative and prosthetic services have decreased.[4]

The improvement in oral health has been attributed to increased availability of fluorides, improved oral hygiene, rising expectations of maintaining a functional dentition, effective treatment, and improved restorative materials.[1,2] All the news on oral health and health care, however, is not good. Reports of difficulty for the uninsured, underinsured, and medically indigent groups in accessing dental care; the disparity in oral health status between poor and nonpoor; and the lack of coverage for dental services under most health insurance plans are disconcerting. The lower survival rate of oral cancer patients compared to similar cancers and the low utilization rate of dental sealants are just two examples that illustrate how access to prevention and early detection remains beyond the reach of many Americans.[5]

In spite of the difficulty in accessing dental care for some Americans, impressive changes have occurred in the prevalence and distribution of dental caries. Many studies show that caries in children's permanent teeth

**TABLE 1**

**Mean Number of Decayed, Missing, and Filled Permanent Tooth Surfaces (DMFS) by Surface for 5- to 17-Year-Old Children. National Health and Nutrition Examination Survey - Phase 1, 1988-1991.**

| Age Groups (Years) | Occlusal DMFS | Buccolingual DMFS | Mesiodistal DMFS |
|---|---|---|---|
| All | 1.4 | 0.8 | 0.3 |
| 5-11 | 0.4 | 0.3 | 0.1 |
| 12-17 | 2.4 | 1.3 | 0.5 |

is predominantly a disease of pits and fissures.[1,2,6-9] A national survey conducted from 1988 to 1991 showed that among 5- to 17-year-old children, 56 percent and 32 percent of all decayed, missing, and filled surfaces (DMFS) occurred on the occlusal and buccal or lingual surfaces, respectively (**Table 1**). Although the pattern of caries was similar among different racial and ethnic groups, the filled component of the DMFS index varied by race in this survey (**Table 2**). Among blacks and Mexican-Americans, less than 50 percent of the once decayed surfaces were treated.10 This survey also showed that the distribution of caries in the population is uneven, with 25 percent of the children aged 5 to 17 accounting for about 80 percent of the teeth attacked by caries in this age group.

Several studies have shown a shift in dental caries from children of high socioeconomic status to those of low socioeconomic status.[2,6,11] Studies conducted in the 1960s showed that caries was more frequent in high socioeconomic status children.[2] However, now studies consistently show that poor children have had more disease over their lifetimes and have more untreated disease.[2,5,11] National surveys have also shown regional variation in caries prevalence. The Pacific (California, Oregon, and Washington) region had one of the highest caries levels, whereas the Southwest had the lowest. The regional variation in the difference in caries prevalence between fluoridated and nonfluoridated areas is also apparent in the national survey. For example, the residents of Pacific region's fluoridated communities had DMFS scores that were less than half of those living in the region's nonfluoridated communities (mean DMFS of 1.42 vs. 3.61), a greater difference than in any other region.[1] This variation has been attributed, in part, to the proportion of the population covered by fluoridation. While 34 to 74 percent of the population is covered by fluoridated water in other regions of the country, only 19 percent of the population received fluoridated water in the Pacific region.

In addition to the decline in caries and changes in its distribution, data also indicate that the rate of lesion progression through the tooth has slowed considerably.[12,13] The interval between caries initiation and cavitation has lengthened, in part because of the increased availability of fluoride and its ability to remineralize lesions. An important implication of this slow progression is that placement of sealants on incipient lesions reduces the risk, if any, of rapid progression and therefore provides ample opportunity to monitor adequately and intervene should there be a need for it.

## Use of Sealants

Although sealants have been around for more than two decades, their use has never been as widespread as that of other preventive measures. Estimates of the prevalence of dental sealants in the 1980s ranged from 4 percent to 19 percent.[14] Data from a recent national health examination survey show that the percent of children aged 8 and adolescents aged 14 having one or more dental sealants in permanent teeth increased to 20.9 percent and 28.2 percent, respectively. Blacks and Mexican-Americans, however, are about one-third as likely to have sealed permanent molars as are white children.[14] Although this is a significant increase when compared to the 1986-87 national children's survey, where only 11 percent and 8 percent of 8- and 14-year-olds had sealants, it falls short of the national objective (50 percent by the year 2000) set by the U.S. Public Health Service.

In California, a survey of third- and 10th-grade schoolchildren concluded that the percentage who received protective sealants on permanent molar teeth also fell short of the national objective.[15] This study found a wide disparity in sealant prevalence with respect to race, poverty, and fluoridation status. It shows that only 10.4 percent of 8-year-old children and 12.6 percent of 15-year-old adolescents had sealants.

## Sealant Effectiveness

Dental sealants have been shown to be effective in caries prevention.[16,17] Sealants are 100 percent effective in preventing pit and fissure caries if they are completely retained. According to Weintraub, the median retention rate based on 49 studies was 92 percent after one year and 67 percent after five years. Wendt and Koch reported 80 percent retention after eight years.[18] More recently, Selwitz and colleagues reported that the overall proportion of sealants retained on the occlusal surfaces of first molars after an average of two years was 92 percent.[19] In a public health sealant program in New York state, sealant retention rates on first molars over four years varied from a low of 64.5 percent on the distolingual

**TABLE 2**

**Mean Number of DMFS, and Proportion of Decayed, Missing, and Filled PermanentTooth Surfaces. National Health and Nutrition Health and Nutrition Examination Survey - Phase 1, 1998-1991.**

| Age Groups | DMFS (SE*) | % D/DMFS | %F/DMFS | % M/DMFS |
|---|---|---|---|---|
| All | 2.5 (0.2) | 19.7 | 78.4 | 1.9 |
| 5-11 | 0.9 (0.1) | 27.9 | 70.8 | 1.3 |
| 12-17 | 4.4 (0.4) | 16.0 | 81.8 | 2.1 |
| Blacks (5-17) | 2.5 (0.2) | 37.7 | 57.7 | 4.6 |
| Mexican-Americans (5-17) | 2.7 (0.1) | 36.4 | 60.6 | 3.0 |

*SE-standard error

groove of maxillary first molar to a high of 83.9 percent on the occlusal surface of mandibular first molar. Factors such as the eruption status, pit and fissure morphology, tooth and surface type, clinical setting, operators' ability, age of children, and type of sealants are all known to contribute to this variation in reported retention rates. Overall, retention rates on distolingual grooves of upper first molars and buccal pits of lower first molars appear to be lower compared to other sites. The most common reason for sealant failure is salivary contamination, usually due to inadequate isolation.

The effectiveness of sealants can be judged from the rate of caries or restorations on sealed, as compared with unsealed, pit and fissured surfaces. Simonsen reported that the percent of sound and sealed first permanent molars that became decayed or filled after 10 years was 21.7, compared to 68.3 for unsealed teeth.[20] Recently, Heller and colleagues reported that the odds of unsealed tooth surfaces becoming carious after five years was 4.2 times greater than for sealed surfaces.[21]

## Cost-Effectiveness of Sealants

While the effectiveness of sealants has been shown repeatedly, cost savings from sealant use has been questioned.[6,7,17,22] The concern expressed by many researchers is that if fewer teeth are becoming carious, the cost of providing sealants to all teeth in all children far exceeds the cost of providing treatment. For example, Leverett and colleagues concluded that five sealants would have to be placed on sound surfaces and maintained for four years to prevent one carious lesion.[22] In a study of 7- to 17-year-old children in Nelson County, Va., an average of eight sealants was applied per individual to prevent one tooth surface from becoming decayed or filled.[19] Even on the occlusal surfaces of first molars, a highly caries-susceptible surface, an average of 5.4 sealants had to be placed to save one surface from decay. Heller and colleagues found that initially sound surfaces did not benefit greatly from sealants over a period of five years compared with sealing initially incipient carious surfaces. For incipient lesions, the five-year decay rate was 10.8 percent for sealed surfaces and 51.8 percent for unsealed surfaces. However, for initially sound surfaces, the five-year decay rate was 8.1 percent and 12.5 percent for sealed and unsealed surfaces, respectively.[21] These results should be viewed with caution because populations having higher levels of caries attack will show more favorable results. Several authors recommend targeting resources to individuals at higher risk for decay and to the most caries-prone tooth surfaces to reduce overtreatment.[7-9,22] Such recommendations have included selection of teeth based on morphology and history of caries, and restricting the sealants to teeth with incipient lesions.

## Risk Assessment

It is generally acknowledged that caries is unevenly distributed in the population and that certain individuals possess characteristics that put them at higher risk for the disease. Caries risk assessment is a process that can identify these individuals. Most population-based studies indicate that 20 percent to 30 percent of the children have more than 75 percent of the disease burden. Many researchers have pointed out that such a shift in caries distribution may have made the routine application of preventive measures for all children of questionable value. Stamm and colleagues suggested that intense preventive measures could be applied more selectively if high-risk individuals were identified prior to the onset of the disease.[23] Risk factors, such as the pit and fissure morphology, exposure to carbohydrates, and presence of Streptococcus mutans can be modified with current preventive measures.

The need to target appropriate preventive measures on an individual basis assumes greater importance because of the proliferation of alternatives to fee-for-service reimbursement in dental care delivery. Unlike fee-for-service programs, capitation-based reimbursements do not provide financial incentives for rendering services that are likely to be ineffective or unnecessary. Therefore, under capitation programs, it may be more beneficial to categorize children based on their risk and provide appropriate preventive measures

rather than the traditional practice of routine six-month recall, prophylaxis, two bitewing X-rays, and topical fluoride treatments. As a result, fewer children will get intensive preventive regimens, and many more will not get clinical preventive services.

Previous studies of risk assessment suggest that the current methods incorporating demographic, behavioral, microbiologic, and clinical factors cannot always predict caries accurately.[9,12,24] Practical problems make it difficult to sample bacteria, assess dietary habits, and estimate the composition of saliva. For example, an estimation of bacterial count based on one tooth site or saliva at a single point in time may not be indicative of the true risk imposed. The multifactorial nature of the disease coupled with the interaction among various protective and risk factors make caries prediction very difficult. According to Rozier, only about 50 percent of children are correctly identified when risk assessment methods indicate a positive result. For those with a negative result, about 80 percent are correctly identified.[24] Although these methods are not perfect, studies have shown that an experienced clinician can predict caries reasonably well in children.[25] This is not surprising because a clinician can take into account a patients' history; their oral hygiene; clinical findings, such as pit and fissure morphology; and the use of dental services to determine the risk for caries. The American Dental Association's guide Caries Diagnosis and Risk Assessment also presents a practical approach for risk assessment (**Figure 1**).[26]

## Guidelines for Sealant Use

Several guidelines were developed in the 1980s to help dentists select appropriate teeth for sealants. The American Dental Association's Council on Dental Research prepared a report to provide standards for third-party insurance carriers for reimbursement of dental sealants.[27] The Massachusetts Department of Health published the monograph Preventing Pit and Fissure Caries: A Guide to Sealant Use in 1986.[8] Additional data on distribution of caries, slower progression of caries, ubiquitous presence of fluoride, availability of techniques to manage caries conservatively, cost-effectiveness of sealants, and improvement in risk assessment methods prompted a reconsideration of recommendations at the Workshop on Guidelines for Sealant Use, held in Albany, N.Y., in 1994.[28] The scientific basis for these recommendations for targeting communities, individuals and teeth (**Figure 2**) is that differences in caries risk exist among individuals and among teeth, and it is possible to incorporate prediction methods in private practice and public health programs. Although these methods are not perfect, the ability to predict caries risk is sufficient to warrant the use of targeting principals. The workshop participants concluded that:

- Pit and fissure caries occurrence is high, and the risk continues through adolescence;
- Sealants are effective in preventing pit and fissure caries and arresting caries progression;
- Sealant use requires meticulous application technique, particularly moisture control;
- Whenever possible, sealant retention should be checked and teeth should be resealed, if necessary; and
- To be cost-effective, sealants should be selectively provided to individuals and teeth at risk for disease.

Many states have initiated school-based sealant programs to extend the benefits of sealants, usually to children from low-income families, who generally are episodic users of primary dental care services. The objective of these programs is to prevent and control dental caries so that it becomes a manageable problem. These programs can provide a valuable preventive service, even if they don't provide a full range of diagnostic and treatment options.

