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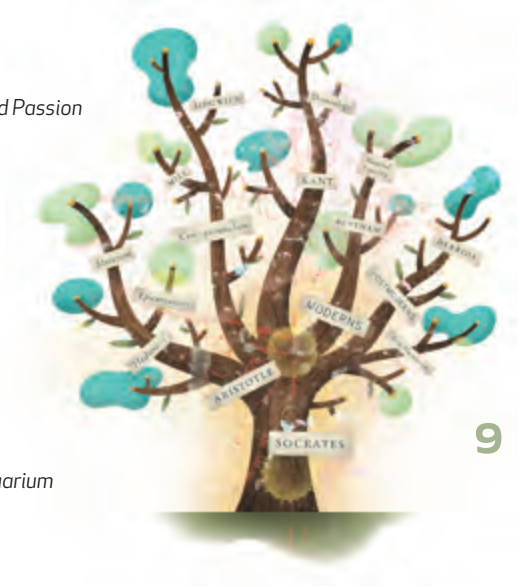

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FEATURES

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FEBRUARY: *Barriers to Care*
MARCH: *General Topics*
APRIL: *Recession Erosion*

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CDA JOURNAL, VOL 39, Nº1

Controversy, Information, and Passion

KERRY K. CARNEY, DDS

The controversy in dentistry today is how to address disparities in oral health and overcome barriers to accessing care.

The word, "controversy," comes from the idea of opposition or "turned against." A topic is controversial when there is no consensus, no uniform agreement, no unity of understanding. There exist false controversies, for example, someone may claim that 2+2 does not equal 4. However in the commonly agreed upon everyday understanding of simple integers, this belief is incorrect. There is no real controversy and little emotion is invested in proving this belief false.

A good controversy can make us think critically. Controversy requires that we evaluate the completeness of our understanding. Do we have all the facts and understand the context? Controversy provides the opportunity to step aside and look at facts from more than one perspective. It can make us uncomfortable as we re-evaluate our understanding of facts.

Benford's Law of Controversy states: passion is inversely proportional to the amount of true/real information available. Gregory Benford is a physicist and science-fiction writer. He is credited with formulating this law in his 1980 novel, *Timescape*. Benford tries to the draw the distinction between controversy in physics and controversy in social and political realms. His premise is: when experiments are not easily carried out, facts are few, unknown or not generally agreed upon, then the field is rife with controversy. The less we know, the more certain we are and the more passionately we argue our view.

The issue of barriers to care is not the result of a failure of the dental profession. However, it is a social and political issue that dentists cannot ignore. Barriers may be defined as an insurance problem, a transportation problem, or a utilization problem. Barriers may be associated with poverty, lack of education, oral health illiteracy, or something else entirely. The fact remains, 30 percent of Californians experience barriers to accessing dental care — and the number is growing.

A good controversy can make us think critically. Controversy requires that we evaluate the completeness of our understanding.

Legislators are pressured to do something to solve the problem right now, but quick fixes are not usually effective long-term solutions. Effective long-term solutions do not necessarily make for popular legislation. Public health advocates and think tanks typically place a premium on innovation. Though it can be very valuable, sometimes innovation looks a little like throwing out the baby with the bath water. When a system serves the needs of 70 percent of the population, those providers working in that system may be resistant to change that appears to threaten its continued existence.

Mainstream media deal in controversy, conflict, and human struggle. They are in the business of simplifying complex issues. Important details and nuances may be lost and debates may be reduced to black-and-white contrasts and seven-second sound bites.

The dentist must remain the head of the dental team. Proposals that could change the nature of the dental team are coming forward from both inside and outside the dental profession.

The Pew Center on the States has launched a national oral health care initiative that includes a focus on developing innovative responses to oral health disparities, including a campaign in California to develop a new workforce model.

W.K. Kellogg is working in five states—Ohio, Vermont, New Mexico, Washington, and Kansas—to build coalitions to introduce legislation to create a new dental provider who can render basic restorative care.

The Josiah Macy Jr. Foundation and the W.K. Kellogg Foundation have funded the American Association of Public Health Dentistry to develop a two-year dental therapist curriculum.

In order to become the experts on the topic, CDA is researching this issue in a comprehensive and deliberative manner. Your dental association is reviewing research and the experiences of other states, including the several existing and proposed workforce models. Organized dentistry must be able to discuss with policy-makers how to provide dental care to more people safely, effectively, efficiently, and sustainably. We need to have evidence of what works and why some solutions work well in one environment but not in others.

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Thank You to the *Journal* Reviewers

Authors have their names on their articles. Contributing editors, staff members, and outside vendors have their names in the masthead. But there are more people involved in putting out the *Journal* than those whose names are printed in each issue. There are also the professionals who formally review manuscripts and offer their recommendations. Below is a list of the people whose reward comes in the form of a thank you letter and a listing here. In addition, there are many others who have provided information counsel to the *Journal*. It is impossible to list them all. The *Journal* extends its thanks to the following people and everyone else who assists us in our endeavor.

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Timothy G. Giroux DDS/Broker

ASK THE BROKER

Question:

I have a practice with an associate, a hygienist and several key employees. Should I have something in writing about their employment that would facilitate a sale or transition?

Fred J, DDS

Even though we have an attorney on staff, we are not lawyers and you need to consult your attorney on these matters. The law in different states also varies. However, I will expound on a few issues as to how I understand the situation here in California.

California is an "at will" employment state, but most attorneys would advise their clients have an "at will" clause signed by their employees as a stand-alone agreement or as part of an office manual. Along with an "at will" clause of employment, some attorneys would recommend that some type of "proprietary information" protection language also be part of the employment agreement. If one were to lose a key employee that has built relationships with the patient base, it would be wise to have some type of agreement in place that makes it clear that all patient information is proprietary to the practice.

Your attorney could also draw up language that would specifically address any efforts by the employees to solicit patients away from the practice. I have seen language that also includes proprietary management systems that are in place. Most of us dentists in California understand that covenants "not to compete" for employees (including dental associates) are not defensible in California, but obviously the proprietary information special to any practice could possibly be protected.

The language may have to be crafted differently for each type of dental employee, but any agreement that would help protect the practice goodwill in this fashion would obviously be beneficial for any buyer with these concerns. After all, the goodwill of most practice transitions represents up to 80% of the value of the practice. Maintaining the continued probability of patient visits to the practice, even in the event of employee turnover, is paramount to the value of the practice.

Again, I want to reiterate that these legal Human Resource questions should be directed to your attorney. It might be wise to address these matters well in advance of any planned transition and have your plan reviewed by your attorney on a regular basis to see if there are any changes to the law regarding these matters.

Timothy G. Giroux, DDS is currently the Owner & Broker at **Western Practice Sales (westernpracticesales.com)** and a member of the nationally recognized dental organization, ADS Transitions. Do you have any **Questions? Email them directly to *Dr Giroux at:* wps@succeed.net** or Call **800.641.4179**

EDITOR, CONTINUED FROM 5

With this issue, the *Journal of the California Dental Association* brings forward, for your examination, information on oral health disparities and barriers to care. This first selection of articles provides one perspective on workforce issues. In upcoming issues, you will be provided with different perspectives on similar topics. The objective is to increase the amount of information and the number of perspectives for you to consider.

You also can stay informed by visiting cda.org/access for more information.

Ours is a science-based profession and it is our goal to dial down the passion and dial up the factual analysis of a controversial topic. ■■■■

The Journal of the California Dental Association *welcomes letters from readers on articles that have appeared in the* Journal. *We reserve the right to edit all communications and require that all letters be signed. Letters should discuss an item published in the* Journal *within the past two months or matters of general interest to our readership. Letters must be no more than 500 words and cite no more than five references. No illustrations will be accepted. Letters may be submitted via e-mail to the* Journal *editor-in-chief at kerry.carney@cda.org. By sending the letter to the* Journal, *authors acknowledge and agree that the letter and all rights of the letter's author become the property of the California Dental Association.*

CDA JOURNAL, VOL 39, Nº1

Matt Mullin

The Genealogy of Ethics

BY DAVID W. CHAMBERS, PHD

We have put a man on the moon, manufactured Kevlar body armor, and destroyed several diseases to make way for others. But what has civilization done to change human nature? Philosophy sometimes gets a bad rap because there is almost no evidence that 2,500 years of talking about it has made us more ethical.

Part of the problem is that we have moved the target. Not raised the bar: just changed what it means to be ethical. Ethics has a genealogy.

The job of ethics, according to Socrates, is to decide how we are to live our lives. The powerful and wealthy of his day hired tutors to coach them so they would appear to be ethical in their civic roles. If Socrates were to drop in today, he would see that the ethical enterprise is being managed by Oprah Winfrey, Disney, and the Tea

CONTINUES ON 11

Diet High in Fish and Nuts Can Protect Against Gum Disease

High consumption of polyunsaturated fatty acids (PUFAs), such as those found in nuts and fatty fish, has been shown in a study to lower the risks of gum disease and periodontitis.

During a five-year study of 184 adults, those who ate the highest amounts of fatty acids were 30 percent less likely to develop gum disease and 20 percent less likely to develop periodontitis. The research was published in the November issue of the *Journal of the American Dietetic Association*.

"This study shows that a small and relatively easy change in people's diet can massively improve the condition of their teeth and gums, which in turn can improve their overall well-being," said Nigel Carter, DDS, chief executive of the British Dental Health Foundation.

Lead researcher of the study, Asghar Z. Naqvi, MD, MPH, MNS, of Beth Israel Deaconess Medical Centre in Boston, said, "We found that n-3 fatty acid intake, particularly docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) are inversely associated with periodontitis in the U.S. population. To date, the treatment of periodontitis has primarily involved mechanical cleaning and local antibiotic application. A dietary therapy, if effective, might be a less expensive and safer method for the prevention and treatment of periodontitis."

"Most people suffer from gum disease at some point in their life," said Carter. "What people tend not to realize is that it can actually lead to tooth loss if left untreated, and in this day and age, most people should be able to keep all their teeth for life."

'B' Sure to Get Your B9 to Lessen Risk of Oral Cancer

Women are less likely to suffer from mouth cancer if they consume high volumes of folic acid in vitamin B in fruits and veggies, according to a recent study.

Researchers from the Columbia University Medical Centre and Harvard School of Public health studied 87,000 nurses for 30 years. Women who had low folic acid intake and a high intake of alcohol were three times more likely to develop mouth cancer than their counterparts who, while drank a lot of alcohol, also consumed a high volume of folic acid. This is the first time that folic acid intake has been shown to affect the risk of the disease.

"Rates of mouth cancer in women have been increasing for many years as a result of changed social habits with more women smoking and drinking. This new research could offer a method to reduce this by looking at the folic acid intake and increasing fruit and vegetables containing folic acid in the diet, said Nigel Carter, DDS, chief executive of the British Dental Health Foundation. "In the past, studies have tended to focus on males as they are twice as likely to suffer from the disease. Whilst this study focuses on women, we know that men also benefit from the protective value of increased fruit and vegetables."

Folic acid (vitamin B9) is essential to one's health by helping to make and maintain new cells. Alcohol, which leads to a reduction in folic acid metabolism by creating acetaldehyde, which then leads to a reduction of folic acid in the body, is one of the major risk factors for mouth cancer. Pregnant women are advised to supplement their intake of folic acid, to ensure healthy development of the baby.

Folic acid is in asparagus, beans, lentils, peas, spinach. In smaller amounts, it also is in broccoli, brussel sprouts and fruit juices. Folic acid is added to bread.

Honors

Timothy S. Shahbazian, DDS, received the 2010 AAOMS Committee Person of the Year award during the 92nd Annual Meeting, Scientific Sessions and Exhibition of the American Association of Oral and Maxillofacial Surgeons in Chicago. Recognized for his leadership of the AAOMS Committee on Health Care and Advocacy, he has been a member of the committee, which monitors and advocates for equitable insurance reimbursement levels, since its inception in 2001.

Shahbazian, a diplomate of the American Board of Oral and Maxillofacial Surgery, maintains a private practice in Fremont, Calif., is a director of the California Dental Society of Anesthesiology, and is a member and lecturer on the OMS National Insurance Company's Risk Management Committee.

Also during the same meeting in Chicago, **Gerald Gelfand, DMD,** received the Presidential Achievement Award presented to association fellows and members who have made significant long-term contributions to the specialty.

For nearly a decade Gelfand, of Woodland Hills, Calif., has worked tirelessly with the AAOMS Committee on Governmental Affairs and the Oral and Maxillofacial Surgeons Political Action Committee to inform colleagues of the importance of legislative and regulatory advocacy and to raise the specialty's profile with legislative bodies at all levels. As chair of both committees, he led the development of cohesive and focused national and grassroots advocacy initiatives to monitor and respond to issues of importance to the specialty.

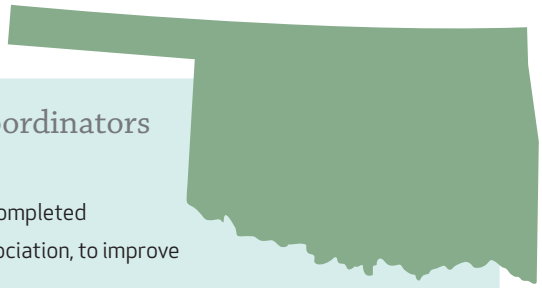
Gelfand is a past president of the California Association of Oral and Maxillofacial Surgeons, the Southern California Society of Oral and Maxillofacial Surgeons, and the San Fernando Valley Dental Society. A fellow of the American and International Colleges of Dentists and the Pierre Fauchard Academy, he has been a delegate to the American Dental Association House of Delegates since 2000, and an alternate delegate and delegate to the AAOMS House of Delegates since 1994.

Gerald Gelfand, DMD

Arthur A. Dugoni, DDS

Arthur A. Dugoni, DDS, along with **John A. Watson, DDS,** of San Diego, recently were honored with the Lifetime Achievement Award from the American College of Dentists.