Many community-based sealant programs have identified sealants as the treatment modality that will realize maximum benefits. Generally, communities and schools with greatest needs are identified. For this purpose, epidemiologic surveys provide the best possible data. However, such data are not always available. Therefore, proxy measures such as census data, percent of the children on free school lunch programs (which is a reflection of poverty level), dentist-to-population ratio, and reports from schools and observations made in other dental initiatives are used in determining the need for dental sealant programs.

Once the schools or other specific populations are identified, the use sealants may be targeted further. In the most common model, where sealants are provided in schools, selected grades are targeted. Most commonly, grades 2, 3, 6 and 7 are targeted because sealant placement on sufficiently erupted first and second molars can best be accomplished and followed-up. Alternately, some programs target all grades but limit the application of sealants to selected groups of children. The selection of these children is based on an assessment of risk at the aggregate level. For example, children of low socioeconomic families or Medicaid recipients may be targeted. To maximize resources, sealants may be provided to selected children and selected teeth.

**FIGURE 1**

**Caries Risk Classification Guidelines**

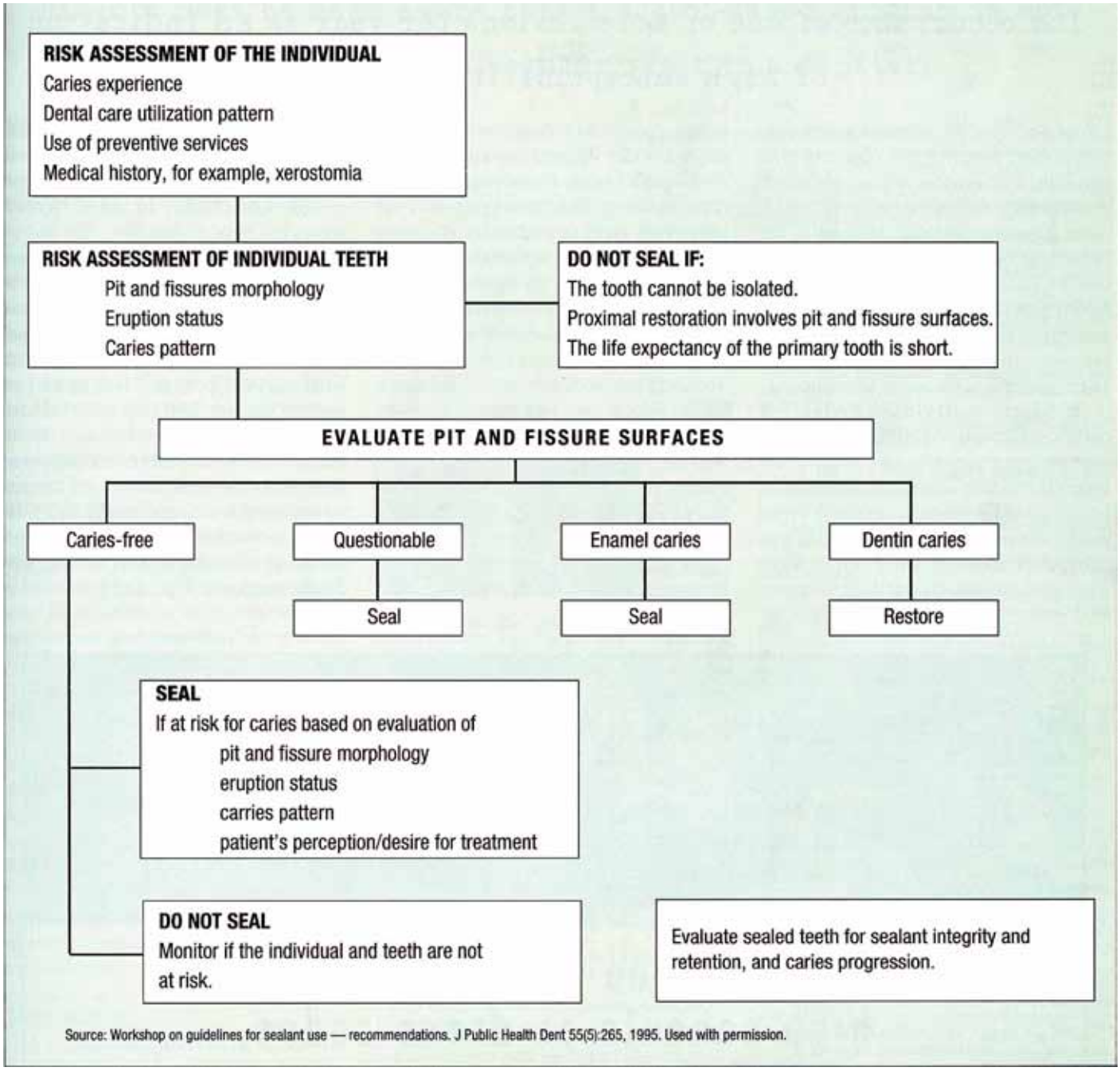
| Risk Category | Child/Adolescent | Adult |
|---|---|---|
| **Low** | No caries lesions in last year<br>Coalesced or sealed pits and fissures<br>Good oral hygiene<br>Appropriate fluoride use<br>Regular dental visits | No carious lesions in last three years<br>Adequately restored surfaces<br>Good oral hygiene<br>Regular dental visits |
| **Moderate** | One carious lesion in last year<br>Deep pits and fissures<br>Fair oral hygiene<br>Inadequate fluoride<br>White spots and/or interproximal radiolucencies<br>Irregular dental visits<br>Orthodontic treamtnet | One carious lesion in last three years<br>Exposed roots<br>Fair oral hygiene<br>White spot and/or interproximal radiolucencies<br>Irregular dental visits<br>Orthodontic treatment |
| **High** | > 2 carious lesions in last year<br>Elevated mutans streptococci count<br>Deep pits and fissures<br>No/little systemic and topical fluoride exposure<br>Poor oral hygiene<br>Frequent sugar intake<br>Irregular dental visits<br>Inadequate saliva flow<br>Inappropriate bottle feeding or nursing (infants) | > 2 carious lesions in last three years<br>Past root caries; or large number of exposed roots<br>Elevated mutans streptococci count<br>Deep pits and fissures<br>Poor oral hygiene<br>Frequent sugar intake<br>Inadequate use of topical fluoride<br>Irregular dental visits<br>Inadequate saliva flow |

Source: ADA Council on Access, Prevention and Interpersonal Relation. JADA, 126:7s:195. Reprinted by permission of ADA Publishing Co., Inc.

In a school-based or school-linked public health program, the objective is to provide maximum benefits at the lowest possible cost; whereas in a private office-based program, the objective is to maintain a caries-free status. Although these objectives appear to be different, some general guidelines outlined at the Workshop on Guidelines for Sealant Use can be incorporated in both public health programs and private practice to accomplish the ultimate outcome of maintaining optimal oral health.[28] These guidelines are summarized here:

- Assess individuals' risk for caries. Although the ability to predict who will get caries is not completely accurate, certain factors are believed to be associated with risk for caries. These factors are past caries experience in primary or permanent dentition. In addition, considerations such as previous dental care, use of fluorides, frequency and adequacy of brushing and flossing, frequency of sugar intake, certain medications (e.g., antisialagogues and sweetened syrups), and medical conditions that result in xerostomia are also believed to increase the risk for caries.
- Assess risk of individual teeth. The most caries-susceptible permanent teeth are first and second molars. While occlusal surfaces are more prone to caries, buccal pits and lingual grooves are also at substantial risk and, therefore, suitable for sealant placement. Primary molars, premolars, and permanent maxillary incisors may be selected if the profile shows high risk. In general, level of caries activity, pit and fissure morphology, caries pattern, and the ability to isolate the teeth adequately determine the selection of teeth. The occurrence of one or more lesions per year is an indication of high susceptibility to caries. **Figure 2** shows the steps involved.

**FIGURE 2**
Guidelines for Sealant Use




Source: Workshop on guidelines for sealant use — recommendations. J Public Health Dent 55(5):265, 1995. Used with permission.

- Evaluate pit and fissure surfaces for sealant application. All surfaces that possess deep pits and/or fissures should be sealed provided that these surfaces can be adequately isolated. Teeth with shallow pits and well-coalesced grooves are not likely to decay in low-risk individuals. Studies have shown that the greatest benefit is realized when teeth with incipient lesions are arrested by sealing them. Sometimes sealants can be placed even on those teeth with proximal lesions that can be independently managed. A pit and fissure lesion that has extended into the dentin should have the caries removed conservatively and restored. This treatment may include the use

of sealants, as in a preventive resin restoration.

Because a majority of children in school-based programs or other public health programs do not use dental services on a regular basis, some modifications may be recommended. Sealants may be applied more liberally and, therefore, to a greater proportion of sound teeth and teeth with questionable caries lesions than would likely be sealed in a private office. Based on a review of the effect of sealants on dental caries, Swift concluded that the dentists' fear of sealing caries inadvertently is unfounded and should no longer be a concern.[29] Also, decisions in school programs are based on clinical examinations without the aid of radiographs, possibly resulting in caries diagnosis criteria that differ from an office-based approach. Parents must be made aware that a school-based program is not a substitute for a regular visit to a dentist. In reality, however, many or most children seen in school sealant programs would not routinely visit a private dental office. Similarly, practitioners should have an understanding of caries epidemiology, risk assessment concepts, and sealant promotion strategies.

## Conclusion

A significant decrease in dental caries has occurred in the United States. Although sealants can contribute toward further improvement in oral health, their use remains relatively low. Several approaches have been adopted in the United States to promote sealant use. Community programs, most often through schools, have provided direct service by applying sealants to children's teeth. The development of public policies that foster sealant use through expansion of benefits is an effective method for increasing sealant use. For example, through the efforts of private dentists and public health officials, Medicaid programs in 49 states cover sealants as a benefit. Educational programs have been directed at the public, labor organizations, individuals responsible for administering health benefit plans, and patients in dental offices. These efforts seek to make sealants a covered benefit under all insurance plans and to encourage their appropriate use in dental practice.

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CDA JOURNAL, VOL 26, Nº5

# Seal America – An Olympic Challenge Awaits You

By Matt Ghaffari

AUTHOR

**Matt Ghaffari** was a silver medalist in Greco-Roman wrestling at the 1996 Summer Olympic Games in Atlanta. He is currently head assistant wrestling coach at Cleveland State University and a motivational speaker.

Eyes fixed on eyes ... feet circling slowly but surely ... hearing only the pulse echoing in my head – and then, explosive drive, impact, and slam. I have lived such moments many times in my life, competing in Olympic-style wrestling going back to my youth. It is always exciting, always fresh, always rewarding, even when not rewarded. I have been able to experience these moments and share them vicariously with others because I have been blessed – blessed with a natural desire to succeed, a sound body, a healthy work habit, excellent coaching, and support from others. Surely, there are other future Olympians out there, but more importantly, scores of young people who will be successful in life if they get off to the right start and have the right support. That is why I have signed on with Oral Health America – America's Fund for Dental Health, to help young people be healthy by receiving protective dental sealants.

Did you know that dental sealants have been around for nearly 25 years? Are you aware that fewer than 1-in-5 school-aged children in the United States have received dental sealants and that for poor and dentally uninsured children, the number is 1-in-10? And did you know that most of the dental decay that children experience today occurs on the pit and fissured surfaces of teeth – those that can be protected by sealants? I did not know these things until recently; but now that I do, I must do something about it.

Oral Health America has committed itself to helping achieve the national Healthy People 2000 goal of 50 percent of school-aged children receiving dental sealants in their permanent teeth. Given that there are more than 125,000 practicing dentists in the United States, nearly 18,000 in California, and even larger numbers of dental auxiliaries, we have a large and skilled team for attacking this challenge. Dental sealants are covered in many insurance programs, including Medicaid. I am told that all dentists learn how to apply sealants while in dental school and that most dentists have the knowledge and skills to treat at-risk children in their practices.

I have seen the terrible toll that ill health – including poor dental health – can exact from children, especially poor children. As a member of the U.S. Olympic Team, I have had access to necessary medical and dental care. I understand how critical a sound, healthy body is to achieving one's goals in life, whether they be athletic, academic, social, or spiritual. I would not have achieved my Olympic dream if I had been burdened with poor dental health.

My Olympic challenge to you is to get involved and take action. I know that you have trained long and hard to become the professionals that you are. You possess special skills that the majority of people will never realize. That provides you with special opportunities and responsibilities – just like an Olympic athlete. Join with your association in Oral Health America's National Sealant Alliance. Take up the national "Seal-a-Million Challenge" to provide a million additional sealants nationally to underserved children by the year 2002. This is a large challenge, but one that we can meet if we clasp hands and pull together.

For more information about the National Sealant Alliance, call Dr. Teran Gall, CDA's director of special projects, at (916) 443-3382, Ext. 4490, or Oral Health America – America's Fund for Dental Health, at (312) 836-9900.

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# Addressing the Needs of Underserved Populations: One Organization's Experience

By Patricia Billings, DDS, and Dennis McKee, DDS

**ABSTRACT** Dental decay is the most prevalent and preventable chronic disease of childhood. Underserved populations are at a health disadvantage with greater unmet needs. This article will discuss the components of oral health promotion programs and facilities designed to meet the needs of underserved populations. These components include organization, needs assessment, resource assessment, priority-setting and planning, oral health intervention, and monitoring and evaluation. Examples from the experience of the San Diego Children's Dental Health Association will be presented in the discussion of each component.

AUTHORS

**Patricia Billings, DDS,** is the Children's Dental Health Association's volunteer school-based program director.

**Dennis McKee, DDS,** is past president of the Children's Dental Health Association.

In San Diego County, the dental community, in collaboration with several other organizations, has responded to oral health needs of underserved children. The San Diego Children's Dental Health Association and the San Diego Children's Dental Health Center have been involved in city service to the children of San Diego for the past 45 years. These organizations exist for the sole purpose of providing dental care to economically disadvantaged children and represent thousands of volunteer hours given collectively by the city's business and dental communities. The health association is a subcommittee of the San Diego County Dental Society's Council on Dental Care. It is the owner and community supporting arm of the Children's Dental Health Center; is a corporation of individuals representing local business, dental, county health department, and philanthropic groups; and has a 35-member Board of Directors that meets monthly.

The Children's Dental Health Center, located in the Golden Hill area of San Diego, is equipped with six dental chairs and employs five registered dental assistants, an appointment clerk, an executive director, and six staff dentists. During the past 15 years, patient demand has increased beyond the capacity of a volunteer dentist staff. Six dentists provide some 70 hours of care per week at a rate of pay that can be considered a partial donation of time. This facility is supported primarily by fees collected and income generated by billing Medi-Cal and the Child Health and Disability

Prevention Program. Donations of equipment, funds for computers, toothbrushes, and emergency funds for care are received each year from private practitioners, community organizations, and local parent-teacher associations.

The Children's Dental Health Association opened its first satellite dental center this year with support from Price Charities and in collaboration with San Diego city schools. This facility has two dental operatories and provides care several days a week as part of a comprehensive health center at Hoover High School in City Heights.

In this article, we will discuss the components involved in the planning and development of programs and facilities designed to address the oral health needs of underserved populations. At each step, we will present examples from our organization, the Children's Dental Health Association. Our efforts began more than four decades ago as an outreach program of the local dental society.

## Statement of the Problem

Although the etiology of dental decay is understood and a majority of dental disease is preventable, dental decay is the most prevalent disease of childhood.1,2 A National Institute of Dental Research survey conducted in 1986-87 showed that by age 17 children had an average of eight decayed, missing or filled tooth surfaces.3

The Maternal and Child Health Branch of the California Department of Health Services contracted to conduct a statewide assessment of oral health needs of California children in 1993-94.5 This epidemiological survey was designed to gain a representative sample of California's children (N = 6,643) in 10 geographic regions of California at three age levels: preschool, kindergarten through third grade, and 10th grade.6 Dental examinations were done in classrooms using a dental explorer and mirror. The assessment found the percentage of California children with untreated caries as follow: 55 percent of children age 6-8, 60 percent of black children age 6-8, 66 percent of Hispanic children age 6-8, and 45 percent of adolescents age 15.6

Oral function can affect quality of life, chewing, eating and speaking, as well as social interactions. Untreated caries cause pain, infection, and oral dysfunction. While dental decay has decreased during recent decades, children of low-income families have not benefited as greatly as others and still remain at significant risk for dental disease.7 Children in the national Head Start Program, who are members of lower socioeconomic groups, have caries rates well above the national averages.8 This is pertinent because socioeconomic status is consistently associated with health outcomes.9 Low family income is a consistent risk factor for poor health among white children.10 Lack of family financial resources can lead to feelings of hopelessness and less optimism for parents.11 Ability to pay is a critical barrier when coupled with culture and language differences that contribute to limited health care access for racial and ethnic minorities at the lower end of the socioeconomic scale.

The National Center for Health Statistics reports that in 1988, 18.1 percent of all children age 3-17 had not seen a dentist in the previous two years.13 Family income influenced dental visits: 54 percent of children from families whose income was less than $19,999 had not seen a dentist in the previous two years. This outcome was also influenced by race: 16.5 percent of white children, 23.6 percent of African American children, 21.2 percent of Asian children, 23.1 percent of Native American children, and 28.9 percent of Hispanic children age 3-17 had not seen a dentist in the previous two years.

Racial, ethnic, and immigrant minority populations are at a health disadvantage with greater unmet needs and less frequent utilization in all types of health care delivery systems.12 Some sociocultural factors are significant in the health status of racial minorities. Social isolation due to language barriers limits information exchange. Ethnicity and associated values affect individual knowledge, attitudes, and behaviors. Race and ethnicity are highly correlated with measures of oral health in the United States, including oral hygiene behavior, use of dental services, and receipt of symptomatic dental care.12

## Step One: Organizing

The first step in organizing is mobilization and/or formation of organizations to address oral health issues. One can develop strategies that will improve oral conditions of the target population through education, problem-solving, prevention, and increased access to care. This organizational step requires establishment of:

- The structure of a new or existing organization;
- A purpose or mission; and
- A strategy for improving oral health.

The Children's Dental Health Association was formed, and the dental center opened in 1952 on the City College Vocational School Campus. Bylaws were written regarding purpose, meetings, membership, board of directors committees, officers, and handling of funds, etc. A memorandum of agreement was formulated clarifying the relationship between the health association and the dental center. The current building for the dental center was acquired in 1964, and

the mortgage paid off in 1974.

The mission statement of the association is "to help economically disadvantaged children obtain and maintain optimal dental health." Other strategies for improving oral health include fund raising; support of a low-cost dental center for underserved children; a satellite dental center on a high school campus; a school-based mobile sealant program; utilization of volunteer dentists; and collaboration with schools, dental organizations, and service groups.

### Step Two: Needs Assessment

Success of oral health promotion depends on knowing what the target population needs, wants, and values. This information may be gained by archival research, original research, epidemiologic surveys, cross-sectional studies, key informant interviews, community forms, or utilization reviews. Target population needs assessment include gathering data regarding caries prevalence, untreated disease, and barriers to care that influence community health behavior patterns.

Supported by a grant from the Alliance Healthcare Foundation in 1996, we were able to document need in our target population. Our statistics, based on classroom dental screening of 5,794 elementary school children in south central San Diego, found visible, untreated caries in 42.4 percent of the children and caries prevalence (past and/or present caries experience as evidenced by presence of caries and/or restorations) of 71.5 percent. Acute or urgent dental need was found in 10.3 percent of the children by the screening dentist.

The association's dental facilities and programs target low-income children who have limited access to dental care. In this population, lack of knowledge as well as cultural and financial barriers affect access to dental care. Other social factors such as fear, poverty, and hopelessness also affect care-seeking behaviors. Because of these barriers, our facilities and programs are located in high-need areas and at school sites, where we provide school-based services.

### Step Three: Resource Assessment

As was set forth in Step One, existing organizations may have an interest in oral health promotion. Collaboration with interested parties should begin with the organizational step and be incorporated into all subsequent steps. Resources might include key contacts who are familiar with the target population, such as school nurses, religious or political leaders, the health department, and labor representatives. Other resources include local dental, dental hygiene, dental assistant, medical, university, and public health organizations. Financial resources may be sought from membership drives, nonprofit foundations, charities and donations, and by billing for services. Changes in the health care environment have affected dental practitioners in both the private and public sector. With the development of managed care and the shift from fee-for-service to population-based payment systems, funding health care for underserved populations may be of interest to business, government, and charitable organizations.

Our school-based sealant program applied for and received funding from the Alliance Healthcare Foundation and the Foundation of the Pierre Fauchard Academy. We plan to start billing Medi-Cal for services provided to covered children in order to assist self-sustainment of the program in the future.

### Step Four: Priority Setting and Planning

Information gathered from needs and resource assessment is used to set priorities and plan for services to meet the identified needs in the target population. Priority-setting is guided by the mission statement of the organization. It begins by setting goals and general criteria for progress and then prioritizing them. These goals will be the basis for developing specific objectives in Step Five, oral health intervention.

Planning considers what level of intervention your organization wishes to reach. Various levels of interaction may be targeted, including modifying oral health behavior of individuals, modifying health behavior of groups, organizational level interventions (worksite, club, church, school), community-level health promotion (changes in social or physical environment), and policy level interventions (legislation).

### Step Five: Oral Health Intervention

This step involves development of specific objectives to meet the goals of the program or organization. Oral health intervention may include education, behavior modification, training, prevention, and treatment. Selection of objectives will be influenced by:

- Available technology;
- Skill and background of the target population;
- Existing practices and beliefs of target population;
- Needs assessment; and
- Resources.

The health association school-based program had the goal of increasing access to dental care for low-income children. Objectives included:

- Classroom dental screening;
- A mobile sealant and hygiene program;
- Referral and linkage with low-cost dental provider;
- Parent education and empowerment of families;

- Follow-up of findings from screenings;
- Referral of severe-needs children to reduced-fee/volunteer dental specialists;
- Financial incentives for initial dental visit;
- Needs assessment and data collection; and
- Evaluation and accountability to schools, grantor, and service population.

## Step 6: Monitoring and Evaluation

Oral health promotion monitoring and evaluation are done to measure program progress, impact, and outcomes, and to determine whether continued funding is warranted. This is accomplished by using descriptive data, comparative techniques, explanatory reasoning, and analytic approaches to answer objective questions.

Outcome evaluation for the school-based program were:

- On-site sealant placement for 600 children;
- Linkage of 476 children with a low-cost provider following dental screenings;
- Participation of 313 parents in dental in-service education; and
- Enlistment of 19 dental specialists who offered to donate time or provide reduced-fee services to high-need children.

The grant for this pilot program was $67,000, and donated professional time (in-kind service) was valued at $25,000.

Cornprehensive general dental care is provided at the Children's Dental Health Center, including restorative; oral surgery; endodontics; crown and bridge; preventive and esthetic services; and removable prosthodontics. The dental center now treats more than 2,500 economically disadvantaged children each year with more than 7,000 patient visits being made. These children come from families with a combined annual gross income of less than 200 percent of the federal poverty level.

## Conclusion

Planning, implementation, and participation in dental projects for underserved populations may offer unexpected opportunities for dental professionals. Because of the collaborative nature of this type of service, dentists have contact with various community organizations, health organizations, and families that they would not have come to know in private practice. Participation levels might include periodic donations of service, advisory membership in a multidisciplinary service agency, committee membership in dental organizations, or initiation of programs to fulfill unmet oral health needs. This overview demonstrates that community service in our chosen profession can broaden our horizons and enrich our practice of dentistry.

Acknowledgments

We would like to acknowledge the support of the Alliance Healthcare Foundation and the Foundation of the Pierre Fauchard Academy for funding of our school-based program and Price Charities for funding the opening and first three years of operation of Hoover High School Dental Health Center.