Dugoni, dean emeritus of the dentistry school in San Francisco that bears his name, a former American Dental Association president and immediate past president of the ADA Foundation, was among the ACD fellows recognized for 50 or more years of ACD membership. "I want to congratulate all the 2010 fellows," he said during the ceremony. "Your life will never be the same. It's a wonderful opportunity to lead, and I am grateful for this award."



First Group of Community Dental Health Coordinators Complete Pilot Program

The first group of students at the University of Oklahoma has completed coursework in a pilot program, created by the American Dental Association, to improve oral health in underserved communities.

"The ADA is proud of these students, who we hope will be the vanguard of a new way — we believe a better way — of preventing disease in underserved communities, in large part by empowering people to take charge of their own oral health," said Raymond F. Gist, DDS, ADA president, in a news release. "This type of community-based approach has worked well in other fields of health care. We believe we can improve people's health and lives by preventing dental disease and raising awareness of the importance of good oral hygiene habits."

The community dental health coordinator (CDHC) pilot program is modeled on the community health worker, which has proven extremely successful in similar capacities in the medical system. The five new CDHCs, will bring dental education, prevention services, and patient assistance to communities lacking adequate access to oral health care and with disproportionate oral disease rates. Additionally, CDHCs can provide specific clinical services under the supervision of a dentist and in accordance with existing state laws such as dental screenings, fluoride treatments, placement of dental sealants and simple teeth cleanings (scaling for periodontal type 1 gingivitis). CDHCs also will help patients navigate the health system to connect patients with dentists by helping them overcome barriers to care such as lack of transportation or childcare.

CDHCs are recruited from the same communities in which they are trained to serve, including remote rural areas, urban areas, and native American communities, thus eliminating many of the cultural, language, and sociological barriers that might otherwise impede their effectiveness.

"The new CDHCs are excited about the roles that they will play in their communities," said Marsha Beatty, co-director of the CDHC program at the University of Oklahoma.

ETHICS AND CHARITY, CONTINUED FROM 9

Party. It is no surprise that the preferred flavor of ethics in business schools today is called "virtue ethics," a revival of the old Greek ideal of looking good in public.

Actually, his program did not work out so well for Socrates, as a democratic government came to power in Athens in 399 BC and put him to death for corrupting the youth by teaching them to question. Aristotle did better because one of this pupils was the tyrant Alexander the Great.

The Dark Ages, medieval times, and especially the Renaissance redefined ethics as a matter of adherence to authority. Face it: the world was a scary and dangerous place. If folks did what they were told by powers temporal and ecclesiastical they might stand a chance. Ethics by authority carried over to the Inquisition.

The Enlightenment of the 18th century replaced authority with cooperation among reason-giving individuals, hence the American and French revolutions. But that created a new problem: How are we to decide what is really right and wrong if we have to listen to other people who are like us? The past 300 years has been an effort to ground ethics in either pure or peer reason, all the time allowing more and more people to participate in the discussion.

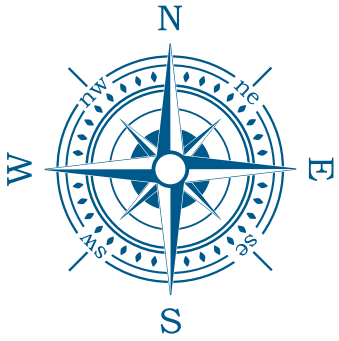
Many scholars feel that we are coming to the end of the Enlightenment. Too much self-interest has soiled the game. Efforts to "cap the oil spill of rampant individualism" by passing laws, redefining ethics as professional or corporate practice, or making it an academic discipline in the universities have not been satisfying.

I am still trying to work out how I should live my life, but whatever society decides is ethics for our time, we must recognize that our genecology involves fitting in with the power elite, recognizing authority, and giving reason to our peers.

The nub:

1. It is worth trying to answer the question "How should I live?"
2. Do not be surprised if others define ethics differently.
3. Do not let others define ethics for you: do not define it without involving others.

David W. Chambers, PhD, is professor of dental education, Arthur A. Dugoni School of Dentistry, San Francisco, and editor of the Journal of the American College of Dentists.



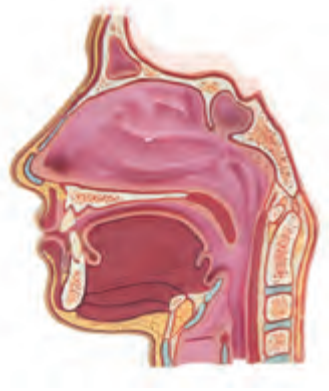
CND Legislative Leadership Award

The Committee for the New Dentist is soliciting nominations for its annual Golden Apple Award for New Dentist Legislative Leadership. This award recognizes a new dentist who has demonstrated outstanding political/legislative leadership initiative. The dentist must be an ADA member in good standing and have graduated on or after Jan. 1, 2001. Constituent societies many nominate one candidate. For more details, contact chicoc@ada.org.

Device for Airway Management Recommended as Intubation Alternative

When traditional nasal intubation methods are ineffective, anesthesiologists are recommending an alternative anesthetic technique that involves a gum elastic bougie (GEB) device. The benefits of this approach were published in an issue of *Anesthesia Progress*.

The application of GEB for nasal endotracheal intubation was performed in 16 patients whose tracheas could not be intubated by conventional techniques due to anatomical problems or misdirection of the tip of the tracheal tube, the authors said. These patients were among 632 people undergoing dental procedures or oral surgery. In explaining how to place and connect the nasal tube for optimal use, the authors noted that the use of several other mechanical aids — including suction catheters, nasogastric tubes, stylets, and nasal flexible laryngeal masks — has been reported previously for nasal intubation.



In cases when the mouth opening is limited or prohibited, the authors said that fiber-optic intubation can be an effective approach to intubation, although they have found it to be time-consuming. Because of this, they suggested the application of GEB as a good alternative.

"In our experience with use of these methods, this GEB technique is very quick, safe, inexpensive, and easy to perform," the authors wrote. "Thus, we recommend the use of GEB from the first attempt for nasal endotracheal intubation in patients with difficult airways."

To see the full article, "Application of Gum Elastic Bougie to Nasal Intubation," go to www2.allenpress.com/pdf/anpr-57-03-112-113.pdf.

UPCOMING MEETINGS

2011

April 7–10	California Society of Pediatric Dentistry 36th annual Session/Western Society of Pediatric Dentistry ninth annual session, San Francisco, 831-625-2773, drrstewart@aol.com.
April 10–16	United States Dental Tennis Association, Tampa, Fla., dentaltennis.org.
May 12–14	*CDA Presents* the Art and Science of Dentistry, Anaheim, 800-CDA-SMILE (232-7645), cdapresents.com.
June 16–18	ADA New Dentist Conference, Chicago, (800) 621-8099, ext. 2779, ada.org/goto/newdent.
Sept. 22–24	*CDA Presents* the Art and Science of Dentistry, San Francisco, 800-CDA-SMILE (232-7645), cdapresents.com.
Sept. 22–24	United States Dental Tennis Association, Palm Desert, Calif., dentaltennis.org.
Nov. 6–12	United States Dental Tennis Association, Palm Desert, Calif., dentaltennis.org.

To have an event included on this list of nonprofit association continuing education meetings, please send the information to Upcoming Meetings, CDA Journal, 1201 K St., 16th Floor, Sacramento, CA 95814 or fax the information to 916-554-5962.

Periscope offers synopses of current findings in dental research, technology, and related fields.

TECHNOLOGY

NATASHA A. LEE, DDS

Laser fails to improve outcome

Matthews DC, Seeing the light: the truth about soft-tissue lasers and nonsurgical periodontal therapy. *J Can Dent Assoc* 76:a30, 2010

PURPOSE: To review current research findings on the use of soft-tissue lasers as an alternative or adjunct to traditional treatment of patients with periodontal disease.

METHODS: The author identified and reviewed current literature that discussed use of lasers alone or in conjunction with scaling and root planing to treat periodontal disease. Research on laser claims regarding efficacy of closed subgingival curettage, sterilization of the periodontal pocket by reducing pathogens, and light excitation of photosensitive dyes through photodynamic therapy were reviewed.

RESULTS: Many articles have been written about laser periodontal therapy but many are reviews, and fewer than 10 percent are randomized controlled clinical trials or longitudinal studies. Of those studies utilizing adequate methodology, none showed therapeutic advantage or improved outcome of laser therapy used alone or in conjunction with scaling and root planing over scaling and root planing alone. All of these studies found no changes in pocket reduction, reduction of bleeding, reduction of microbes, or changes in clinical attachment levels. Only one study reported a difference in attachment using laser therapy in conjunction with scaling and root planing, but the difference was not clinically significant.

CONCLUSIONS: There was no supportive clinical evidence currently to recommend use of lasers as an adjunct or alternative to traditional scaling and root planing or conventional periodontal surgery.

RELEVANCE: It is often challenging for a dentist to decide whether to incorporate new technology into practice when bombarded with journal articles and manufacturers claims. Although the appeal of modern technology exists for both the patient and the practitioner, one must weigh the evidence for clinical efficacy for the patient and improvement of their oral health with the lure of being on the cutting edge of technology. This review provides guidance based on current research for those making decisions about use of lasers for periodontal treatment in their practice.

PERIODONTICS

GERALD I. DRURY, DDS

Fixed retainers associated with inflammation

Levin L, Samorodnitzy-Naveh G, Machtei E, The association of orthodontic treatment and fixed retainers with gingival health. *J Clin Periodontal* 79(11):2087-92, November 2008.

BACKGROUND: The purpose of the study was to evaluate the association of orthodontic treatment and postorthodontic fixed retainers with gingival health.

METHODS: The study consisted of 92, 18- to 26-year-old subjects. One calibrated dentist performed all examinations. Periodontal parameters measured at six sites per tooth in the anterior sextants included PI, GI, GR, PD, and BOP. When fixed retainers were present, the distance between the retainer and incisal tooth edge and to the CEJ were measured.

RESULTS: There were 64 past orthodontic patients and 25 with one or two fixed retainers. Significantly greater lingual PI, PD, and labial gingival recession were found in previously treated orthodontic patients compared with nontreated patients. Localized GR, PD, PI, GI, and BOP were significantly more prominent and greater in teeth with a fixed retainer than in those without a fixed retainer. Greater PD, BOP, PI, and GR were observed in patients with fixed retainers compared with the postorthodontic patients without fixed retainers. A weak positive correlation was found between plaque on the lingual/palatal and gingival recession in the whole population; and a moderate positive correlation was found between plaque on the lingual aspect and lingual/palatal recession in the postorthodontic patients. The differences in plaque, BOP, and inflammation were noteworthy. The recession differences were small, approximately 0.08 mm, with a large DSD, and were of minimal clinical relevance. The small difference in clinical parameters between the groups might be attributed to the short period from orthodontic treatment to examination in this young adult population.

CONCLUSION: Orthodontic treatment, especially when combined with postorthodontic-fixed retainer placement, could have a negative effect on periodontal health.

BOTTOM LINE: Fixed retainers could lead to periodontal problems.

ORTHODONTICS

GLENN SAMESHIMA, DDS, AND LINDSEY MACFARLANE, DDS

Space maintenance critical for implant

Olsen T, Kokich V, Postorthodontic root approximation after opening space for maxillary lateral incisor implants. *Am J Orthod Dentofac Orthop* 137(2):158.e1-; discussion 158-9, February 2010.

AIM: To assess postorthodontic maxillary central and canine root approximation after opening space for maxillary lateral incisory implants.

INTRODUCTION: There can be several years between orthodontic appliance removal and implant placement due to continued facial growth and tooth eruption. There have been reports that during this time the roots of the maxillary central and canine reapproximate and insufficient space remains for implant placement.

METHOD: To analyze this idea, 94 patients with missing lateral incisors were examined. Inclusion criteria for the study was as follows: congenitally missing at least one maxillary lateral incisor, treated orthodontically to open up space for an implant, not missing an adjacent central or canine, no significant root resorption on adjacent teeth and treatment was completed between 1990 and 2008. Both periapical and panoramic radiographs were used to analyze the intercoronal and interradicular distance between the adjacent central incisor and canine. The radiographs were taken before orthodontic treatment, after orthodontic treatment, and at the time of implant placement.

RESULTS: 11 percent of patients had relapses that prevented implant placement. The mean time between orthodontic appliance removal and implant placement was 14 months. Of those patients who had a shorter time between appliance removal and placement, some had insufficient space for implant placement. Orthodontists can attest that patients who do not wear retainers can have rapid relapse.

CONCLUSION: 6.3 mm of intercoronal space and 5.7 mm of interradicular space is needed to place a maxillary lateral incisor implant. To ensure there is sufficient space for the implant, a resin-bonded bridge or a bonded wire will reduce root approximation.

BOTTOM LINE: It is important that the space for the maxillary lateral implant be maintained after the removal of orthodontic appliances if the implant is not to be placed immediately. It is necessary to maintain the orthodontic space that was created with a bonded-resin bridge or bonded wire. If the space is not properly maintained, the roots of the maxillary central incisors and the maxillary canines will approximate and the space for the implant must be opened again orthodontically.

IMAGING

SANJAY M. MALLYA, BDS, MDS, PHD,
AND SOTIRIOS TETRADIS, DDS, PHD

Morphological changes paralleled pain

Cevidanes LH, Hajati AK, et al, Quantification of condylar resorption in temporomandibular joint osteoarthritis. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 110(1):110-7, 2010.

THE CLINICAL PROBLEM: Patients with clinical signs and symptoms of temporomandibular joint dysfunction are often imaged to assess osseous changes of osteoarthritis. However, evaluation of these radiographic changes is currently based on qualitative assessment and frequently does not correspond to clinical symptoms.

AIM: This study examined whether changes in condylar morphology induced by osteoarthritis (OA) could be quantified and whether measurements of morphological alterations correlated with pain intensity and duration.

METHOD: The patient sample included 29 female patients with TMJ OA and 36 asymptomatic female subjects. Shape correspondence, a 3-D surface mapping technique, was used to map the condylar morphology. Shape correspondence is based on point mapping the condylar surface to a unique position to generate surface meshes and allow computation of spherical parameters. Morphology of osteoarthritic condyles was compared with that of asymptomatic subjects. Alterations in condylar morphology were correlated with clinical signs of OA.

RESULTS: The surface models clearly depicted condylar morphology. In patients with OA, the condyles demonstrated flattening (60 percent) and osteophytic or erosive changes (40 percent). In contrast, only 15 percent of condyles from asymptomatic subjects showed flattening and no erosive or osteophytic changes were detected. The condylar morphology of the TMJ OA group was statistically significantly different from the asymptomatic group ($p \leq 0.05$). These morphological variations significantly correlated with pain intensity and duration.

CONCLUSIONS: Three-dimensional quantification of condylar morphology showed marked differences between OA and asymptomatic condyles. The extent of these morphological changes paralleled pain severity and duration.

BOTTOM LINE: Image processing techniques allow quantification of morphological alterations in the bony components of the TMJ. Such technologies hold promise to evaluate temporal changes in the joints and to identify morphological variations that may have implications for clinical management or prognosis.

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Olya Zahrebelny, DDS

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(Note: Badge mailing will begin the first week of March for registrations completed prior to this date.)

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E	ADA member active-duty military dentist (VA, federal, state dentist)	$50	$75
F	Non-ADA member active-duty military dentist	$365	$390
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		011	p.m.	$195
Equipment Repair	Yaeger, et al.	012	a.m.	$175
		013	p.m.	$175
Photography	Dunn	014	Full day	$295
Laser Dentistry Track	Coluzzi/Vendors	015	a.m.	$25
		016	p.m.	$25
		017	p.m.	$25
3D Imaging	Fasbinder	018	a.m.	$45
		019	p.m.	$45
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	Instructor	Course #	Day/a.m./p.m.	Fee
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CPR — Conventional	Barksdale	033	a.m.	$75
CPR — Skills Check	Lee/Brellis	034	p.m.	$50
CPR — Skills Check	Lee/Brellis	035	p.m.	$50
Laser Dentistry Track	Coluzzi/Vendors	036	a.m.	$25
		037	p.m.	$25
		038	p.m.	$25
3D Imaging	Fasbinder	039	a.m.	$45
		040	p.m.	$45
TDIC Risk Management Courses	Iwata/Curley	736	a.m.	$50
		737	p.m.	$50
Saturday Workshops, May 14				
CPR – Conventional	Barksdale	041	a.m.	$75
CPR – Skills Check	Lee/Brellis	042	p.m.	$50
CPR – Skills Check	Lee/Brellis	043	p.m.	$50
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Last Name	Formal First Name and Middle Initial	Category Letter	License #	Title	Fee $	Course #	Fee $	Course #	Fee $	Course #	Fee $	Fee $
1.												
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CDA JOURNAL, VOL 39, Nº1

The International Dental Therapist: History and Current Status

ABSTRACT Dental therapists provide preventive, restorative, and minor surgical treatment, mostly for children in government-sponsored health programs, in more than 53 countries. Their quality of care and acceptance by the public and dental profession has been well-documented. Since 2005, they have been effectively serving native Alaskans in remote communities. Not only do dental therapists provide basic dental care to underserved populations, they enable associated dentists to practice at a higher level of proficiency and efficiency.

AUTHOR

Jay W. Friedman, DDS, MPH, is a dental consultant and writer living in Los Angeles.

Since their initial deployment in 2005, dental therapists have been providing basic dental care — prophylaxis, sealants, fillings, stainless-steel crowns, pulpotomies, and simple extractions with local anesthesia — to the native Alaskan population in rural communities.[1,2] In May 2009, Minnesota authorized the training of dental therapists to provide oral health care in underserved areas in the state.[3] And in November of the same year, the Connecticut Dental Association's House of Delegates voted to endorse a pilot project for a two-year training program for dental therapists to work in a public setting.[4] In what appears to be a developing trend, a number of dental associations, including the California Dental Association, are reviewing the potential dental therapists have to address the problem of access to care in the United States.

Until recently, many dentists and dental hygienists in the United States were unaware that dental therapists are utilized in at least 53 countries throughout the world.[5] Many dentists question the need for dental therapists or reject the concept as a threat to their profession and their livelihood. A review of the development and acceptance of dental therapists in other countries can be helpful in understanding the positive benefit that the adoption of dental therapists in the United States can have for the profession and society.

Origins

The development of dental therapists began in New Zealand with recognition of the high rejection rate for military service of its young men and women during World War I due to severe, rampant dental disease. With only 100 dentists for a population of 1.2 million, a ratio of 1:12,000, the impossibility of bringing

dental care to so many people without the introduction of a new auxiliary was recognized. The first training school for dental nurses, specifically for children's dental care, was established in 1920 by the New Zealand Department of Health. Until recently, employment of all dental nurses, now called dental therapists, was restricted to a school dental service, with assignment to small clinics located on public school grounds, supervised by Department of Health dentists. Dental nurses provided care to children, including preschoolers, only to age 12, after which adolescents aged 13 to 16 received care from private practicing dentists paid for by the government. Participation in the program was voluntary, requiring parental permission. By the 1970s, more than 60 percent of preschoolers and 95 percent of schoolchildren were enrolled in the program, with permanent tooth loss virtually eliminated, long before the advent of water fluoridation.[6]

Expansion

Other countries faced with similar widespread dental disease and a shortage of dentists soon adopted the New Zealand dental nurse model. Initially, their dental nurses/therapists were trained in New Zealand. Many countries now have their own training schools.

It is not only "underdeveloped" nations that utilize dental nurses. With respect to provision of oral health care to their entire populations, most nations are underdeveloped. Thus, countries similar to the United States such as Australia, Canada, and Great Britain have well-established dental therapist programs that are widely accepted by the public.

Counting only those trained on the New Zealand model, there are more than 14,000 dental therapists presently deployed worldwide.[5] However, China has an estimated 25,000 "assistant dentists" who are very similar to dental therapists in training. They practice independently in rural areas.

Supervision and Quality of Care

The quality of care provided by dental therapists has been thoroughly investigated. Beginning in the 1950s and to the present, these studies have shown that dental therapists maintain technical standards equivalent to dentists.[7-17]

COUNTRIES THAT PERMIT dental therapists to practice independently usually require consultative collaboration with a supervising dentist.

Important aspects of their training are an understanding of their limitations, their parameters of care, and their need to work in close association and consultation with dentists. Countries that permit dental therapists to practice independently usually require consultative collaboration with a supervising dentist.

From a public health perspective, few countries have achieved, much less exceeded, the success of New Zealand where virtually all children are enrolled in the school dental program. Malaysia is one of these countries where 96 percent of elementary and 67 percent of secondary school children are seen by school dental nurses, as they are still called there.[18] As in New Zealand, the dental nurses also provide care for preschool children brought to the school clinics by their parents. It is likely that other countries with an expanding dental therapist workforce will achieve these high utilization rates, which are the sine qua non of a successful oral health care program.

Current Trends

New Zealand

More than 95 percent of children under age 13 and 56 percent of preschoolers continue to receive preventive and curative oral health care by dental therapists in the School Dental Service and there is virtually no untreated dental caries by the end of the school year. This extraordinary achievement is accomplished by providing service directly on the school grounds in either fixed dental facilities or mobile units. Because many schools, particularly those in remote rural communities do not need a full-time dental therapist on site, and rather than replace aging on-site clinics and equipment, the trend is toward greater utilization of mobile units and community health ("hub") centers that promote a team approach to health care.[19]

Adolescents aged 13 to 18 are eligible for care from private practitioners paid by the Government Adolescent Oral Health Services at no cost to the patient. But only about 54 percent of adolescents access private dentists, significantly fewer than when services are provided directly at school.

As a consequence of the reduction in caries from water fluoridation, the number of dental therapists declined from 1,350 in the 1970s to about 660 today. By 1999, the three regional schools were closed as training of dental therapists was transferred to the University of Otago School of Dentistry in Dunedin. Three years later, a second dental therapist program was begun at the Auckland University of Technol-

ogy. By 2007, each school had merged the dental therapist and dental hygiene programs into one three-year program, with a bachelor of oral health degree. After graduation, registration is required to designate the area of practice, which may be in only one discipline or both. Those credentialed in general dental therapy practice are allowed to treat patients to age 18. Oral health therapists could qualify to treat adults with additional training, but thus far no courses are available for this purpose. There are no treatment age limits if credentialed in general dental hygiene practice.[19]

As a point of historical interest, dental hygienists were employed by the military as early as 1974, but training of dental hygienists for the general public did not begin until 1994 due to opposition of the dental profession, which had long since accepted dental therapists. There are presently fewer than 250 dental hygienists in New Zealand, but they are rapidly gaining in numbers and acceptance by dentists, particularly with the development of the combined dental hygiene/therapist program.

Since 2003, oral health therapists are permitted to work in the private sector where they may be employed by dentists to care for their adolescent patients.[20,21] However, the majority continue to provide dental therapy in the School Dental Service. Dental therapists may also own their own practice, with the requirement of a supervisory contract with a dentist, but few, if any, have done so. In a 2008 survey, almost 60 percent of dentists in private practice said they would be willing to employ a dual-trained therapist/hygienist.[22]

With the increase in population and the decline of the existing workforce due to retirement, a shortage of dental therapists is anticipated in the future. But from the standpoint of the newly emerging oral health therapists, the future in New Zealand is positive.

Australia

From the time of its inception in 1966 until 2000, dental therapists in Australia were generally restricted to practice only in the School Dental Services, where the large majority of dental care for children is still provided in fixed and mobile dental clinics. As of 2003, 87 percent of all dental therapists were employed at least part time in the schools.[23]

In one state, Western Australia, dental therapists have always worked in private practices as well as public service; since 1983, they have been able to treat adults as prescribed by dentists. Although required to have some dental hygiene skills, they do not qualify nor can they register as hygienists since their dental hygiene training is limited to a six-week to 12-week course. Dental therapists in the public sector are restricted to children and adolescents up to age 18. They do not require diagnostic prescription by dentists. All but one state, New South Wales, have now eliminated employment restrictions so that many more dental therapists work, at least part time, in private dental offices and in community and hospital clinics where they are also permitted to treat adults.[24]

Originally designed as two-year certificate or diploma programs in nonuniversity dental therapy schools restricted to females, a number of universities now offer a three-year "oral health therapist" program that combines traditional dental therapy and dental hygiene, as in New Zealand. The oral health therapists will trend more toward private practice where their periodontal therapy skills have more applicability. The number of dental therapists working in private practice has doubled since 2003. However, most continue to work in both the public and private sector, many part time. "Part-time work is reflective of the majority female workforce and equates with other similar health disciplines including dental hygiene and nursing."[25]

How this will affect the School Dental Services and oral health care for children remains to be seen, but it is likely that many, if not most, dental therapists will continue, at least part time, in the School Dental Service.

Great Britain

The first dental therapist school was opened in the United Kingdom in 1959, patterned after the New Zealand model. There are now 17 schools that provide dual qualification in dental therapy and dental hygiene, with approximately 240 therapists/hygienists graduating each year. The diploma courses for both dental hygiene and dental therapy are 27 months in length, compared to three years to obtain a BSc degree in oral health sciences. One school provides for dental hygienists to qualify as dental therapists by completing a three-day a week, 36-week course.[26]

IN A 2008 SURVEY, almost 60 percent of dentists in private practice said they would be willing to employ a dual-trained therapist/hygienist.

The trend toward dual qualification was stimulated by a shortage of dental therapist positions in governmental and hospital services; whereas, there were more job opportunities for dental hygienists who had long been employed in private general dental practices. Thus, many unemployed dental therapists acquired additional training as dental hygienists, which eventually led to the dual-training programs. In 2002, the governing General Dental Council granted permission for dental therapists to work in private dental practice. However, many dual-trained dental therapists still work as dental hygienists, although there is increasing recognition and utilization of their combined skills, particularly since more dentists are now trained alongside dental therapists in the same university programs.

Though accustomed to dental hygienists, the public is generally unaware of the role of dental therapists, which makes it difficult to obtain consent to their care. Even after the qualifications of dental therapists were explained in recent surveys, only 61 percent of adults would accept treatment from them. On the other hand, a recent survey reported that those patients receiving care from dental therapists expressed a higher degree of satisfaction than patients treated by dentists.[27] For dental therapists to be more widely accepted as oral health care providers in private practice, the public needs to be better informed and reassured of their qualifications and competence.[28-30]

There has been a remarkable shift in employment, with 50 percent of dental therapists now in private dental practices, compared to none six years ago. Slightly more than half work part time, averaging about 25 hours a week.[31] Nearly two-thirds work in multiple locations and are paid an hourly rate or a monthly salary and one-third are self-employed.[32] They treat both children and adults. It is estimated that therapists have the potential to provide the treatment in 35 percent of dental visits and 43 percent of clinical time.[33] Wherever they practice, a written treatment plan must first be developed by a registered dentist, after which they can implement treatment independently, based on their own judg-

ment of priorities and techniques. The treatment plan may be very detailed, or just state "restore."[34] Many therapists are concerned that dentists do not fully appreciate their clinical skills, that they are not being fully utilized, and that more patients could be referred to them.[35] However, their employment by dentists is still limited because the National Health Service, under which most dental care is provided, does not yet pay for treatment by dental therapists in private practice. The NHS contract is being revised and it is hoped that treatment by dental therapists in all settings will soon be covered.[30]

Fiji

The Republic of Fiji was established in 1970 after being granted independence by Great Britain and its territory includes more than 322 islands in the southwest Pacific, east of Australia and north of New Zealand. Only a third of the islands are occupied by its population of a little more than 900,000.