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# Dientes! Community Dental Clinic: Dental Care for Low-Income Residents of Santa Cruz County

By Jay Balzer, DMD, MPH, and Catherine Webb, DDS

**ABSTRACT** Dientes! is a private nonprofit community dental clinic that was established in 1994 to provide dental care for low-income residents of Santa Cruz County. Its founders were successful in securing support from a diverse group of community agencies, including city and county governments, philanthropic foundations, the dental community, and corporate and individual donors. Dientes! provides approximately 250 visits per month in a three-chair clinic in Santa Cruz; a school-based program in Watsonville was scheduled to begin in March 1998. The major challenge facing Dientes! is to establish a reliable financial base that will allow the program to better meet the needs of low-income county residents over the long term.

AUTHORS

**Jay Balzer, DMD, MPH,** is the executive director of Dientes! Community Dental Clinic.

**Catherine Webb, DDS,** is a co-founder of the clinic.

Dientes! Community Dental Health Clinic came into being for a very simple reason: It just didn't seem right that low-income residents of Santa Cruz County had to travel to neighboring counties to obtain dental care they could afford.

In many other counties, dental care for the poor is provided by county health departments and/or community health centers. In Santa Cruz County, these organizations limit their clinical services to medical care; dental care is not provided.

So in early 1990, several community-minded dentists and concerned citizens got together to solve this problem. The answer they came up with was to create a private nonprofit organization to provide dental care for the poor.

But the story is far more complex than that. It took more than four years of planning, fund raising, and community organizing to bring the project to fruition in October 1994. The Dientes! organization had to be developed from the ground up since it is a "stand alone" dental clinic, without ties to a parent health care organization.

The effort was akin to starting a private dental practice, but without that key ingredient – the dentist/owner – who has all the incentive in the world to make things work because his or her livelihood depends on it. Dientes! was developed by a group of volunteers, unpaid individuals with jobs and lives of their own, who were developing the clinic in their spare time.

What the founders did represents a textbook example of how private citizens can bring together the diverse resources

**TABLE 1**

**Dientes! Community Dental Clinic Major Sources of Community Support: 1994-1998.**

(Excludes patient care revenue)

| Source of Support | Type of support and year | Values |
|---|---|---|
| **Government** | | |
| County of Santa Curz | Major equipment (1994) | $20K |
| | General operating support (1994-97) | $12K/yr |
| | Support of HIV program (1997-98) | $20K |
| City of Santa Cruz | General operating support (1994-97) | $4K/yr |
| **Foundations** | | |
| Community Foundation of Santa Cruz County | Start-up equipment | $20K |
| | School-based services (1997-98) | $16K |
| The Packard Foundation | Improve access for children (1994-95) | $20K |
| | Expand services for families (1996-1997) | $50K |
| | Management assistance (1996-97) | $7K |
| | Develop school-based services (1997) | $20K |
| | Implement school-based services (1997) | $50K |
| | Partnership with private practices (1997-1998) | $30K |
| The California Endowment | Program expansion (1997-98) | $115K |
| The Dental Health Foundation | Equipment and management support for school-based preventive services (1998-00) | $25K/yr |
| **Dental Community** | | |
| Monterey Bay Dental Society | Start-up grant (1994) | $20K |
| Individual dentists | Clinic volunteers (1994-97) | $12K/yr |
| Dental supply companies | Donation of dental supplies (1994-97) | $5K/yr |
| **Corporate and Individual Donors** | | |
| Catholic Healthcare West | Start-up grant (1992) | $20K |
| Corporate donors | General operating support (1994-97) | $10K/yr |
| Individual donors | General operating support (1994-97) | $3K/yr |

of a community – both public and private – to meet a pressing community need. They persuaded the County Health Department to use a portion of its state tobacco tax funds to purchase equipment for the clinic. They obtained substantial start-up grants from the Monterey Bay Dental Society, Dominican Hospital/Catholic Healthcare West, and Community Foundation of Santa Cruz County. Smaller sums were obtained from local corporations and individuals. Private dentists volunteered in the clinic, and dental supply companies donated materials. The words "partnership" and "collaboration" tend to be overused these days, but these terms accurately describe the process that made Dientes! a reality.

## The People We Serve

Our name, "Dientes!" is the Spanish word for "teeth;" and it signifies our commitment to those Latino members of our community who lack access to dental care. However, these are not the only people we serve. People with low incomes who lack dental insurance reside throughout the county. A recent survey[1] conducted by United Way found that less than half the population (47 percent) has dental insurance coverage, compared with 68 percent who have medical insurance.

Even people with Denti-Cal insurance have difficulty getting care. Among the approximately 200 active dentists in the county, only 12 general dentists and three pediatric dentists accept Denti-Cal.[2] Consequently, we are a major source of care for Denti-Cal patients; they account for approximately 60 percent of our visits.

Patients who do not qualify for Denti-Cal and who have incomes at or below 200 percent of the poverty level – a group often termed the working poor – constitute our other major class of patients. An individual with a monthly income of less than $1,315 and a family of four with a monthly income of less than $2,675 qualify for our services. These patients pay on a sliding fee scale, which for most patients is approximately half as much as a private practice fee.

We also serve people who have difficulty obtaining care elsewhere, for whatever reason, such as people who are homeless;

have HIV disease; or have developmental, mental, or physical disabilities.

## Our Clinic

Dientes! is governed by an eight-member Board of Directors and employs a part-time executive director. We operate a 1,000-square-foot, three-chair clinic in a one-story Santa Cruz office building. Our clinic is small, modern and well-maintained; it gives the appearance of a modest private dental office, rather than a low-income clinic.

Thanks to a grant from the California Endowment, we recently expanded our weekly schedule from three to 4 1/2 days per week. Each day we employ a dentist, two dental assistants, a receptionist, and an office manager. Five volunteer dentists help us serve additional patients. Dental hygiene students from Cabrillo College work in our clinic as part of their community rotation.

More than 85 percent of the services we perform are preventive procedures, fillings, and emergency visits for the relief of pain and infection. We also provide a relatively small number of full and partial dentures, root canal treatments, crowns, and periodontal treatments. We provide approximately 250 visits per month. Our annual budget is approximately $400,000.

## Where We're Headed

At a strategic planning session in May 1997, the Board of Directors endorsed an expanded role for Dientes! Specifically, we want to improve access to dental services for families in Watsonville, which is 30 miles away from Santa Cruz in the southern end of the county. Our first step in that direction is to start a school-based dental program in partnership with the Pajaro Valley Unified School District's Healthy Start program.

We are also exploring ways to serve low-income families in Watsonville through partnerships with both the government and private sectors. One partnership we are exploring is with the County Health Department, whereby we would establish a Dientes! clinic in a county-owned building adjacent to the medical clinics that serve low-income people. Another potential partnership is with the local community health center, Salud Para la Gente, whereby we would establish a Dientes! clinic within their facility. Still another option we are exploring, with the help of a Packard Foundation grant, is the feasibility of creating a partnership with several private dentists, whereby we would contract with them to serve our low-income patients in their own offices. If this type of collaboration could be developed as a reliable source of care, then we might be able to avoid the high cost of developing a new facility in Watsonville.

## Our Major Challenge: Financial Sustainability

We are working hard to strengthen the financial health of our organization so that we can continue to serve the community over the long term. That is not an easy task, given the nature of our business: a dental practice that pays its expenses (rent, staff, materials, etc.) at market rates but collects its Denti-Cal and sliding-fee revenue at a fraction of private practice fees.

Our challenge is to increase revenue and reduce costs by various means:

- Increasing the productivity of our clinical staff;
- Increasing the contribution of dentist and dental hygienist volunteers;
- Increasing donations from community businesses and individuals;
- Developing fundraising events; and
- Increasing grant and contract income.

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# Dental Care for the Underserved Children of Monterey County: Meeting the Challenge

By Ray E. Stewart, DDS, MS

**ABSTRACT** With its expansive area, and the special needs of agricultural workers, Monterey County held significant challenges for setting up a children's health clinic. Part of the solution to addressing the county's unmet dental needs was the establishment of the Children's Miracle Network Dental Center in 1995. But working in the fields leaves little time for travel to appointments, so the Dental Center expanded to a mobile unit that can go where the need is. Understanding the special needs of one's community is crucial to establishing programs that can successfully address the state's needs for children's dental care.

AUTHOR

**Ray E. Stewart, DMD, MS**, is the president of California Society of Pediatric Dentists.

Monterey County is on the central coast of California and is, arguably, one of the most beautiful and desirable places to live in the entire United States. It contains communities that have among the highest per capita incomes in the nation (e.g., Pebble Beach, Carmel, Monterey, and Pacific Grove). Monterey County is also one of the country's most prolific agricultural regions. The Salinas Valley is often referred to as "The Salad Bowl of the Nation," and as such, is dependent upon a large population of seasonal agricultural employees who, by and large, have little, if any, health care insurance as a benefit of their employment.

A survey conducted for the Maternal, Child and Adolescent Health advisory board in Monterey County in 1991, found that by far the greatest unmet health need in Monterey County was children's dental health. Dental infections and accompanying pain were acknowledged to be one of the leading causes of school absence and impairments to classroom performance in the public schools. The following statistics were sobering:

- In 1991, there were approximately 34,000 Medi-Cal eligible children ages 0 to 16 years. Five years later, in January 1996, those numbers had increased to 44,000.
- Only 20 to 25 percent of Medi-Cal children saw a dentist during the year 1990-91. Less than 5 percent of children under age 6 visited a dentist. Of the children who had been to a dentist, many were seen only once – for an emergency.

Only two pediatric dentists in the county were seeing Medi-Cal children under age 6 at that time, of which there were 18,000. In addition to this large number of Medi-Cal children, there were thousands of other children who were considered medically indigent and had limited access to dental care.

- Fifty-eight percent of Head Start preschool children screened in 1991 had dental decay, with an average of three decayed teeth per child.

Sixteen percent had baby bottle tooth decay; 12 percent required urgent or emergency care.

With these alarming statistics and given that there were but a handful of dentists in Monterey County seeing Medi-Cal patients in 1991, and with virtually no ability to expand services to this population, my partners, Roger Sanger, DDS, and Peter Chiang, DDS, and I developed a plan for a facility to provide comprehensive dental services to this large population of patients.

The Department of Health Services in Monterey County recognized the unmet need for dental care; however, they did not have the resources nor the capital available to build and staff dental facilities to provide the needed services. They did, however, enthusiastically participate in an effort to mobilize a collaborative effort among public and private entities to develop the necessary dental care facility. It was through these joint efforts and a commitment from the Children's Miracle Network at Salinas Valley Memorial Hospital, that the Children's Miracle Network Dental Center was opened in July of 1995. The dental center is a 2,500-square-foot facility, staffed by two full-time dentists and eight auxiliary personnel. It serves 45 to 50 patients per day, providing comprehensive preventive and restorative needs to children and adolescents up to age 18.

The geography of Monterey County is such that it is nearly 100 miles long from the northern line to the southern boundary. The population in need of pediatric dental service is broadly distributed from one end of the county to the other. This creates a significant logistical and transportation problem in delivering health care services from a single stationary or fixed site clinic facility such as the dental center. The additional fact that a large segment of our target population is from families whose parents are employed as field workers or in packing sheds makes it difficult to schedule dental appointments during working hours and leads to large numbers of missed or canceled appointments. These barriers, especially in remote areas of the county, prompted requests from several communities dotting the southern part of the county to establish treatment facilities similar to the dental center in those locations.

The $300,000 that would be required to capitalize the building and equipping of multiple facilities was prohibitive.

An effort to address these logistical problems eventually led to the proposal to build a mobile facility capable of delivering comprehensive preventive and restorative services to several communities on a rotating basis. It was further determined that, where possible, the unit would best be located at school sites to minimize the need for transportation to and from appointments or the need for parents to take off work to accompany the child, except for the attending appointment to provide health histories and informed consent.

The proposal was, again, a broadly based collaborative effort among numerous public and private agencies. The initial start-up funding for the project came from a $200,000 grant from the Children's Miracle Network at Salinas Valley Memorial Hospital.