In 1998, the Fiji School of Medicine, Department of Oral Health, established a "multientry, multiexit" career "Dental Ladder."[36] This modular approach to dental education takes full advantage of work experience. In most other countries, including the United States, many dental assistants become dental hygienists and a few dental hygienists go on to become dentists, but there is virtually no credit allowed for previous experience or training, particularly for hygienists. The Fiji program allows full credit so that it requires only a second year of training after the first year of introductory dental assisting courses to be certified as a dental hygienist; a third year leads to a diploma in dental therapy; two additional years, for a total of five, qualifies for a bachelor of dental surgery (BDS), the equivalent of a DDS/DMD in the United States.

Fiji's career Dental Ladder is not limited to its territorial sovereignty. Since its begin-

ning 11 years ago, 16 dental therapists from other areas stepped up the ladder to become dentists: American Samoa (2); Kirbati (2); Nepal (1); Papua New Guinea (4); Samoa (1); Solomon Islands (4); Tonga (1); and Vanuatu (1). In addition, 14 dental hygienists have advanced to become dental therapists.[37]

At present, there are approximately 100 dentists for a dentist/population ratio of 1:9,000 and more than 70 dental therapists. Entry up the ladder is determined by the needs and availability of funds as assessed by the Ministry of Health. There is only one oral surgeon, so general dentists are trained not only to extract teeth, but also to reduce and wire mandibular fractures. In addition to preventive and restorative services, dental therapists perform extractions on both adults and children, which, unfortunately, is a much needed service particularly in the outer island villages that are unlikely to have more than an annual visit by a dentist.[36]

Canada

From a high of 365 in 1990, there are presently 280-300 dental therapists serving in governmental, nongovernmental, territorial, and aboriginal organizations. Of these, 128 (or 45 percent) are in private practice; 105 in the province of Saskatchewan.[38]

The Saskatchewan Dental Health Plan was remarkably successful. By the mid-1980s, with a staff of 400, including about 26 dentists and 150 dental therapists and their assistants, more than 80 percent of school children received annual examinations, preventive, and restorative treatment in school and community clinics. Yet, by 1992, after years of declining financial support, the school program was eliminated. Oral health care for school children is now completely in the hands of the private dental sector with a sharp decline in utilization and consequent increase in untreated dental disease.[5]

Despite the negative impact of conservative governments, fiscal restraints and professional opposition, the dental therapists have survived in many parts of Canada, particularly in Saskatchewan, Manitoba, and the Northwest Territories. Indeed, dental therapists in Saskatchewan, who number more than 200, are unique in that they are a self-regulating profession, licensed by the Saskatchewan Dental Therapists Association.[39] Nonetheless, they are required to have a formal referral or consulting relationship with a dentist, whether as an employee in a governmental organization, a community health center, or a private practice. That they have been so well-incorporated in the private sector by dentists, as well as continuing to serve in the public sector, should allay concerns that they are competitors with dentists rather than colleagues on the dental team.

THERE IS ONLY ONE oral surgeon, so general dentists are trained not only to extract teeth, but also to reduce and wire mandibular fractures.

The Netherlands

Although specific to the Netherlands, the following quotation summarizes the impetus for change in the character and delivery of oral health care, "A number of factors, including rising expectations for the quality of life in modern society, the related need for medical care and an increase in the volume of knowledge available, have produced pressures for more knowledgeable and skillful health professionals, including dental hygienists. Dental awareness in the general population has grown. Patients have become more assertive and, with increased possibilities to obtain information (e.g., Internet), demand different kind of treatments. They are also more oriented toward preventive health care, including preventive oral health care. The aging population is increasingly retaining teeth and needs more, and often more complex, care than the previous elderly generation who were often edentulous."[40]

Beginning in 2002, the Netherlands began a major transformation of its dental profession. There are no longer dental therapists and dental hygienists, but rather a combination of the two that retains the name "dental hygienist." The "new-style dental hygienist" provides the basic preventive and periodontal services of the traditional dental hygienist, plus the basic restorative treatment and noncomplex extractions of the dental therapist. The university training has been increased from three to four years, culminating in a bachelor's degree.[40]

Competing with the dental hygienist is the "prevention assistant," a trained dental assistant who receives further training in an eight-day course developed by the Dutch Dental Association. Employed by dentists, prevention assistants do prophylaxis including supragingival scaling and fluoride applications. Because they are paid less, many dentists prefer them to dental hygienists. Nonetheless, most dental hygienists, approximately 1,500 (or 65 percent), are traditional hygienists in association with or employees of private dentists. About 800 (or 35 percent) work as private entrepreneurs.[41]

In consideration of changing demographics, particularly the aging of the population, the "new-style dentists" are to be the oral physicians of the future, with their

training increased from five years to six. Ideally, their practice will be devoted more toward the medically compromised and elderly populations that require greater knowledge, skills, and experience, while the new-style dental hygienists provide routine oral health care for the younger, healthier population.

It should be noted that although the Dutch dental profession opposed this transformation, it was enabled by the support of other professional organizations, educational institutions, consumer organizations, and the health insurance industry. There are as yet too few new-style practitioners to assess their impact on dentistry and the acceptance by the public.

Summary

Advocates of dental therapists believe their addition to the oral health workforce in the United States will enhance the profession. Not only do dental therapists provide necessary care to underserved populations, they have the potential to enable dentists to practice at a higher level of proficiency and efficiency. Far from being a novelty, this brief review of the long history of dental therapists and their current status in five representative countries demonstrates their remarkable contribution to the oral health of their recipient populations and ultimate acceptance by private dental practitioners and their representative associations. ■■■■

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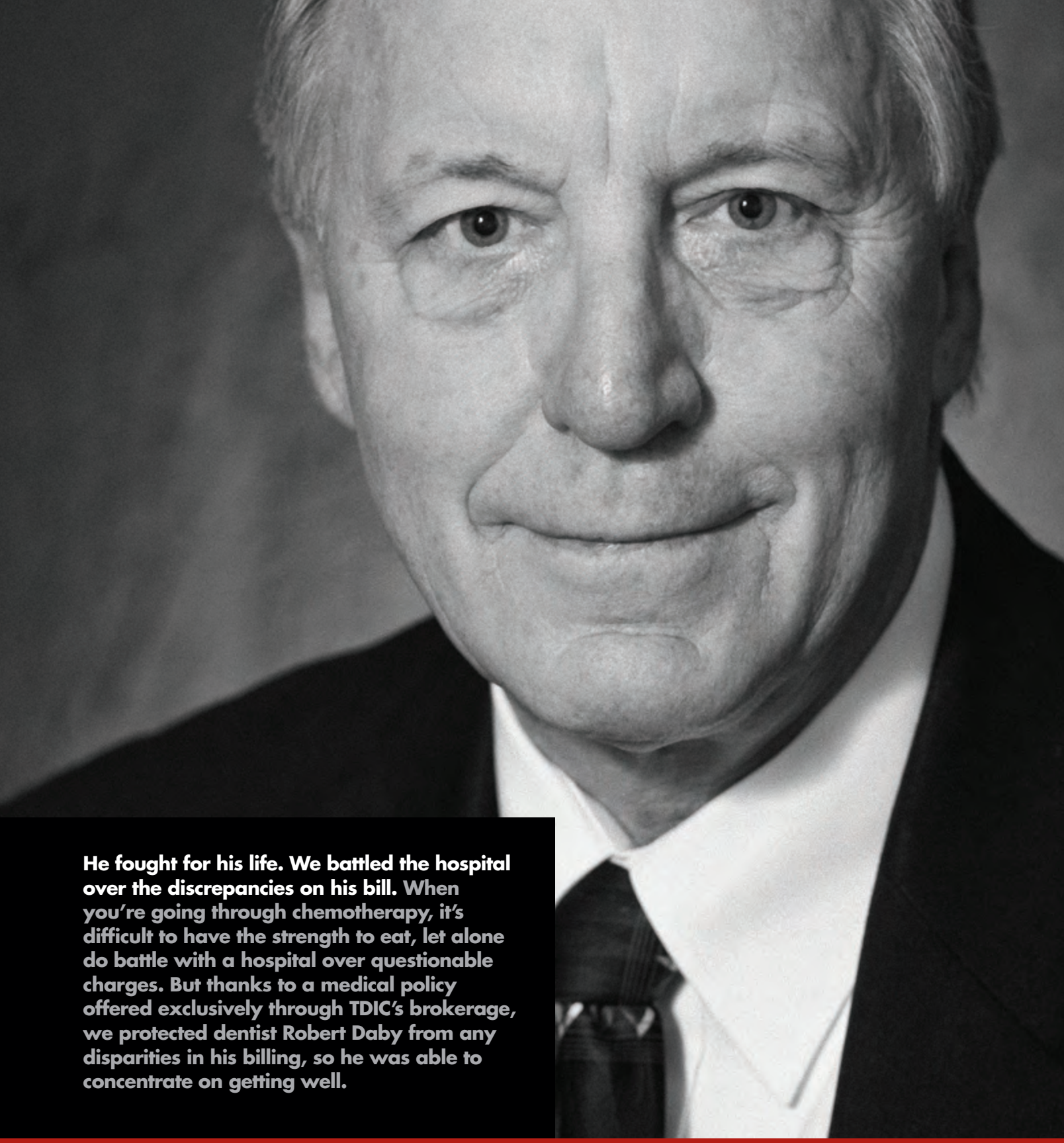

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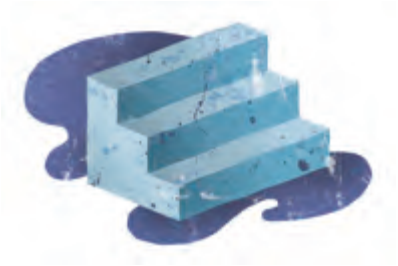

The Development and Implementation of Dental Health Aide Therapists in Alaska

RON J. NAGEL, DDS, MPH

ABSTRACT Alaska natives are disproportionately affected by oral disease in comparison to the general American population and have limited access to care. This paper discusses the development and implementation of the dental health aide therapist by the Alaska Native Tribal Health Consortium. This dental therapist can effectively extend the ability of dentists to provide for those not receiving care in the remote villages of rural Alaska, helping address oral health disparities existing among Alaska natives.

AUTHOR

Ron J. Nagel, DDS, MPH, retired from the United States Public Health Service Commission Corps after 21 years of service. In 2000, he helped develop and introduce dental therapists as one of four new oral health workforce models for rural Alaska.

The American Indian/Alaska native (AI/AN) population has the highest rate of dental caries of any population cohort in the United States, five times the U.S. average for children 2 to 4 years of age.[1] Seventy-nine percent of AI/AN children, age 2-5, have tooth decay, with 60 percent of these children having severe early childhood caries. Eighty-seven percent of these children, age 6-14, have a history of decay, twice the rate of dental caries experience for the general population. Ninety-one percent of AI/adolescents, age 15-19, have caries. Sixty-eight percent of AI/AN children have untreated dental caries. One-third of schoolchildren report missing school because of dental pain and 25 percent report avoiding laughing or smiling because of the appearance of their teeth. This prevalence of caries infection exists in spite of the implementation of significant public health programs of decay prevention by the Indian Health Service (IHS) and tribes, including the fluoridation of water systems suitable for fluoridation; the use of topical fluorides and dental sealants; and educational programs for children and parents on oral health.

Lack of access to professional dental care is a significant contributor to the disparities in oral health that exist in the AI/AN population. Two major factors contribute to inadequate access to care: the relative geographic isolation of tribal populations, particularly in Alaska, and the inability to attract and retain dentists to practice in tribal health facilities in rural areas.[2]

Alaska offers a specific example of the geographic problem of providing access to care. There are 130,000

Alaska natives in the state, with approximately 85,000 of these individuals living in the 200 villages that make up rural Alaska. A majority of these villages are not connected to the rest of the state by roads, thus requiring travel by air or water. While village clinics provide essential medical care, in many instances, villagers must travel hundreds of miles by bush plane or boat to obtain dental care.

In spite of intense recruitment efforts and significant financial incentives, the IHS and the tribes continue to experience great difficulty in attracting dentists nationally. Approximately one-fourth of the dentist positions at 269 IHS and tribal health facilities were vacant in 2007.[3] There is one dentist for every 2,800 individuals in the IHS and tribal health clinics compared with one dentist for every 1,500 individuals in the general U.S. population.1 Historically, Alaska's tribal programs have had a 25 percent vacancy rate for dentists and a 30 percent average annual turnover rate.

Expanding the Dental Workforce

The potential to reach more AI/AN children with needed oral health care can be significantly improved by expanding the number of individuals capable of providing care. While physician's assistants and nurse practitioners are commonly employed physician-extenders, the only comparable dentist-extender is the dental hygienist, who deals primarily with issues of periodontal health for adults, and generally is able to work only under direct supervision of a dentist. There has been ongoing interest in increasing the number and expanding the scope of existing workforce models. An American Dental Association task force, in 1995, recommended a significant expansion of the dental team in order to meet the emerging crisis in the workforce.[4] The editor of the *Journal of the American Dental Association* called for an expansion of allied dental personnel and their duties as the preferable alternative to increasing the number of dentists being educated in our dental schools.[5] Several leaders in dental practice and education have echoed his call.[6,7] Adding a new model, such as dental therapists, could be particularly beneficial to increasing access to care for populations who currently do not have good access in the current system.

WHILE VILLAGE CLINICS provide essential medical care, in many instances, villagers must travel hundreds of miles by bush plane or boat to obtain dental care.