The Charitable Council of Monterey County undertook the grant-writing responsibilities to raise the balance of the necessary capital to purchase, equip, and operate the unit. Their efforts were extraordinarily successful in raising an additional $300,000 from the California Endowment and the David and Lucille Packard Foundation.

The Children's Miracle Network Mobile Dental Center, dubbed "Smiles on Wheels" began operation in March 1998 in Greenfield and will eventually move to other school sites throughout the southern part of the county.

The target population to be served by the Children's Mobile Dental Center consists of children of uninsured, low-income families who reside in the target service area. The projected ethnic classification of the children served by the Children's Mobile Dental Center is characterized as 78 percent Hispanic, 18 percent Caucasian, 2 percent Portuguese, 1.5 percent Asian/Pacific Islander, and the final 0.5 percent distributed among the African and Native American population, respectively.

The overall goal of the Children's Mobile Dental Center program is to improve the oral health of uninsured, low-income children who reside in Monterey County by reducing the prevalence of dental caries and untreated diseases. The estimated impact is as follows:

- To expand prevention and comprehensive treatment of dental disease for uninsured, low-income children who reside in south Monterey County by offering 8,000 outpatient dental visits during the first 12 months of operation.
- To provide training to local primary

care providers and school nurses on classifying Child Health and Disability Prevention Program oral health needs to help improve oral health screening and follow-up services.
- To educate parents about good oral health practices and train parents as teachers for other families.
- To reduce untreated dental caries to no more than the national average among children aged 6 through 8, within five years.

Dental services provided in the Children's Mobile Dental Center will be comprehensive in nature. A full range of restorative, surgical and preventative services will be available using state-of-the-art techniques and equipment. Children who need more complex treatment under sedation or general anesthesia will be referred to the Salinas Children's Miracle Network Dental Center.

One cannot overemphasize the importance of developing a grass-roots network of participating organizations and interested parties who come together to achieve a common cause and goal. Without a careful cultivation and building of a solid foundation, based on trust and cooperation, the best made plans for the most worthy of causes will fight an uphill battle to achieve access. The ultimate success of this project rests with the enthusiasm and support engendered by the solid cooperation among no less than 14 agencies, boards and governing bodies.

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# The Children's Dental Center – A Community Resource to Meet a Community Need

By Cherilyn G. Sheets, DDS, and Warren B. Riley, MBA

**ABSTRACT** Growing numbers of children of working poor families in California have limited access to dental care. This article presents a unique solution to this problem: the Children's Dental Center. The center, a nonprofit corporation, emphasizes quality multidisciplinary care, aggressive preventive dental practices, and education programs for parent and child. Through behavioral change, coupled with dental care of urgent problems, the family's immediate needs are addressed while creating a future of diminished dental need and greater self-esteem.

AUTHORS

**Cherilyn G. Sheets, DDS,** is the founder and president of the Children's Dental Center.

**Warren B. Riley, MBA,** is the executive director of the center.

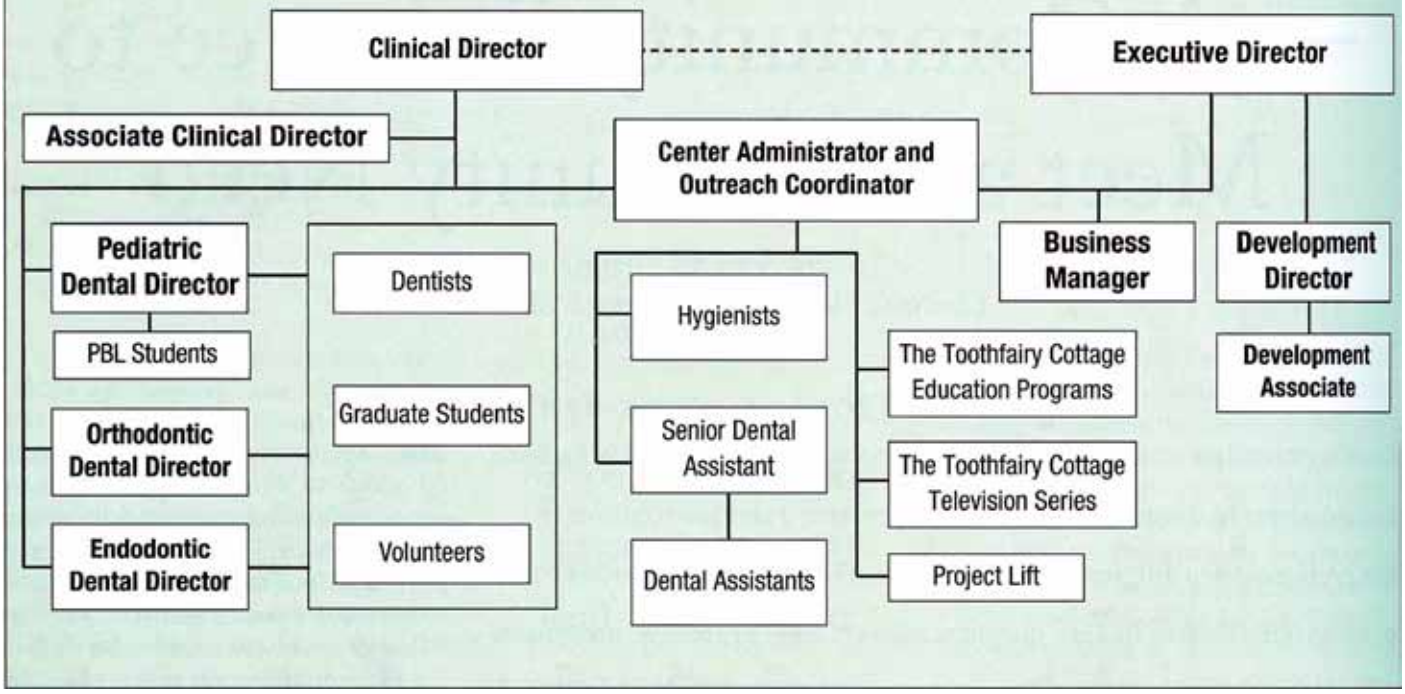
Newspaper stories describing dramatic demographic changes in California's major urban centers abound. They describe communities of greater ethnic diversity, multiple foreign languages, working class families struggling to make ends meet, new and different religious organizations, and occasional tensions between neighborhoods. The stories intrigue us as humanitarians and challenge us as health care providers.

Beyond the newspaper stories is the reality that 580,000 children under age 19 in California have limited access to dental care.[1,2] There are dental offices for patients with insurance or money. There are social service programs for families needing dental treatment for their children if they are living at or below poverty level. But, for the working poor, access to dental care is practically non-existent. Consequently, we find children with "significant pain, interference with eating, poor self-image, overuse of emergency rooms, and valuable time lost from school."[3] A recent needs assessment of the oral health of California's children revealed that "dental disease was the most prevalent of health issues affecting children and that dental services were not always available for prevention and treatment."[4] Findings such as this led to the establishment 2 1/2 years ago of the Children's Dental Center. Today, more than 3,000 children have received care at the center. Unfortunately, this has only scratched the surface.

The Children's Dental Center was developed to serve communities of Southern California where ethnic diversity

Figure 1

The Children's Dental Center — Table of Organization




and rates of poverty are especially high: Inglewood, Hawthorne, Compton, and Lennox (**Table 1**). In the Lennox School District, consisting of six schools with a total enrollment of 6,175, 99 percent of the population is nonwhite and 88 percent qualifies for the free lunch program, thereby indicating the family is living at or below poverty level.[5]

Until the founding of the Children's Dental Center in 1995, local efforts to respond to the need for dental care for these underserved populations were limited. Various programs were available at clinics in Long Beach, Venice, East Los Angeles, and Buena Park. These clinics concentrated on urgent needs for restorative care. Because of the large area covered by Los Angeles and Orange counties and the relatively limited capacity of these clinics, only a small portion of children received treatment.

## History, Mission, Goals

The Children's Dental Center is in an Inglewood facility that was originally the family private practice of James B. Sheets, DDS. For 40 years, it was an active and successful dental office. But, Dr. Sheets' health declined, and a plan to make a philanthropic gift did not meet expectations. The facility was turned over to the Children's Dental Center, a then-newly formed nonprofit corporation. A plan for renovating the building and launching preventative and restorative services was developed. In January 1996, the doors of the center were opened to the community.

The center represents a bold and exciting vision:

- "The Children's Dental Center provides the highest quality multidisciplinary care to meet the needs of children who have no other access to dental care, while enhancing each child's positive self-image."

To realize this vision, the center established six program goals:

- To provide access to multidisciplinary dental care to the children of the working poor who have no other sources for compensated care;
- To have a comprehensive patient/parent educational program coordinated with a strong preventative dentistry program to minimize children's dental disease in the community;
- To create an environment of learning for graduate students to gain knowledge in multidisciplinary pediatric care as part of a unique community outreach program;
- To make a visible difference in an ethnically diverse community, typical of many of the country's inner cities;

**TABLE 1**

**Poverty Levels and Ethnic Diversity of Selected Communities of Southern California.[6]**

| Geographic Area | Total Population | Familes Below Poverty | Children Below Poverty | Black | Hispanic* | Asian | White |
|---|---|---|---|---|---|---|---|
| Inglewood | 113,502 | 3,508 | 7,152 | 49.71% | 46.09% | 1.85% | 12.29% |
| Hawthorne | 71,349 | 2,015 | 3,654 | 35.53% | 40.25% | 8.93% | 29.43% |
| Compton | 90,454 | 10,680 | 26,514 | 44.69% | 19.20% | 3.27% | 15.42% |
| Lennox | 22,757 | 966 | 2,351 | 10.35% | 81.57% | 1.24% | 39.54% |

*Note that U.S. Census data for people of Hispanic origin are not mutually exclusive with other races.

- To encourage minority youth to consider a career in the profession of dentistry; and
- To provide a model that can be replicated throughout the country.
- The Children's Dental Center consists of 10 operatories and associated laboratory, radiologic, and administrative support spaces. Dental services include preventive and restorative dentistry, as well as more complex services such as orthodontics, endodontics, prosthodontics, oral-maxillofacial surgery, and plastic surgery. Staffing for the center is made up of paid, student, and volunteer dental professionals and administrators (**Figure 1**).

The center had 3,800 child appointments during the first year of operation and 5,100 during the second year. The patient profile is:

- Gender: 51 percent female and 49 percent male;
- Age: 7 to 8 years old (23.5 percent), 9 to 10 years old (17.7 percent), and 11 to 12 years old (14.1 percent); and
- Residence: Inglewood/Lennox (32 percent), Inglewood (19 percent), Hawthorne (14 percent), Los Angeles (11 percent), and other neighboring communities.

In addition to its dental care programs, the center is committed to education on several levels. First, there is a strong emphasis on patient/parent responsibility in the prevention and maintenance of dental health. Instruction is given on the importance of plaque control; fluorides and sealants; frequent dental checkups; and nutrition for maintaining optimal general, as well as dental, health.

Second, a plan has been developed for an aggressive community education program to take the center's preventive health messages to local schools and homes. A school-based education and sealant program, health screenings, and there are other community outreach efforts. An adjacent facility is being renovated to become the Toothfairy Cottage to house education programs. Also, a television series is planned, and Project Lift will be launched as a partnership with local religious organization youth groups.

## Community Collaborations

The Children's Dental Center has flourished by forming and nurturing collaborations.

The center has successful collaborations with:

- Two local schools of dentistry (the University of Southern California and Loma Linda University);
- Four local programs in dental hygiene (West Los Angeles, Cerritos, Cypress, and USC);
- Two local hospitals (Daniel Freeman Memorial Hospital and Centinela Hospital Medical Center);
- Five school districts (Lennox, Hawthorne, Lawndale, Centinela Valley, and Inglewood);
- The state and local dental professional community;
- More than 50 firms in the dental industry;
- More than a dozen local corporations;
- Six major local nonprofit agencies; and
- More than 25 private and family foundations (10 of which have provided support in excess of $75,000 each).