The New Zealand school dental nurse, now called a dental therapist, has served as a prototype for adding such a member to the dental team in many countries throughout the world. New Zealand's dental therapist curriculum model has been a two-year postsecondary training program of approximately 2,400 hours with more than 25 percent of the time devoted to the clinical care of children.[8,9] School dental nurses have provided comprehensive primary care for children in the schools of New Zealand since 1921, and 52 countries document some variant of a dental therapist.[10] The typical justification for developing and deploying dental therapists in these countries has been an inadequacy of the dental workforce, adversely affecting access to oral health care.[11] Of particular relevance to workforce issues for Alaska's native population is the success of Health Canada caring for its "First Nation" people since 1972 utilizing the model of international dental therapist.[12-14] An important lesson from the Canadian program is that the success of any new model depends on adequate funding, good policy, and support. The system of care requires at least as much attention as the workforce model deployed to work within it.[15]

There have been two previous attempts to introduce dental therapists into the United States. The first attempt occurred in 1949 when Massachusetts passed state legislation authorizing a two-year training program for nondentists to prepare and restore teeth under the supervision of a dentist. The program was to have been funded by the U.S. Children's Bureau to the Forsyth Dental Infirmary for Children. However, the American Dental Association's (ADA) House of Delegates passed a resolution opposing the program, and the Massachusetts governor rescinded the enabling legislation in July 1950.[5-6]

The second attempt to introduce dental therapists into the workforce occurred in 1972. J.L. Ingle, then-dean of the School of Dentistry at the University of Southern California, and J.W. Friedman proposed the use of school dental nurses, based on the New Zealand model, to address the issue of untreated caries in school children.[7-8] The then two California dental associations objected strongly to the proposal, which contributed to the U.S. Public Health Service's failure to fund the training grant, and the proposal did not move forward.

Early National Discussions and the Alaska Native Tribal Health Consortium

In 1999, the dental director of the Southeast Alaska Regional Health Consortium developed a white paper delineating the crisis in access to oral health care in the Alaska tribal system. The Alaska Native Tribal Health Consortium (ANTHC) responded by applying for, and winning, an IHS Support Center grant.[16] In November 2000, the author was selected to be the director of this new IHS Support Center with the main focus to be on the development of a unique oral health workforce to meet the needs of Alaska natives.

In early 2001, the IHS was approached by a small group of individuals working with the Forsyth Institute in Boston regarding the IHS' interest in working collaboratively to develop a new oral health care worker modeled after the school dental nurse/therapist of New Zealand.[17] The Forsyth Group was concerned about the ability to develop a therapist in the United States due to restrictive state dental practice acts. However, the tribes and their reservations are sovereign, thus having the ability to pursue the development of such a clinician. Initial inquiries by Forsyth concerning foundation funding for such an initiative were unsuccessful.[18]

Concurrent with these discussions, the ANTHC was beginning the development of dental health aides, under the provisions of the congressionally authorized Alaska Community Health Aide Program (CHAP). The program has existed for more than 40 years and there are more than 550 community aides working in 180 villages, providing culturally sensitive care to fellow villagers. Initially, the dental aide program called for development of a primary dental health aide (PDHA) and an expanded-function dental health aide (EFDHA). The PDHA would function as a community dental educator but also provide preventive services under the general supervision of a dentist. The EFDHA would work under the direct supervision of a dentist and serve as an expanded-function dental assistant. As a result of the discussions with the group from Forsyth, a third level of dental health aide also was conceptualized, the dental health aide therapist (DHAT), that is, a dental therapist following the international model.

This author was the person responsible for working with the ANTHC in Alaska to develop the dental health aide program. He was also involved in the conversations between the leadership of the IHS and the Forsyth Group. Absent foundation funding sought by Forsyth, discussions proceeded within the ANTHC regarding the training of DHATs, and sources of funding for such. The School of Dentistry at the University of Otago in New Zealand agreed to accept Alaska native students into their dental therapy training program. Funding to support training and travel was obtained from the Rasmuson Foundation. In February 2003, six Alaska native students traveled to New Zealand to participate in a two academic year curriculum to be trained as dental therapists. Additional cohorts were sent to study in New Zealand in February 2004 and February 2005.

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American Dental Association Challenges the ANTHC Initiative

The American Dental Association was informed of the Alaska native students studying to become therapists in New Zealand and the intention for them to return to tribal villages to practice. At its October 2003 Annual Session, the ADA House of Delegates passed a resolution calling for a task force to "explore options for delivering high-quality oral health care to Alaska natives."[19] The Alaska Native Oral Health Access Task Force submitted its report to the ADA Board of Trustees in August 2004. Based on the task force's recommendations the board advanced to the House of Delegates at the ADA's October 2004 annual session, a resolution with 14 elements to address access to oral health care for Alaska natives, with two dealing specifically with the advanced-level DHAT: (1) "the ADA work with the ADS [Alaska Dental Society] and tribal leaders to seek federal funding with the goal of placing a dental health aide (i.e., a PDHA) trained to provide oral health education, preventive services and palliative services (except irreversible procedures such as tooth extractions, cavity and stainless-steel crown preparations and pulpotomies) in every Alaska native village that requests an aide" (emphasis added); and (2) "The ADA is opposed to nondentists making diagnoses or performing irreversible procedures." The resolution passed the House of Delegates overwhelmingly on a voice vote.[20]

In November and December 2004, the ADA attempted to amend the Indian Health Care Improvement Act, which was in the process of being reauthorized by the Congress in the closing days of the 108th Congress. This act authorized the development and operation of the Community Health Aide Program, which included dental health aides. House Bill

HR 2440 was amended at mark-up to read, "ensure that no dental health aide is certified under the program to perform treatment of dental caries, pulpotomies, or extractions of teeth."[21] However, the ADA's proposed amendment was not successful.

The ADA and the Alaska Dental Society, along with several private practitioners, filed a lawsuit in January 2006 naming the Alaska tribes and eight of the dental therapists returning from New Zealand, seeking to prohibit the therapists from practicing.[22] In June 2007, Alaska's Superior Court ruled against the plaintiffs and a subsequent settlement agreement was reached.[23] The ADA gave the ANTHC Foundation $537,000, with a stipulation that it would not be used for the DHAT program, and gave the State of Alaska $75,000.

Dental Health Aide Therapists Training Launched in Alaska

In September 2006, the Kellogg Foundation awarded the ANTHC a grant to provide DHAT training in Alaska.[24] To develop this new education program, ANTHC partnered with the University of Washington MEDEX Northwest program. MEDEX is a regional program that began in 1968 to educate physician assistants as part of the University of Washington School of Medicine. ANTHC and MEDEX created the DENTEX Program that brings an interdisciplinary approach to oral health education and a unique opportunity to develop dental therapists who are equipped to fill a distinct public health role. The curriculum is of two academic years, followed by a directly supervised clinical preceptorship.

The new DENTEX curriculum emphasizes competency in oral disease management, behavioral management, and community oral health promotion skills. Patients are motivated to change behavior via interactions they have with their therapist over time.[25,26] To accomplish this, an emphasis is placed on educating therapists who will go on to develop effective relationships.[27] DHATs are recruited from villages where they will return to serve to ensure community and cultural acceptance. The new paradigm places a great emphasis on the students' predicted ability to return to their home region and contribute to the oral health of their communities. The first two cohorts of DENTEX educated dental health aide therapists graduated in December 2008 and December 2009, respectively. Two more cohorts are currently in training. As the program matures, it is expected that students will pay tuition, and the training program will be sustainable as a viable health career. Medicaid reimbursement for DHAT services enables tribes to continue to place DHAT where they are needed most.

THE NEW PARADIGM places a great emphasis on the students' predicted ability to return to their home region and contribute to the oral health of their communities.

The federal CHAP Certification Board certifies DHATs in Alaska. This process is a competency-based certification and differs in important ways from licensure. DHAT skills are evaluated over time, it is not a single-event test. Supervising dentists directly supervise a specified number of services provided by the DHAT during the course of patient treatment. This typically takes place during the 400-hour clinical preceptorship. Once these skills have been demonstrated consistently to the satisfaction of the supervising dentist, the DHAT may apply for certification. This process is repeated every two years to ensure continuing competency and account for any changes in a therapist's skill level.[28] This ongoing skills evaluation yields good predictive validity so that supervising dentists have a clear working knowledge of the skills of each therapist. In addition to certification, each therapist operates under a set of individualized standing orders that are developed by the supervising dentist to delineate the scope of the therapist's practice. Standing orders allow the supervising dentist to control the scope of practice of each therapist and account for variation between skill levels from one therapist to another. Continuing education can then be planned for each DHAT to build on any skill set. Each therapist must participate in a minimum of 24 hours of appropriate continuing education every two years. The system provides supervising dentists with the administrative controls to ensure a high quality delivery model and the flexibility to deploy therapists in a variety of settings.

DHATs operate in a "dependent practice." This means that they are part of a system of supervised care. The goal is to ensure that each patient receives a singular high standard of services, regardless of who provides the care. To accomplish this, supervising dentists must provide clinical guidance, and the therapist must obtain appropriate patient consultations and referrals. Policies defining this process can be developed to fit the needs of any particular health system.[29]

Fiset evaluated the Alaskan dental therapists in September 2005 and commented, "I have evaluated the clinical

performance of four dental therapists who have been providing primary care for Alaska natives since the beginning of 2005. Their patient management skills surpass the standard of care. They know the limits of their scope of practice and at no time demonstrated any willingness to exceed them. I believe that the program deserves not only to continue but to expand." He concluded that they were "competent providers."[30] In August 2006, Bolin reviewed the records of 640 dental procedures performed for 406 patients. No significant evidence was found to indicate that irreversible dental treatment provided by DHATs differs from similar treatment provided by dentists.[31] Since there was a limited sample size available to review at the time; Bolin recommended further studies to determine long-term effects of the use of DHATs as part of a dental team.

RTI International was awarded a $1.6 million-dollar contract in July 2008 by the W.K. Kellogg Foundation, in partnership with others, to conduct a two-year evaluation of the implementation of the DHAT program. Results from this study are now available.[32]

Conclusion

The Alaska Tribal Health Consortium, with the cooperation of the IHS, and supported by a number of philanthropic foundations, has provided leadership for demonstrating that the international model of developing and deploying dental therapists can be utilized in the United States to improve access to care for native Alaskans, and, as a consequence, has had a significant impact on reducing oral health disparities and improving oral health. The effort offers a model for incorporating dental therapists as members of the dental team in other states and settings. ■■■■

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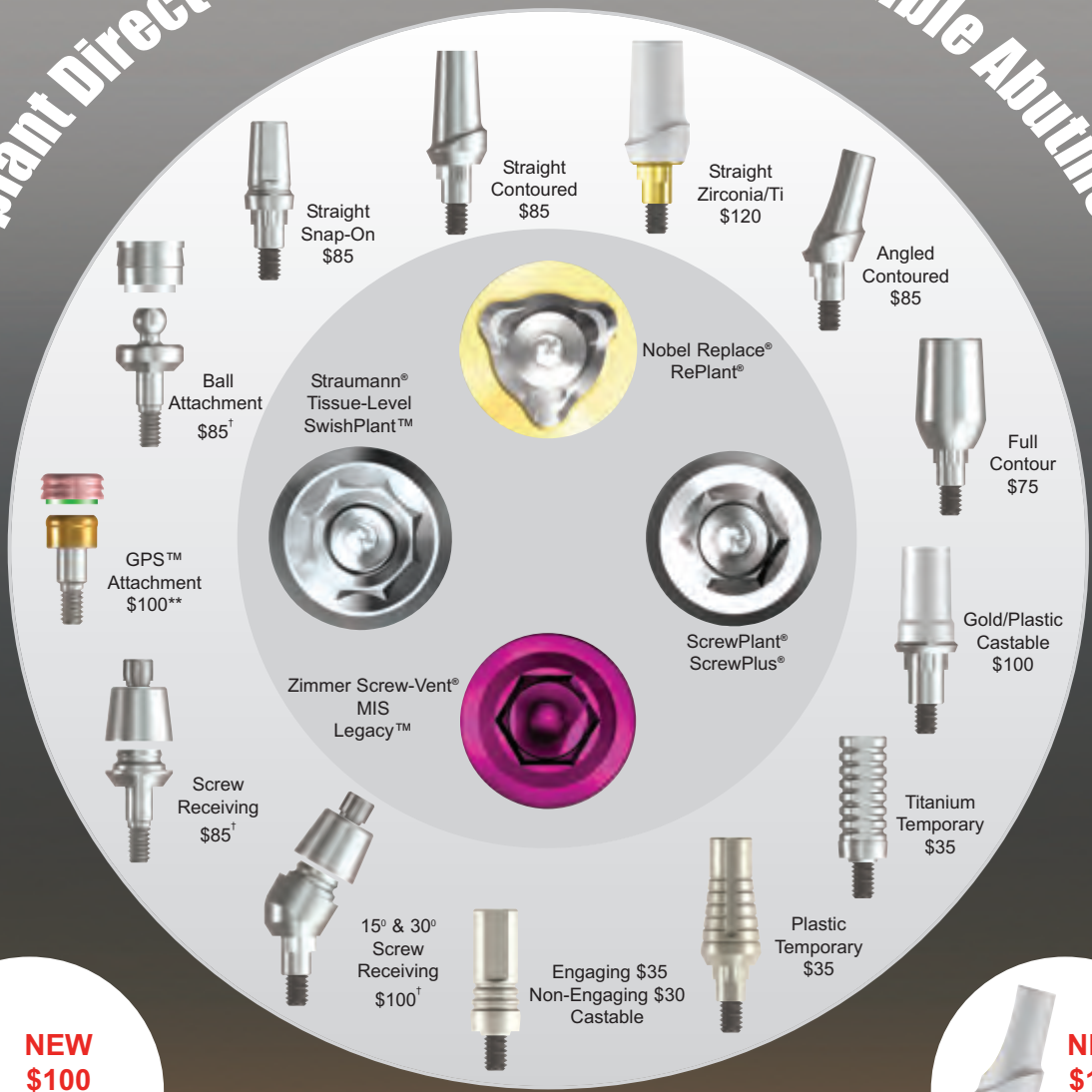

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Alternative Practice Dental Hygiene in California: Past, Present, and Future

ELIZABETH MERTZ, PHD, MA, AND PAUL GLASSMAN, DDS, MS, MBA

ABSTRACT This study examines the development of the registered dental hygienist in alternative practice in California through an analysis of archival documents, stakeholder interviews, and two surveys of the registered dental hygienist in alternative practice. Designing, testing and implementing a new practice model for dental hygienists took 23 years. Today, registered dental hygienists in alternative practice have developed viable alternative methods for delivering preventive oral health care services in a range of settings with patients who often have no other source of access to care.

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Oral health is an important component of people's overall health and well-being.[1] Yet a significant percentage of the population does not have access to affordable and quality dental care services. In California, it is estimated that nearly one-third of young children 11 years old or younger have never visited a dental provider nor have not visited a dental provider in more than one year.[2] Dental insurance is less available than medical insurance, and care is often difficult to get even for the insured, particularly those with public insurance.[3] The burden of oral disease is disproportionately born by lower-income and rural populations, racial and ethnic minorities, medically compromised or disabled populations, and, increasingly, young children.[4]

Lack of access to dental care and oral health disparities are two of the most significant policy issues facing the field of dentistry today. After decades of struggling with these issues, policymakers and the professions are considering workforce redesign as a primary strategy for improving access to care with the hope that workforce innovations may reduce disparities in both utilization and oral health outcomes.[5] This strategy is regarded by some as a radical move away from the traditional organization of dental services. Yet, for the past 30 years, ongoing efforts have been underway to reconfigure the dental workforce in California. Future efforts will benefit from lessons learned about what is effective, both politically and in practice, and from knowledge about existing infrastructure and policy.

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The dental workforce in the United States is made up primarily of dentists, dental specialists, dental hygienists, and dental assistants. This core array of providers has existed since early in the 20th century, yet, underneath the consistency of these broad categories, lies ever-shifting trends in training, scope of practice, and care delivery settings. Each provider type has evolved over time, and together dental providers have developed practices that span a wide number of arrangements. Each configuration of care can be considered a "practice model" made up of and dependent upon a number of factors including; financing, regulation, population needs and demographics, local economies, public health capacity, educational systems, and patient demands. The solo private practice of dentistry is the dominant, but certainly not the only, practice model for delivering oral health care services. This article describes a new and evolving practice model for delivering preventive dental care, the alternative practice of dental hygiene in California.

Background

A large body of literature exists that tracks the supply, demand, and distribution of the dental workforce over time. For example, the American Dental Association reports on the private practice of dentistry annually and outlines the dimensions of this traditional practice model each year.[6] Recent studies in California concerned with workforce shortages and the educational pipeline have examined the dental hygiene and dental assisting workforce.[7,8] Finally, literature on new workforce models in dental care is now available, although studies of various pilot projects date back to the 1960s and 1970s.[9-11] These workforce studies share a focus on a number of important factors including overall trends, changes in educational requirements and scope of practice, quality of care, and the economics of the labor force. However, very few studies document changes in access to care over time as the result of the implementation of a new model of care delivery.

This paper explores the impact of a new practice model on access to care through an examination of the history, evolution, and current practice of alternative practice dental hygiene in California. The data for this study comes from a number of sources. Archival documents and dental and dental hygiene association literature inform the historical analysis. The evolution over time of this new model is documented in two surveys of the hygiene workforce, conducted in 2005/2006 and in 2009 at the University of California, San Francisco. An understanding of the current and future issues facing practitioners working in this new practice model comes from a qualitative study of RDHAPs and related stakeholders conducted by the authors in 2007. These data represents a comprehensive set of perspectives on the alternative practice hygiene.

EACH PROVIDER TYPE has evolved over time, and together dental providers have developed practices that span a wide number of arrangements.

History of Alternative Practice Hygiene

The movement that led to the current provider classification of the registered dental hygienist in alternative practice (RDHAP) was begun within the Southern California Dental Hygienists' Association in the late 1970s. At that time, there was much experimentation with the education and scope of practice for dental auxiliary personnel across the country, primarily to expand the capacity and efficiency of the dental office. The Robert Wood Johnson Foundation and the W. K. Kellogg Foundation both invested in "dental nurse" pilot programs in the early 1970s. At this time a new approach, the training expanded auxiliary management (TEAM) model was developed whereby educational institutions taught a team approach to dentistry, including the training and management of dental auxiliaries in extended functions.[12]

In California, this and a number of other workforce pilot projects were made possible by the 1972 passage of AB1503 (Duffy) that enacted the Health Manpower Pilot Project Act (HMPP) into the Health and Safety Code.[13] Now called the Health Workforce Pilot Project (HWPP) program, it allows for demonstration of the effectiveness and safety of new or expanded roles for health care professionals through a formal pilot project involving didactic and clinical training, as well as a period of utilization in the work setting. The results of the pilots can be used to inform the Legislature when deciding on new laws that seek to change professional practice laws and licensure board rules. The HWPP program has been used extensively in California for various health professions, most notably in nursing and dentistry.[13]

In the first decade of the HMPP (1972-1982), there were 27 dental auxiliary pilots proposed. Twenty-one were completed, three were denied, and three were withdrawn due to lack of funding.[13] Almost all of the projects were undertaken by faculty at the state's dental schools or community colleges. The pilot projects impacted dental auxiliary regulation. For example, in 1976 the Board of Dental Examiners (BDE) adopted regulations

allowing auxiliaries trained in the pilot programs to practice extended functions (advanced procedures not formerly in their scope of practice). In 1981, the accreditation laws were changed to allow for educational preparation of expanded-duty dental assistants (EDDAs), and by 1984, a number of educational programs for teaching expanded duties to dental assistants and hygienists were in place.[13]

In 1981, a group of dental hygienists and educators proposed a HMPP project focused on determining if the independent practice of dental hygiene could be safe, effective, economically viable, and acceptable to the public. The application was approved by the Office of Statewide Health Policy and Development and HMPP No. 139 was officially launched in 1986. The project required 118 hours of classroom training in management and business, as well as an update on dental hygiene procedures and practices, 300 hours of a supervised residency, and, finally, 52 hours of in-service management practice.[14] The final employment phase was meant to test and evaluate the concept of independent practice in a variety of settings. About 60 hygienists applied for the course. Two classes were trained with 18 participants in 1986 and 16 participants in 1987.[15] Ultimately, 16 of the 34 participants went on to operate independent practices.[14]

The HMPP evaluation was done by a team consisting of two dentists responsible for on-site quality assurance, a dental hygiene educator, a dental school faculty member, and a health economist who managed and published the full HMPP No. 139 evaluation.[15] A short history of the demonstration project documenting the trainee selection, training phases, site selection, monitoring services provided, payment sources, media coverage, and legal challenges to the demonstration project has been published elsewhere.[14]

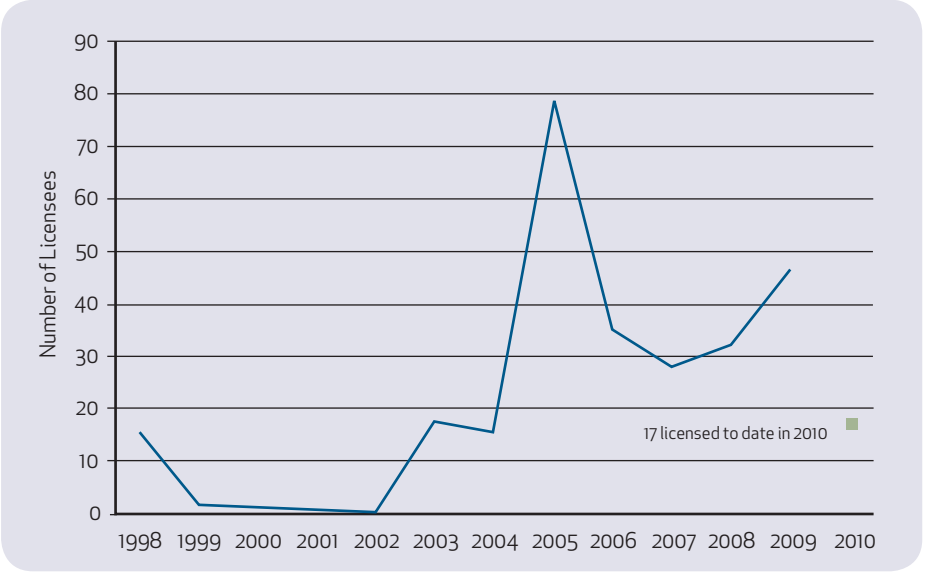

FIGURE 1. Distribution of currently active RDHAP licenses by year granted in California, 2005. Data point for 2010 only represents licenses awarded up until May. The HMPP pilot participants became eligible for licensure when the law went into effect in 1998; however, no formal education was available until 2003, hence the lack of licensees between 2000-2002. Data provided by the California Dental Hygiene Committee, April 2010.

The following were the HMPP's evaluation conclusions:

- Independent practice by dental hygienists provided access to dental care, satisfied customers, and encouraged visits to the dentist.[16]
- The HMPP No. 139 practices consistently attracted new patients, charged lower fees, and preventive services were more available to Medicaid patients than they would be in a dental office.[17]
- The demonstration project produced outcomes in both structural and process aspects of care that in many cases surpassed those available in dental offices in quality, achieved high patient satisfaction, and showed no increased risk to the health and safety of the public.[18]

HMPP No. 139 was surrounded by a highly politicized and contentious process that created an unproductive divide between the dental and dental hygiene associations in the state. The final legislation that passed, AB 560 (Rosenthal/Perata) was co-sponsored and passed by a 77-0 margin. It represented a compromise between the various constituencies' positions on independent dental hygiene practice. While differences of opinion about the RDHAP still exist, both the dental and dental hygiene associations have expressed formal support of RDHAP providers and a commitment to collaborating to ensure access to high quality dental care for patients.

Registered Dental Hygienists in Alternative Practice (RDHAP)

Today, a dental hygienist licensed in California with a baccalaureate degree (or the equivalent) can, after completing a board-approved continuing education course and passing a state licensure examination, practice independently in underserved settings. These settings are defined as Dental Health Professional Shortage Areas, residences of the homebound, nursing homes, hospitals, residential care facilities, and other public health settings.[19] RDHAPs may independently provide all services that, as an RDH, they are licensed to provide under general supervision. RDHAPs must have a "dentist of record" on file with the Dental Hygiene Committee of California to gain licensure. This documented relationship is for referral, consultation, and emergency services.

RDHAPs can provide dental hygiene services to patients for 18 months without involvement of a dentist or physician. If an RDHAP continues to provide services to that patient he or she is required to obtain written verification that the patient has been examined by a dentist or physician licensed to practice in the state. The verification needs to contain a prescription to continue providing dental hygiene services. That prescription is then valid for two years.[20]

In total, 294 RDHAPs have been licensed. Currently, 287 RDHAPs are actively licensed to practice. **FIGURE 1** shows the number of active licenses by year granted. The 16 pilot participants became eligible for licensure when the law went into effect in 1998. Additional licenses were not granted until after RDHAP education was available in 2003.

RDHAP Education Programs

One provision of the law that established the RDAHP license category was the requirement that candidates for the license complete a 150-hour dental board-approved course. The course must conform to specific educational requirements delineated in the law. There are currently two education programs for RDHAPs in California. In 2003, West Los Angeles College, a community college with a well-established dental hygiene program, opened the first training program. The same year, the California Dental Hygienists Association (CDHA) created a fund and issued a request for proposals to support the development of an online education program. The motivation was to expand the educational opportunity to dental hygienists who could not travel and attend multiple in-person sessions by offering a primarily on-line program that could be completed by hygienists on a flexible schedule and wherever they were located. The Pacific Center for Special Care at the University of the Pacific School of Dentistry (Pacific), now named the Arthur A. Dugoni School of Dentistry responded to the RFP and in 2004 opened the second RDHAP training program in California.

Today, both programs use a combination of in-person and distance education modalities. The Dugoni program has an initial and a final in-person session and the remainder of the program is delivered using Internet-based education. The West Los Angeles College program has four weekends of seminar-style continuing education on campus and the remainder is delivered through distance education. While these two training programs have produced about 250 graduates, it is noteworthy that both programs have had excess capacity since their inception.

The Current Practice of Alternative Dental Hygiene

In line with the theme of this special issue to better understand different workforce models in relation to improving access to care, the following section examines the current state of RDHAP practice along three dimensions. First, who are the individuals who become educated and licensed as RDHAPs and what is the sustainability of this pipeline? Second, what are the dimensions of the RDHAP practice model including what is working and what is not? Finally, what evidence is available regarding patient access to care under this model?

RDHAP Workforce

The practice setting restrictions surrounding RDHAP practice were not a component of the initial HMPP No. 139 pilot project, although access for underserved patients was a pilot project goal. The restrictions were a political compromise that resulted in the mandate that RDHAPs expand dental hygiene care for underserved populations in California. As a result, the individuals attracted to train and become licensed as RDHAPs are experienced, entrepreneurial, and driven by a mission to serve the underserved and improve access to care.

In 2005, a sample survey of RDHs in California provided baseline information on the 119 RDHAP providers who were licensed at the time.[7] The response rate from RDHs to this survey was 73 percent (n=2776) and the response by the subcategory of RDHAPs to this survey was 92 percent (n=110). The study showed the individuals obtaining RDHAP licensure had some unique characteristics in comparison to the broader RDH workforce. The basic demographic

TABLE 1

Demographics and Educational Attainment of Individuals in the Registered Dental Hygiene and Alternative Practice (RDHAP) Workforce in California, 2005

Significant differences are noted at *p<0.05.