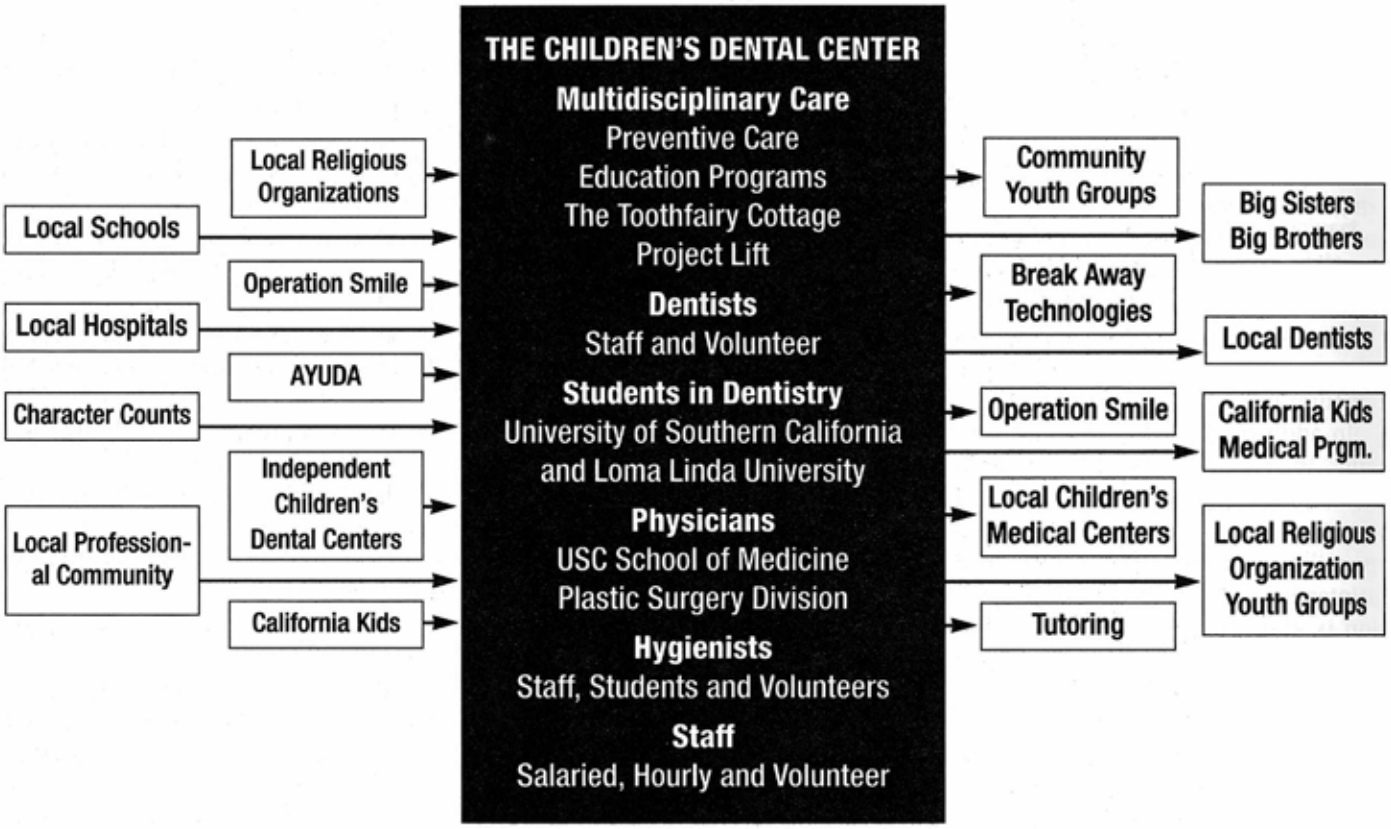
## Start-Up and Operating Costs

Capital costs for the Children's Dental Center were significant because of the $1 million renovation necessary to create the state-of-the-art facility. Funding for this renovation was provided by several private foundations. Contributions from dentists have exceeded tens of thousands of dollars. Additionally, hundreds of individuals have provided support for the center, including an anonymous gift of $50,000.

Operating costs for the center have amounted to approximately $500,000 in the first year and $850,000 in the second. One-quarter of the revenue was earned income – from patient fees at $25 per child, rental income from a few days of private practice dentistry in one operatory, contracts with school districts, professional educational seminars, and the sale of holiday cards. Three-quarters of the revenue was contributed income – from foundation grants, corporate gifts, and individual gifts developed through various campaigns – and in-kind donations from the dental industry.

**Figure 2**

The Children's Dental Center Community Collaborations and Support




## FINANCIAL AND IN-KIND SUPPORT

### Foundations

The Ahmanson Foundation
Blue Cross of California
Weingart Foundation
Leavey Foundation
The California Endowment
A.C. Tyler Perpetual Trust
Slipstream Foundation
Schuchert Foundation
Parsons Foundation
California Community Foundation
Mattel Foundation
Disney Foundation
Doheny Foundation
Pacific Mutual Foundation
The ARCO Foundation
Foundation of the Pierre Fauchard Academy
TRW Foundation
Pincus Foundation
Gillespie Foundation
Jewish Community Foundation
F.I.B. Foundation
McDonnell-Douglas
E.C. Foundation
Freeman Hospitals Foundation
Underwood Foundation

### Dental Industry

Kerr Corporation
Oral-B
3-M
Discus Dental
Nobel Biocare
American Dental Technologies
Crest
Jelenko/Heraeus Kulzer
Dentsply International
KaVo America
Colgate-Palmolive Company
Ivoclar North America
Patterson Dental
Global Surgical Corporation
Block Drug
Denatus USA
Hu-Friedy Manufacturing Co.
Warner Lambert
The Bosworth Company
Premier Laser Systems, Inc.
Van R/Clive Craig/Cadco
GC America
Ormco
Eastman Kodak Company
Kreativ, Inc.
Pelton & Crane

## Words of Wisdom

Untreated dental disease is a leading health problem of children in California. Dentistry has an opportunity to respond with leadership in this time of crisis. As a profession, dentistry knows how to address the problem. To fail to act quickly and effectively when we see the increasing numbers of families in dental distress is to fail to meet our ethical and professional obligations. Additionally, it makes us vulnerable as a profession to legislative solutions for this health problem. The taxpayer cannot be taxed enough to pay for all of the dental disease that currently exists in this segment of the population. Therefore, the only solution is for these families to learn the most cost-effective, least painful and longest lasting treatment – prevention of dental disease.

It is hoped that communities will use the experience of the Children's Dental Center to help care for families in need by replicating it in their own cities. The goal is to provide dental care and health promotion education in a fun and caring environment. Since the smile of a child is critical to his or her feelings of self-worth, dentistry can be a vehicle to positively change children's lives. In the process, we help them create a much brighter vision for their own future.

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# San Gabriel Valley Foundation for Dental Health: A Hand Up Not a Handout

By Richard M. Cohrs

ABSTRACT The San Gabriel Valley Foundation for Dental Health Clinic was established to offer reduced-fee health care to the needy. The basic tenets of the clinic are to minimize dental disease by teaching prevention and treat the dental needs of the disadvantaged, while teaching responsibility for the cost of dental care. Beneficiaries of the clinic include patients, dental assisting students, volunteer dentists, and organized dentistry.

AUTHOR

**Richard M. Cohrs, DDS,** is editor of the San Gabriel Valley Dental Society.

Prior to 1997, when the San Gabriel Valley Foundation for Dental Health Clinic was established, there was no dental clinic sponsored by organized dentistry to treat the unmet dental needs of the local community. Two options for such treatment did exist, Every Child's Health Option (ECHO) and the El Monte Comprehensive Health Center. ECHO only treated dental emergencies, without any concomitant fee for the service. The El Monte Comprehensive Health Center currently has two full-time dentists who treat patients five days a week at reduced fees, and there is no prerequisite to be an eligible patient, such as low family income. There was no facility that emphasized minimizing dental disease by teaching prevention as well as treating the dental needs of the disadvantaged, while concurrently teaching responsibility rather than promoting the concept of entitlement by giving away services for free.

## The Beginning

The 1994 president of the San Gabriel Valley Dental Society, Dr. Stuart Rubin, had a dream of establishing a clinic that would cut through the red tape and get to the dental treatment. He discussed the idea with Gretchen Richardson, director of the LaPuente-Hacienda Dental Assisting Program, and came up with the concept of a program having the following goals:

- To provide multidisciplinary dental care to disadvantaged children;
- To offer a comprehensive patient/parent education program coordinated with a strong preventive dental program to minimize dental disease in children;
- To provide an environment of learning for dental assisting students to gain knowledge in running and staffing a multidisciplinary pediatric care facility;
- To make a visible difference in an ethnically diverse community;

- To encourage minority youths to consider a future in dentistry; and
- To provide a model that can serve as a pattern for other facilities.

The clinic was set up through the foundation (a 501[c][3] charitable, nonprofit organization) so it could accept tax-deductible contributions and would be at arm's length from the San Gabriel Valley Dental Society. Dr. Sylvia Beeman chaired an ad hoc committee, which coordinated the process of establishing the clinic. Legal steps such as creating bylaws and articles of incorporation were done with the help of an attorney. Approximately $2,000 in seed money was provided by the Alliance of the San Gabriel Valley Dental Society. It took 12 months to get a community clinic license from Los Angeles County. Finally, the state accepted the articles of incorporation in July 1996, thus creating the San Gabriel Valley Foundation for Dental Health.

## The Facility

The current facility is a multiroom building consisting of a classroom, supply room, X-ray alcove, business office, and a large classroom converted to include three dental chairs for treatment. The dental assisting program has 54 students on a self-paced program that should take about one year to complete. Clinical requirements include 384 hours of clinic experience treating patients at several locations: the clinic, private dental offices, and the mobile clinics of the University of Southern California.

The clinic is staffed by volunteer dentists who must be members of the dental society. The clinic offers two half-days of treatment per week. To quality as a patient in the clinic, the families of the child must:

- Not receive state entitlements, such as Medi-Cal;
- Not be eligible for any form of private dental insurance;
- Not have an annual income sufficient to pay for dental care as determined by income tax records or current payroll information, or be eligible for a school lunch program; and
- Show proof of residence in San Gabriel Valley.

Fees for dental services are $20 for the initial visit and $10 per subsequent visit. The foundation members firmly believe that even a nominal fee instills value in the service provided and counters the misguided concept of entitlements, which teach dependence on public support. The dental care provided is intended for those families that are working to make ends meet but cannot afford the "luxury" of dental care for their children. Since education is one of the goals, there is a strong emphasis on patient and parent responsibility in prevention and maintenance of dental health. Patients sign an agreement with the clinic to instill a sense of individual responsibility for a healthy lifestyle.

The dentistry provided at the clinic includes basic restorative dentistry, basic oral surgery, and general periodontics. The clinic will treat selected orthodontic cases, and possibly endodontic cases, in the future, depending on volunteer commitment. An objective of the foundation's organizers is to have each of the society's approximate 600 members donate one half-day in the clinic. If that were the case, each member would only need to work in the clinic once every four years. This reach for idealism strengthens the value of volunteer support.

## Statistics

The start-up costs for the clinic were about $2,000, donated by the Alliance of the San Gabriel Valley Dental Society, the Glendora Kiwanis Club, and the Dental Foundation of California. Some of the supplies and many hours of work were donated by society members. The clinic has received instruments, toothbrushes, and disposable supplies from companies that include Oral B, Hu-Friedy, Patterson Dental, and Brasseler. From May to December 1997, the clinic treated about 350 patients, providing $55,710 worth of dentistry for about $3,218 in costs to patients.[1] The resulting ratio of cash income to the value of dentistry produced is 6 percent.

## Conclusion

This philanthropic effort has been a benefit to all involved. Clinic Director Gretchen Richardson states: "The clinic has been a great hands-on learning experience for my students as well as our staff. The students' enthusiasm and participation has been excellent, and working with a different dentist each day gives them an opportunity to improve their chairside skills."