Demographics	RDH	RDHAP
Mean age	44.7	46.9
Percent female	97.5%	96.3%
Percent underrepresented minority (black, Hispanic, native American)*	8.5%	21.2%
Children at home (of any age)*	55.5%	41.2%
Can communicate with patients in a language other than English*	26.6%	34.7%
Educational level (highest degree in any field)		
Certificate/associate*	52.2%	29.7%
Baccalaureate*	43.3%	56.4%
Masters/doctoral*	4.5%	13.9%

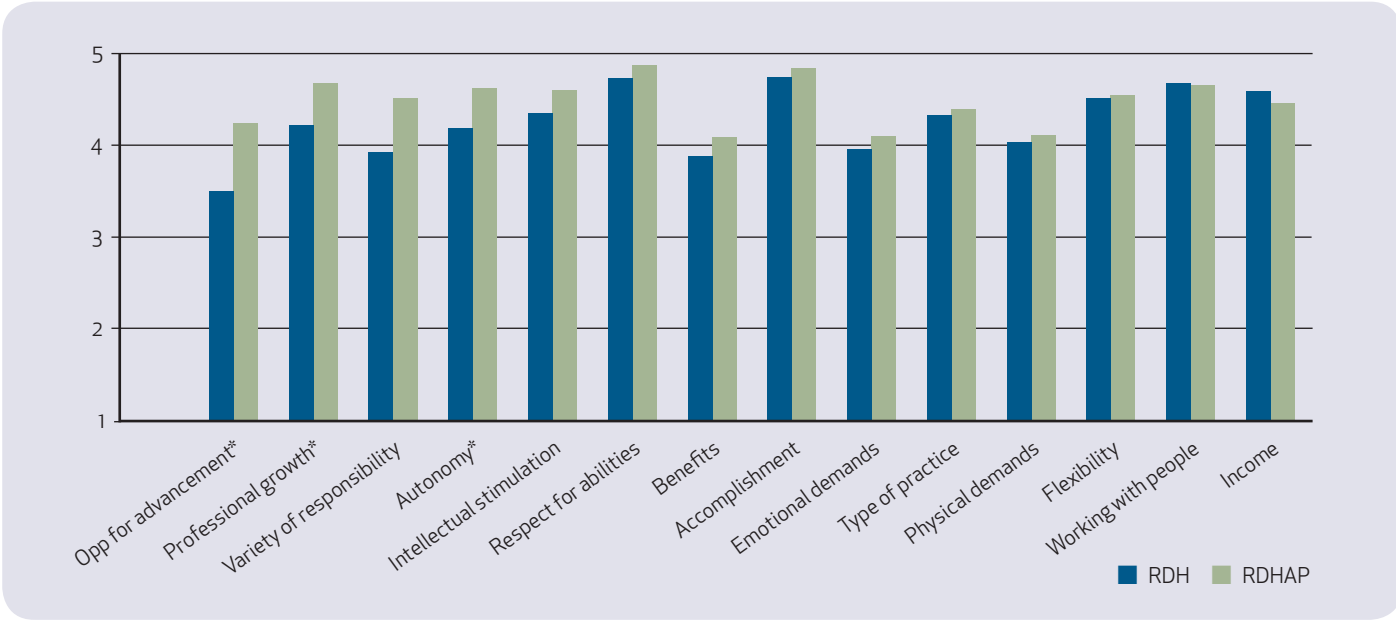

FIGURE 2. Elements that contribute to job satisfaction of RDHs and RDHAPs in California, 2005. Scale is 1-5 with 1=low contribution and 5=high contribution to job satisfaction. Significant differences are noted at *p<0.05.

differences are displayed in **TABLE 1**. RDHAPs were more likely than RDHs to be from an underrepresented minority population (black, Hispanic, native American), were more likely to speak a foreign language, and were less likely to have children living at home. As well, RDHAPs report having attained a higher overall level of education (in any field).

RDHAPs hold differing opinions than RDHs about issues concerning the dental professions, and in elements that contributed to their job satisfaction. These differences are displayed in **FIGURE 2** and **TABLE 2**. The individuals with an RDHAP license were more likely to value opportunities for advancement, growth, responsibility and autonomy than RDHs, although both groups rated these attributes highly. As well, RDHAPs express stronger commitment to underserved patients and communities and improving access to care than do RDHs. Of note however, across the board, is the high percentage of both RDHs and RDHAPs who personally would like to work in different settings, advance their skills, and contribute to improving access to care.

TABLE 2

Professional Opinions of RDHs and RDHAPs in California, 2005

Percent is those who "agreed" or "strongly agreed" with the statement as it relates to them personally. All categories are statistically different at significance of p <0.01.

Opinions on professional issues	RDH	RDHAP
Would like self-employment without supervision	39.1%	95.9%
Would like general supervision only	69.5%	91.8%
Would like prescriptive authority	64.8%	94.9%
Would like to be trained to do restorative procedures	40.1%	70.4%
Is not practicing to full extent of training	34.5%	59.0%
Thinks current environment is good fit for skills	93.9%	87.4%
Would like to work outside dental office	49.8%	95.8%
Would like to be directly reimbursed	28.1%	88.4%
Desires to work with disadvantaged patients	31.9%	88.7%
Desires work with underserved community	30.0%	77.1%
Thinks improving access is important	66.5%	94.9%
Would like to interact with nondental health providers	67.3%	95.8%

RDHAP Practice Activities

The 2005 study showed differences in the practice characteristics of RDHs and RDHAPs. Of the licensed RDHAPs who were practicing, 43.8 percent reported working in a residential care facility, 43.8 percent reported working with homebound patients, 31.5 percent reported working in their own private practice, and 15.1 percent reported working in schools. When comparing RDH and RDHAP practice activities, the authors found a difference between RDHAPs and RDHs in terms of the patient populations, work settings, and hours worked. These differences are displayed in TABLE 3.This data provides the first indication that RDHAP practices were improving access to care, particularly for minority, medically compromised, and disabled populations.

While the baseline survey was informative in understanding the demographics of RDHs who were pursuing RDHAP practice and some general practice differences, it did not allow for a detailed analysis of RDHAP specific activities. In 2009, the authors conducted a follow-up study of RDHAPs to further investigate the practice characteristics of licensed RDHAPs. The 2009 survey received a 74 percent response rate (n=176). Of the respondents, 105 (59.7 percent) graduated from the Dugoni program, 60 (34.1 percent) graduated from WLAC, and 11 (6.2 percent) were participants in the original HMPP program. Of the survey respondents, 92.6 percent report actively practicing dental hygiene in any capacity, and of those active in practice, 72.8 percent are working as an RDHAP in California. RDHAPs report a strong intention to continue working; 58.2 percent expect to remain in the labor force for 10 or more years, with only 2.5 percent planning to drop from the labor force in the next two years.

TABLE 3

Patients and Practice Characteristics of Individuals in the RDH and RDHAP Workforce in California, 2005

Significant differences are noted at *p<0.05, **p<0.1.

	RDH	RDHAP
Patient characteristics (all patients across settings worked)	**Averages**	
Patients per day	8.36	8.49
Percent of patients from underrepresented minority groups	22.2%	24.5%
Percent of patients by age group		
0-1 years**	0.1%	0.6%
2-5 years	4.2%	5.0%
6-17 years	12.4%	12.3%
18-64 years	61.8%	61.2%
65+ years	21.3%	21.3%
Percent of patients medically compromised*	16.8%	25.8%
Percent of patients developmentally disabled**	2.9%	4.7%
Percent of patients mentally ill*	2.6%	5.6%
Percent of patients behavior management	1.5%	2.6%
	RDH	**RDHAP**
Practice characteristics (all practice activities inclusive of RDHAP and RDH)	**Averages**	
Work in a private dental office*	97.5%	75.5%
Hours worked per week	34.55	31.77
Hourly wage	$45.28	$50.73
Distribution of hours worked weekly		
Patient care	94.1%	77.3%
Administration	3.1%	7.4%
Public health	0.4%	6.3%
Teaching	1.4%	4.6%
Research	0.1%	0.0%
Other	0.8%	4.3%

The practice characteristics of RDHAPs are highly variable, yet a consistent theme is the use of mobile equipment to practice part time in alternative settings with patients who have no other regular source of dental care (TABLE 4). The most common work setting reported by RDHAPs is in residential/assisted-living facilities where on average 67.8 percent of RDHAP clients have no other source of dental care. Residences of the homebound and skilled-nursing facilities are also common work settings for RDHAPs with patients who have even fewer other options for care. In order to provide services in these settings, RDHAPs must develop formal relationships with the institutions, develop patient trust, schedule patients ahead of time, efficiently bring in mobile equipment to provide care, document the care provided and then bill either insurance or the patients individually. RDHAPs report that the work is rewarding, but ergonomically

TABLE 4

Reported Work Settings of RDHAPs and Average Percent of Patients in that Setting with no Other Source of Dental Care, in California, 2009

More than one work setting can be reported by each individual and is not indicative of full-time work, only that they provide some services in this setting.

Work setting (RDHAPs can have multiple settings)	Percent of RDHAPs reporting working in this setting	Average percent of patients in setting estimated to have no other source of dental
Residential facility/assisted living	63.6%	67.8%
Residence of homebound	61.0%	82.0%
Nursing home/skilled-nursing facility	58.5%	78.8%
Schools	22.1%	43.9%
Independent office-based practice in DHPSA	14.4%	51.8%
Other institution	12.8%	68.1%
Hospital	9.3%	65.1%
Local public health clinic	7.6%	73.3%
Home health agency	5.9%	71.7%
Community centers	5.1%	80.8%
Federal/state/tribal institution	4.2%	61.3%
Community/migrant health clinic	4.2%	76.0%
Other	2.5%	N/A

and logistically difficult. This may explain why few RDHAPs are able to do this type of practice on a full-time basis.

Within the multitude of settings where RDHAPs work, they report a wide number of practice activities (TABLE 5). The majority of RDHAPs are providing direct patient care, for just over two days a week on average. Not all report patient care hours because some RDHAPs are employed in administrative or educational positions. In addition, RDHAPs do a significant amount of administrative work to manage their practices and case management to assist their patients. Additionally, behavior management (activities to gain cooperation for dental hygiene procedures) and public health activities are reported by more than a third of RDHAPs, and are often essential in order to bring the patients into the formal delivery system. It is clear there is not a single pathway for RDHAP practice; rather, licensees can pursue a variety of employment opportunities in addition to becoming a sole practitioner. In addition, many RDHAPs maintain some level of employment in an RDH role.

In 2009, the majority of RDHAPs (82.1 percent) reported maintaining employment in a traditional hygiene position, on average three days (24 hours) per week. Of the RDHAPs who maintain RDH employment, 77.4 percent work in an RDH position at the same location where they were employed prior to becoming an RDHAP, while 59.2 percent work as an RDH in the office of the dentist who serves as their "dentist of record" for licensure, indicating moderately strong ongoing ties between hygienists working in alternative practice and the dentists in their communities.

Regardless of these ties, when patients need a referral for restorative care, it appears mixed as to how easy this may be. Fifty-two point four (52.4) percent of RDHAPs report they find it "easy" or "somewhat easy" to refer their patients for dental care, while 47.6 percent report they find it "somewhat difficult" or "difficult" to find someone to accept their referrals. Only 28.0 percent of RDHAPs report that their "dentist of record" will accept regular and ongoing referrals from them. FIGURE 3 reports the average percentage of RDHAP patients referred to different providers in the community when they need care beyond what the RDHAP can provide. Two-thirds of referrals go to community dentists in private and public settings, yet, on average, RDHAPs cannot find needed referrals for about one in 10 of their patients (FIGURE 3).

RDHAPs and Access to Care

A likely factor in the difficulty finding referrals for traditional dental care is that the patient mix of RDHAPs presents some unique challenges in relation to the known limitations of the current dental care system.[21] RDHAPs report difficulty communicating with one in five patients on average due to language barriers, although this ranges from zero to 98 percent. On average, 12.0 percent of RDHAP patients are under the age of five, 24.3 percent are over the age of 80, and only 11.1 percent of RDHAP patients have private dental insurance. These indicators show that RDHAPs are expanding access to preventive care through their patient care activities, as well as expanding access to restorative care through their case management and referral activities.

Given the percentages of RDHAPs that work in long-term, skilled nursing and residential care facilities it is not surprising the very high percentages of underserved patients that make up their

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TABLE 5

Practice Activities Reported by RDHAPs in California, 2009

RDHAP practice activities	Percent of RDHAPs reporting working these types of hours	Mean hours per week of all RDHAPs	Mean hours per week of those working these type of hours
Direct patient care	95.1%	16.4	17.3
Patient behavior management	51.5%	1.9	3.6
Patient case management	64.1%	2.8	4.4
Administration	73.8%	5.0	6.8
Public health activities	36.9%	1.6	4.4
Teaching	11.7%	0.7	5.7
Research	3.9%	0.1	3.8
Other professional activities	8.7%	0.4	4.6

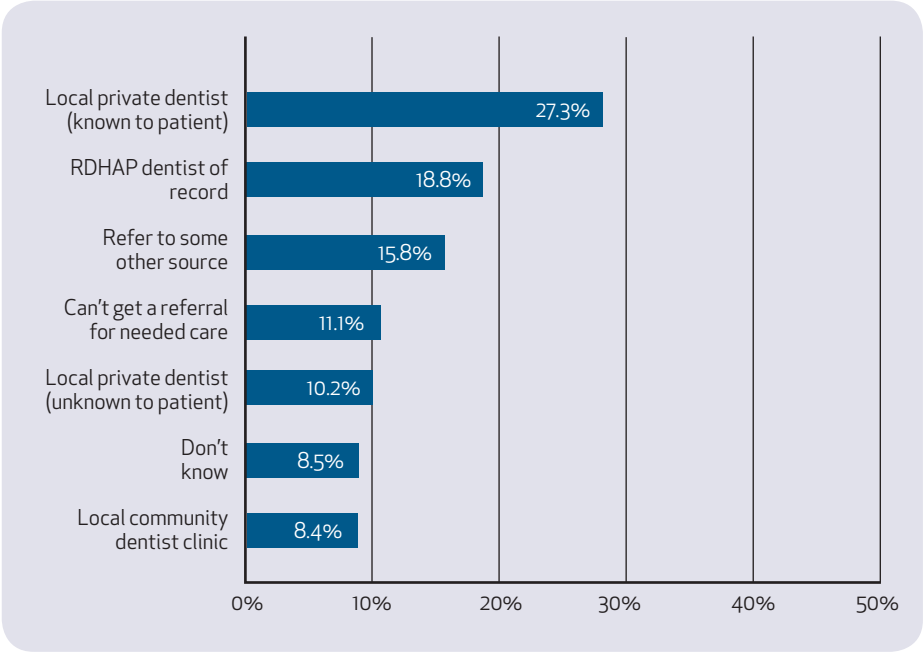

FIGURE 3. Destination of RDHAP patient referrals for restorative or advanced care needs in California, 2009.

practices (**FIGURE 4**). On average, 68.9 percent of the patients in an RDHAP practice are medically compromised, 52.2 percent are physically disabled. Almost a third (29.9 percent) on average, have a developmental disability. These patients have well-documented problems receiving dental care in the traditional system but are accessing screening, preventive care, and referrals through the work of RDHAPs.