Although Dr. Rubin's dream of creating this clinic was not inspired by critics of organized dentistry decrying the access to dental care problem to legislators in an effort to further their own agendas, the establishment of this clinic does, in fact, come at an opportune time in that regard. CDA has only recently focused on such philanthropic efforts of local dental societies throughout the state, in response to the realization of the need that existed, and the political significance of the issue.

We are proud of the San Gabriel Valley Foundation for Dental Health because it benefits the target population of underprivileged children, students in the dental assisting program, the dentists who volunteer their time and efforts to staff the facility, and organized dentistry. Our ideals demonstrate what type of health care the future could hold: Not a handout, but rather a hand up, to those who want to help themselves.

Reference
1. San Gabriel Valley Foundation for Dental Health, 312 E. Las Tunas Drive, San Gabriel, Calif., accounting data.

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# Improving Oral Health for People With Special Needs Through Community-Based Dental Care Delivery Systems

By Paul Glassman, DDS, MA, and Christine Ernst Miller, RDH, MHS, MA

**ABSTRACT** A community-based dental care delivery system is described. This system has been used in a number of communities in California to improve oral health for people with special needs. It includes oral health assessment, coalition building, development and networking of local resources, training of dental professionals, and utilization of preventive dentistry training materials. Also discussed are challenges of the future that will need to be met to continue to make oral health a priority and reality for people with special needs in California.

AUTHORS

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In California, inadequate access to medical and dental care for people with special needs remains a significant problem. In this context, "special needs" refers to medical, social, psychological, or physical conditions that make it necessary to modify the normal course of dental treatment. Examples of such conditions include medical and developmental disabilities; problems associated with aging; and psychological problems, including dental phobia. Individuals with such conditions have been termed "special patients."[1]

In studies of special patients, such as people with developmental disabilities residing in community settings, it has been reported that these individuals have significant unmet medical needs in general,[2-6] as well as significant unmet dental needs.[7-11] These findings are even worse for individuals with disabilities who are living in rural areas of our country,[12] and conditions are further complicated by the increasing trend to move individuals with severe disabilities out of institutions. Many individuals have been moved into community living situations with inadequate arrangements for medical and dental services.[4-6]

There have been many programs developed to provide services to individuals with special health problems.[13-18] The Federal Administration on Developmental Disabilities funds University Affiliated Programs that utilize the resources of institutions of higher education to provide services to individuals with disabilities. These university programs have incorporated

outreach activities. However, many have concentrated their efforts in those urban centers where the University Affiliated Program is located.[19] In spite of these and other efforts, access to effective dental care remains a problem for many individuals with disabilities residing in community living situations.[20-22]

One of the problems faced by individuals with severe disabilities and severe dental problems is the fact that they may require dental treatment in a hospital. In urban centers, there are often adequate resources for hospital dental care that are not present in other areas. There are few reports that describe methodologies for developing hospital dental services for an undeserved rural disabled population.[23] A review of alternative dental care delivery systems for individuals with severe disabilities living in the community found discussions of institution-based programs where individuals in rural settings would need to travel to an institution for care. Also discussed were mobile programs in which limited dental care might be available in the local communities on a sporadic basis.[24] There were no models described that included the identification and development of local resources within the community as a means of increasing access to dental care.

Recently, many commissions, organizations, and individuals have recommended that dental practitioners be trained to participate in community-based dental care programs.[25-27] The Pew Health Professions Commission recommended that the health practitioner of the year 2005:

- Be able to work with others in the community to integrate a range of services and activities that promote, protect and improve health;
- Be able to expand access to effective care;
- Participate in coordinated care in new health care settings; and
- Participate in the delivery of care to diverse segments of the population in community-based settings.[28,29]

Some of the problems faced by people with special needs living in community settings were brought to the attention of the authors a decade ago because of a severe problem in rural northern California. Case managers in agencies for people with disabilities in a number of rural northern California communities reported difficulty accessing dental care for their clients with developmental disabilities. In many counties, they were unable to find dental practitioners who were willing to accept new patients with developmental disabilities. The situation was critical, with many individuals suffering pain, infection, and loss of function.

Since that time, the authors have participated in the development of a number of community-based programs to improve oral health for people with special needs living in rural northern California. The programs have resulted in increased access to dental care and increased preventive activities in the communities where they were established.30 These efforts have been primarily directed at developing services for people with developmental disabilities living in rural communities. In recent years, however, this work has expanded to include rural and urban areas throughout California and programs for people with a variety of special needs.

This article will present lessons from the past decade of work and point out areas that still need attention in order to make oral health a priority and reality for people with special needs in California.

## A Community-Based Model

**Figure 1** depicts a community-based model that has been used in a number of communities to improve the oral health of people with special needs by developing and coordinating resources and systems within the community. The basic assumption in this model is that there are resources in the community that, if fully utilized, would result in an improvement in oral health. A further assumption is that these resources tend to be underutilized because of inadequate communication and coordination.

## Identify Local Problems

The first step in using this community-based model is to identify the local problems. Although the basic problem, inadequate oral health, may be the same in all instances, the contributing factors may be very different. Ukiah, Calif., was the first community where the authors applied this model. In that community in 1990, there were no resources for providing dental care under general anesthesia for those individuals with severe dental problems and significant dental disease. This meant that caregivers of individuals with these problems were making long drives to San Francisco to receive this type of service. In addition, that community had few dental offices that were accepting new patients with Denti-Cal, making outpatient dental care hard to find.

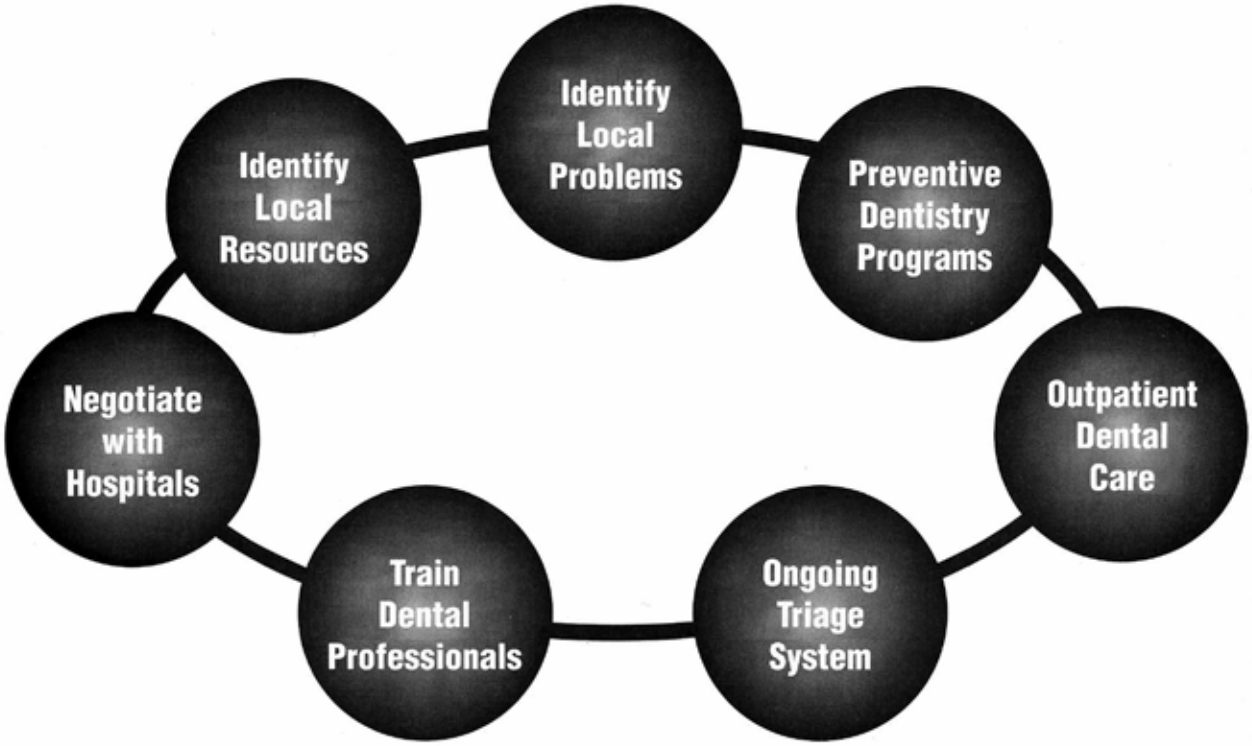
In contrast to that situation, hospital resources and dental offices accepting Denti-Cal are available in the central Los Angeles area now. However, individuals with special needs still have a difficult time finding those sources of care and may not have adequate understanding and information about how to prevent dental disease.

Clearly, the methodology to be applied to improving oral health of people with special needs in these communities is different. Without a thorough analysis of the particular issues facing each community or region, a unique and targeted strategy cannot be developed.

To fully understand the local problems, the authors have conducted surveys of dental professionals; interviewed physicians, social service professionals, and caregivers; and conducted dental screening examinations. These data are of interest in that they demonstrate, among other things, that the primary dental problem identified was poor oral hygiene. In addition it was found that caregivers overrated the need for dental

Figure 1

Development of a Community-Based Dental Program for People with Special Needs




care under general anesthesia compared to the opinions of dentists with experience working with special needs populations.[30]

## Identify Local Resources

The next step in the development of the community-based model is to identify local resources. Again, each community is different. Even in the rural communities where the authors encountered no or few dental offices willing to accept patients with Denti-Cal or to perform hospital dental procedures, there were individual dental practitioners who were willing to help find solutions. In addition, there were agencies for people with special needs and hospitals that were also willing to participate in finding solutions.

The authors have worked extensively with directors, clinical resource managers, and case managers in regional centers throughout the state. There are 21 such agencies under contract with the state Department of Developmental Services to provide information and referral, diagnosis and evaluation, individual program planning, and prevention activities for people with developmental disabilities residing in their regions. They are also responsible for community placement of people with developmental disabilities into a number of levels of community living arrangements. Identifying agencies, such as the local regional center, that are able to work with the dental community is key to developing a community-based solution for improving dental health.

## Community-Based Coalitions

In every community where the authors have worked, a coalition of agencies and individuals evolved that reflects the unique community-based solution for that community. **Figure 2** shows some of the entities that have been involved in these coalitions. The role of the dental school, as represented by the authors, has been to act as consultants and catalysts in bringing together the participants and in designing the model and to provide training and consultation for the dental professionals in the community. In every community, there have been dental professionals, agency personnel, administrative and professional staff at hospitals, community health and recreation centers, and caregivers who have contributed to the solutions for that community.

The reason that the coalition and cooperation between the entities just described is so powerful is the fact that they posses different capabilities. One example is the common situation where dentists who are willing to see people with

special needs are overwhelmed by "social" barriers. These social barriers include determining who is able to give consent for this individual to have treatment, how to access health history information, and who to talk to about follow-up care. However, a case manager at the local regional center may not only know how to address these issues, but may also be willing and able to do so for the dentist if it results in dental care being delivered to the regional center consumer.

In most of the communities where the authors have worked, the formation and continuation of the coalition has included the hiring of a local dental coordinator. This individual has worked part-time for the local regional center and been responsible for coordinating many aspects of the system. This coordinating role has been central to the success of these systems. Dental coordinators have been dental hygienists, dental assistants, social workers, and nurses.

### Hospital Resources

In some communities, there were no resources for performing general dental care under general anesthesia. In these communities, small grant funds were used to purchase portable dental equipment and supplies. However, even with these purchases, systems needed to be arranged for providing hospital dental care. The authors have acted as consultants in negotiating with hospital administrators, internists, anesthesiologists, and hospital managerial personnel to facilitate the introduction of dental services into the hospital environment. In each community where hospital services have been developed, a hospital protocol was written that details the responsibilities of everyone involved and all the steps necessary to plan and carry out dental services in the hospital environment.

### Training of Dental Professionals

Although there were dental professionals in each community willing to participate, the authors found a need and desire for further education. The authors have either given or arranged courses for dental professionals on subjects such as dental implications of various special needs, the regional center system, hospital dentistry procedures, behavioral interventions, and preventive dentistry procedures.

The authors are currently developing a system, under contract with the Redwood Coast Regional Center, to use videoconferencing technology to provide consultation and education to dental professionals in rural Northern California.

### Ongoing Triage System

One important aspect of the community-based model is matching the person in need of dental care with the right resource for providing that care. The most successful models have used the services of the dental coordinator described earlier to conduct periodic dental screening examinations. The coordinator is then able to make referrals to local dental practitioners who are able to care for the individual with the particular set of general health and dental problems that were identified in the screening examination. Using this system to avoid unsuccessful referrals has contributed greatly to the success of the model.

### Outpatient Dental Care

In some communities, the availability of outpatient dental care has increased as a result of the implementation of the community-based system. One factor that has facilitated outpatient care is the reduction of the "social barriers" for dental professionals discussed earlier. The use of a dental coordinator, acting as the liaison to the coalition of agencies and individuals, allows the dental office to concentrate on providing dental care. Another factor that has encouraged dental professionals to accept referrals has been the education and consultation made possible by the linkage with the dental school faculty in these systems.

### Preventive Dentistry Programs

Since a major goal in each community has been to prevent dental disease and avoid the need for dental treatment, it was necessary to address the deficiencies in preventive practices that were identified in the assessment phase of the systems. One common problem was the high turnover of staff in residential care facilities as well as lack of caregiver understanding of the causes and prevention of dental disease. It is clearly not practical for dental professionals to provide repetitive dentistry training in community settings. The authors believed that a more effective approach would be the development of training materials that could be used in a pyramid training program where the manager of a residential care facility or an agency administrator could be trained, and then subsequently train other caregivers and individuals.

A preventive dentistry training package was designed and produced. The training package is called "Overcoming Obstacles to Dental Health: A Training Program for Caregivers of Individuals with Disabilities." It consists of:

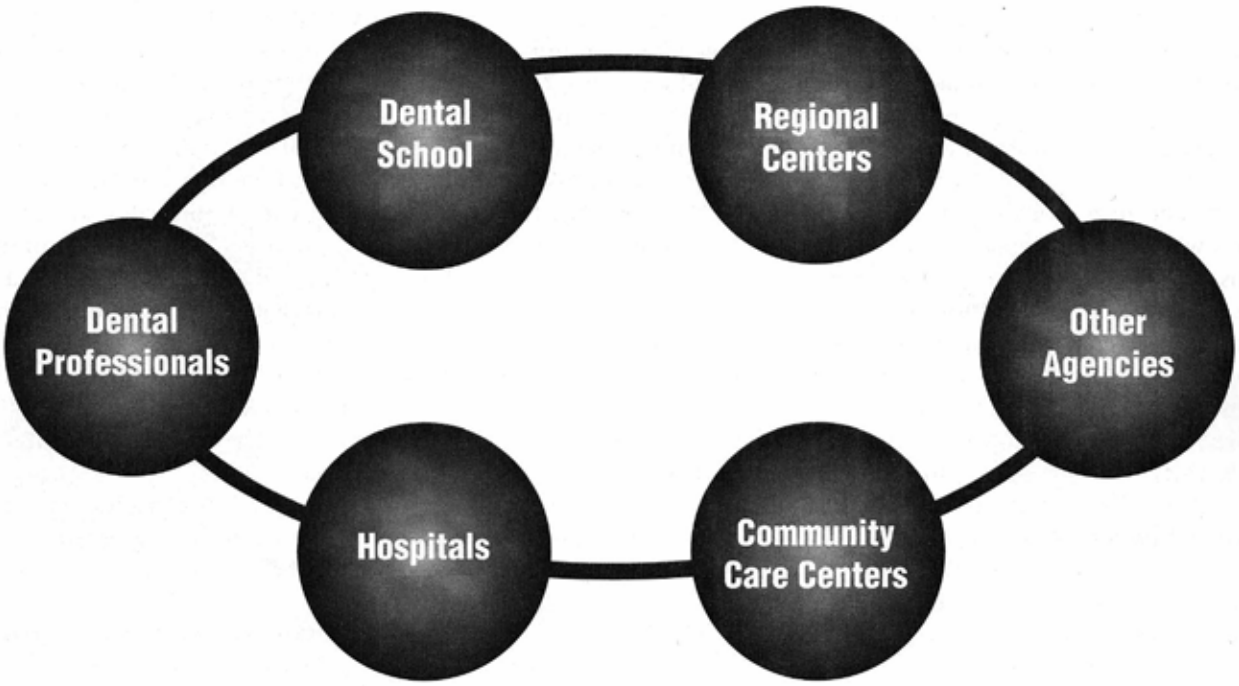
- A nine-minute videotape that serves as an overview of the material and is designed to be viewed at the beginning and end of the training sessions as well as serve as an ongoing reference;
- A workbook that goes into detail about each of the subjects previewed in the videotape;
- A trainers' manual containing a set of instructions for the use of the materials; and
- A pre- and post-test of multiple-choice and true-false questions covering the subject matterin the training materials.

The training program blends dental and behavioral information and provides instructions for developing a customized plan that can be integrated into the daily routines of individuals with special needs. The training time is flexible and can range from short 45-minute overview sessions to six-hour classes.

The preventive dentistry training

Figure 2

Participants in a Community-Based Dental Program for People with Special Needs




package has been shown to be effective in increasing caregiver knowledge about dental and behavioral information needed to implement a preventive dentistry program.[31] In addition, field-testing has shown that training with these materials can increase caregiver participation in preventive dentistry procedures, increase toothbrushing activities of the individuals being served, and improve oral hygiene measures in these individuals.[32] These materials are currently being used in oral disease prevention programs across the country. A Spanish-language version of the materials is due to be released in the summer of 1998.

## The Future of Dental Care for People with Special Needs

Although a great deal has been accomplished using the community-based systems described above, there is still much to be done. Funding and reimbursement issues were not addressed in the discussion above. The community-based models were developed with the assumption that funding for reimbursement of dental care was fixed at the time. Indeed, the fact that these systems have gone as far as they have in increasing oral health in the communities where they have been applied is testimony to the usefulness of the model and the fact that progress can be made without increasing reimbursement. In order to develop long-term and widespread increases in oral health for people with special needs, however, further funding will be needed. Funding is needed to reimburse practitioners for the extra time and expertise required to provide dental treatment for these individuals. In addition, increased funding for coordinated community-based solutions is critical to allow replication of the community-based models described here. These systems have demonstrated that community-based coalitions, managed by a dental coordinator, can increase the effectiveness of everyone involved in improving oral health of people with special needs in the community.

It is especially worrisome that managed care reimbursement systems are being developed that do not recognize the particular difficulties of providing dental care to people with special needs. Some programs do not provide for any reimbursement for dental treatment in a hospital setting. Much of the progress in the past decade could be undone if the current level of funding were reduced.

Another area that needs continued

development is making prevention of dental disease in special-needs populations a priority. There is widespread agreement that dental treatment is much less desirable than prevention of dental disease. We also know how to prevent dental disease. Therefore, it is tragic that this information is not available to many caregivers and individuals who need it. The pyramid training approach described earlier must be further developed and expanded and made available across the state.

Research must also be continued and expanded to develop "best practices" for improving dental health of people with special needs. These best practices include prevention programs, treatment methods, reimbursement systems, and further development of the community-based model. Dental schools may be the best places to conduct such research as well as to act as centers for training of predoctoral, postdoctoral, and postgraduate students.

Another challenge is the dissemination and sharing of information about methodologies for improving dental health in special-needs populations. The authors have been involved in instances where some people have dedicated themselves to improving oral health for people with special needs in that community. Unfortunately, they were not aware of other successful systems and resources and have wasted considerable energy "reinventing the wheel." It is critical that the scarce resources in this area be used wisely. This would involve efforts to devise a method for better communication and cooperation between individuals and agencies interested in this problem.

## Summary

A community-based dental care delivery system has been described. This system has been used in a number of communities in California to improve oral health for people with special needs. The system includes oral health assessment, coalition building, development and networking of local resources, training of dental professionals, and utilization of preventive dentistry training materials. Challenges for the future are also indicated in order to continue to make oral health a priority and reality for people with special needs in California.

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# The Dental Auxiliary's Job Manual

Robert E. Horseman, DDS

Congratulations! Throwing caution to the winds, you have chosen a career in dentistry as your personal road to happiness and early retirement. By carefully following the information given in this manual, you will be assured of achieving your goals and rapidly rising to the top of a fulfilling career.

## The Interview

You have two things going for you:

- The law prevents the interviewer from asking personal questions to which you would normally have to plead the Fifth; and
- The office desperately needs you, or it wouldn't have run an ad in the first place.
- As a with-it practitioner of hipness, determine quickly if black lipstick and matching two-inch nails are permitted along with big hair and four-inch spike heels. If not, maybe you don't want to work for people this retro. Be sure to ask about profit-sharing plans, when your first vacation starts, and what time morning and afternoon breaks begin.

## How to Dress

Before the current infection-control mania, an assistant's garb consisted of white pants and any kind of a patterned blouse that would disguise the presence of colorful impression material and centrifugally applied prophy paste. Today, a hole cut in the bottom of an OSHA-approved 33 gallon trash bag in an attractive dark olive shade with cutouts for the arms will do nicely. Shoes, such as those worn by Michael Jordan during NBA playoffs, are preferred. These will cost upwards of $150 and resemble Mardi Gras floats.

## The First Days

There are at least 100,000 practicing dentists in this country. Each one of them has his special way of doing things and covertly thinks the other 99,999 are hopelessly wrong. To make sure he is correct in this assessment of his colleagues, he will pay $295 to attend a course where another dentist shows him his way. There is no reason for you to accustom yourself to your new dentist's methods, which are subject to capricious changes anyway. Be sure to point out how things were done in the office you just left. Begin by going through the drawers and cabinets and rearranging instruments and supplies to suit yourself. This has the effect of presenting you as an industrious asset to the practice out to make the other employees look like chopped liver. It also elevates you to a power position, being the only person who knows where anything is.

### Dealing With Other Personnel

In the eyes of the other people in the office, you are the New Kid on the Block and, as such, subordinate to them. To level the playing field, you must begin to ingratiate yourself with the boss immediately, otherwise the senior players will walk all over you and you'll be the New Kid forever. Calling him "Doctor" every other sentence and cleaning all the outside windows during your lunch hour will show the other personnel that you mean business and are not to be trifled with. Conduct yourself professionally, but with a certain elan; Anna Nicole Smith would be a good role model.

### The Front Desk

Power corrupts and absolute power begins at the front desk. Initiate your assault on the front desk position early. Like the Maginot Line, it can be easily outflanked by any scruples-deficient underling on the way up. This is what you want to be, not somebody's handmaiden. The rest of the staff are human beings with the same needs as you and they want to get ahead just like you do, so they are not to be trusted. But there's only room at the top for one Alpha Gal and you don't want to be detained by a gaggle of overachievers jockeying for your job.

You do this by mastering the computer and the operating software for the practice so thoroughly that you can insert your own variations and delete the payroll records of the other employees. Now who is the subordinate?

### Onward and Upward

Two months on the job and with perseverance and perfidy you've reached the top – or have you? Sure, you arrange the schedules so you're out by 4:30 p.m. regardless. Insurance companies and laboratories know and respect you like Leona Helmsley. Supply people and manufacturer reps genuflect and kiss your ring. Moxie and chutzpah you've got. Is there more?

### You bet your sweet hard drive!

You are an upwardly mobile person with your back to the wall, reaching for the brass ring with your ear to the ground, your nose affixed to the grindstone, and your eye on the 401(k). Uncomfortable as that may be, you recognize that your employer is in way over his head with the business end of the practice. It's not the reason he became a dentist.

### Here's What You Do

You make an offer to buy him out. Yes! Do this on a day when you've overbooked him with loose bridges, denture patients who want a refund, and obnoxious kids under the age of 3. All he can think of is carpe diem. It'll be like a free all-expenses-paid three-week trip to Bora Bora, he fantasizes, and bingo! the place is yours.

### Publisher's Warning

Twenty-five thousand copies of this manual have been sold. We would be remiss not to advise you to watch your back. Change the computer password daily and never leave for lunch. Beware the obsequious toadying new employee and be sure to get a signed covenant from her to not compete.