Discussion

As a new practice model, alternative practice dental hygiene is quite different than traditional dental hygiene practice and traditional dental practice. The financing for this model of care reported in our survey is primarily from Denti-Cal, both in patient percentages and in overall revenue, although private insurance and self-pay also contribute.

The regulation of the RDHAP education program explicitly restricts the amount of education they can receive in business planning and finances, also restricting their ability to plan for and fully understand the components that go into developing an RDHAP practice during this portion of their training. (California Code of Regulations, Title 16, Division 10, Chapter 3, Article 2, Section 1073.3.) A number of RDHAPs report returning to formal education in addition to the RDHAP program to further develop their business or public health skills.

This is compounded by difficulties with payers who often refuse to recognize them as providers (although they are legal billable providers) and low fee payment streams for underserved patients. Since the July 2009 elimination of the adult benefit by Denti-Cal, RDHAPs report struggling to continue to provide services to adults formerly on Denti-Cal but have instituted measures such as sliding-fee scales to try and accommodate these clients.

The rules that regulate RDHAPs mandate where they can practice, essentially limiting their options to special and underserved populations. Testament to the difficulty any provider would face when required to practice only in the margins of the delivery system with underserved patients, RDHAPs do struggle to make their practices work. First, the logistics of providing services in the community can be challenging. As well, the ergonomics of practice in a community setting, particularly with bedbound or disabled patients, can also be challenging. While the mobile equipment can be adjusted in some cases, some of the work RDHAPs do simply cannot be done on a full-time basis due to the physical demands it places on the individual provider.

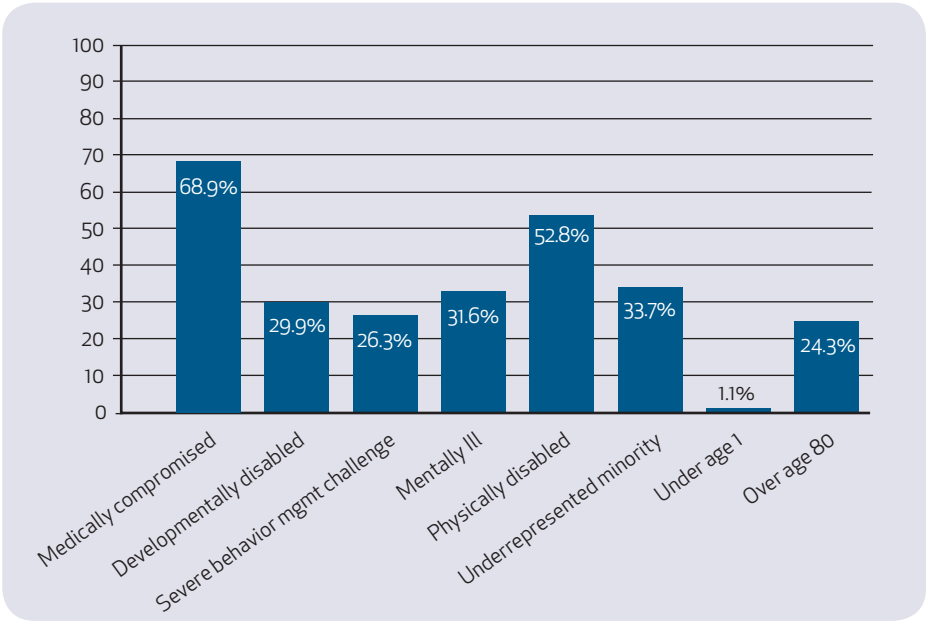

FIGURE 4. Average percent of patients in RDHAP practices by various demographic categories in California, 2009.

As is clear from the data presented, although the population they serve have very high needs and getting them services is difficult, RDHAPs have been able to find ways to open up access to these patients on the margins. Unfortunately the RDHAPs' ability to refer these patients for ongoing needed dental care is still very challenging. It is likely that RDHAP choice of practice setting (within the restrictions of the law) varies by their own personal preference as well as the local economy and public health capacity, and patient demands. The educational system for RDHAPs seems to be meeting current demand and evolving to meet the needs of students to the extent possible within the restrictions outlined by the California Dental Board.

Conclusion

Since the release of the landmark 2000 Surgeon General's Report on Oral Health the oral health care landscape has changed significantly, and with the passage of the Patient Protection and Affordability Act of 2010 at the federal level, ongoing changes are likely to impact the delivery of oral health care services.[1] In the 2003 Surgeon General's Call to Action, the key recommendation for addressing the myriad of concerns about the dental care workforce was to increase the flexibility, capacity, and diversity of the oral health workforce.[22] Stakeholders have responded to this call by proposing and implementing a number of workforce innovations in the arenas of education, prevention, and practice.[23]

Today in California, there are 10 different provider classifications in dentistry; dentists, dental specialist (specialty board-certified DDS), dental assistants, registered dental assistants, registered dental assistants in extended function, orthodontic dental assistant permit (can be added to RDA or RDAEF), dental sedation assistant permit holder (can be added to RDA or RDAEF), registered dental hygienists, registered dental hygienist in extended function, and RDHAPs. How these providers ultimately work together in teams or in collaborative relationships among themselves and with other health care providers will create the future practice models for oral health care in California. The alternative practice of dental hygiene in California has proven to be an important innovation in successfully improving access to preventive dental care services, case management, and referral for a wide range of underserved populations in California. ■■■■

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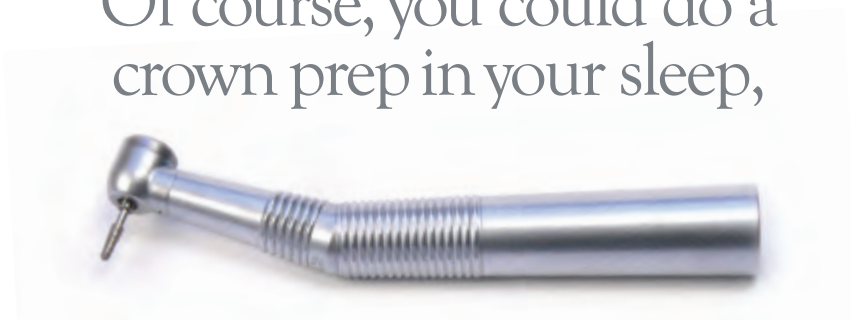

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Est. Ortho practice in 2,668 sq. ft. office with 5 open bay chairs in a professional dental complex. Panorex and Cephlometric X-ray machines. Stable and loyal referral base. Annualized GR as of Oct 2009 are $335K+. Owner retiring and willing to help for a smooth transition. Asking 227K.

3028 NAPA-SOLANO COUNTY GP

Owner retiring from well-est. practice in 1,400 sq. ft. facility with 5 ops. All fee-for-service pts. with great word-of-mouth reputation. 2009 GR $731K+, June 2010 FY on schedule for $771K+ with just 4/doctor-days. Asking $518K.

3041 SOUTH BAY GP

Well est. & successful practice in gorgeous state-of-the-art facility located in a most desirable area. Modern equipment updated in 2007 and near paperless office. Equipment includes Gendex digital x-rays, Panorex, Cerec & Dexis. 1,653 sq. ft. facility w/6 fully-equipped ops. Avg. GR for past 5 years 1.6M w/59% overhead. 2010 GR as of Aug. on track for 1.5M+. Quality staff. Long term lease available. This is an outstanding opportunity for the experienced dentist looking for a high quality practice. Asking $1.3M.

3040 MID-PENINSULA GP

Golden opportunity to own an established mid-peninsula practice and building. Located in professional and residential neighborhood in a charming 1,168 square foot facility w/3 fully-equipped ops. + a hygiene op. Seller retiring and working just 3 doctor days/week. Consistent 4 Year avg. GR $417K+ w/an avg. net of $153K+ & 2010 GR on schedule for $412K+ as of June. Practice Asking Price $297K, building available to purchase; or lease at fair market rent.

PENDING

3037 PLACER COUNTY GP

Well est. Placer County General & Cosmetic Practice. 6 fully-equipped state-of-the-art ops., in single story 2,700 sq. ft. stand alone professional building. Avg. GR for past 4 years $1.4M+ with 61% overhead and just 4 doctor-days/week. Approx. 1,954 active patients, all fee-for-service. Seller is re-locating out-of-state but will help for smooth transition. Seller owns the building and will provide buyer with a fair market lease or sell the building to buyer. Asking $1,134,000.

PENDING

3030 NORTH BAY AREA PERIO

Owner retiring from well established periodontal practice with excellent referral sources in a 2,411 square foot state-of-the-art office facility with 4 fully equipped operatories and a dedicated staff. Looking for buyer with high ethical standards and great clinical skills. Great location and owner willing to help for a smooth transition. Asking $600K.

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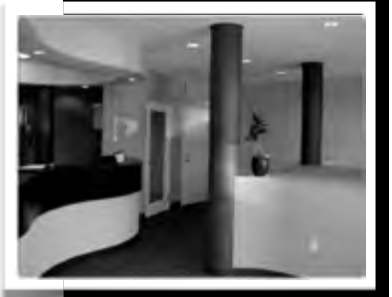

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- **APTOS:** *For Sale* - General Dentistry Practice. Highly desirable location. 2008 Gross Receipts over $1Mil. w/adjusted overhead at 51%. 3-operatories in 1,000 sq ft. Pano & Modi computerized software. 9-hygiene days per week. Practice operated for past 33 years in same location. Open 5 days a week. Owner willing to work back for new owner 2 days/wk. #14305 SOLD
- **BIG BEAR CITY:** *For Sale* - General Dentistry Practice. 26 years at current location. Gross Receipts $428K. 3-equipped operatories. Doctor owns the building. New lease available or option to purchase.
- **CENTURY CITY:** *For Sale*-Office Space, equipment and leaseholds only. Opportunity for low cost startup practice and or satellite. Asking $100K.
- **CENTURY CITY/BEVERLY HILLS AREA:** *For Sale*-Office space, equipment and leaseholds only. 1,100 sq ft 3 operatories, digital x-ray system. Remodeled 4 years ago. Shows well. Located in a professional building. Owner has relocated.
- **EL DORADO HILLS:** *For Sale*-General Dentistry Practice. 2009 GR $790,758 adjusted net income $312K. Intra-Oral camera, Pano, Softdent software, 4-equipped ops. 6-hygiene days. Practice has been in its present location for past 18 years. Owner retiring. #14324 SOLD
- **FOLSOM:** *For Sale* - General Dentistry Practice. Gross Receipts in excess of 1.5M the past three years. 2009 Adjusted Net of $550K. 2,700 sq. ft. office with 7 ops, Digital, Dentrix, Intra-Oral camera, Laser, 5+year old equipment, 8 days hygiene. Beautiful office, great location. Owner retiring. #14336
- **FOLSOM:** *For Sale* - General Dentistry Practice 2009 Collections $513K. Adjusted net income $184K. 4 ops (plumbed for 5), Intra-Oral camera, fiber optics all ops. Patient base software. Owner retiring. #14329
- **GRASS VALLEY:** *For Sale*-General Dentistry Practice. 2009 GR of $307,590 (3 days/wk) with adjusted net income of $105K. 3 Ops. refers out most/all Ortho. Perio, Endo, Surgery. Laser, Intra-oral camera, Diagnodent, EZ Dental Software. Good Location. Owner retiring. #14337
- **GRASS VALLEY:** *For Sale*-This Periodontal Practice is located in a very desirable growing community. Practice has been in its present location for the past 28 years. Office consists of 1,500 sq. ft. 3 ops, Intral-oral camera. Practice has 5 days of hygiene. #14272 SALE PENDING
- **GREATER SACRAMENTO AREA:** *For Sale*-Gross Receipts in excess of $1.1 Million dollars for the past three years. Adjusted net $450K. 2,400 sq ft office-5 ops. Hygiene days-6, Owner works 32 hours per week. Eagle Soft, Laser, Pan, Intral Oral camera, fiber optics. Owner retiring.
- **LAKEPORT:** *For Sale*-General Dentistry Practice. Gross Receipts 904K with adjusted net $302K. Practice has been in same location for past 23 yrs, and 25 yrs in previous location. 2,600 sq ft with 8 equipped treatment rooms. Intral-Oral camera, Pano, Sedation, and Data Con software. Owner to retire.
- **LIVERMORE:** *For Sale* - General Dentistry Practice. 2009 Collections were $688K with an adjusted net income of $287K. There are 4 ops in this nicely updated 1,032 sq. ft. office space. Dentrix software, 6-days/wk hygiene. Owner has been in same location for 36 years with long-term employees. Owner is retiring. #14326 SOLD
- **LOS ANGELES:** *For Sale* - General Dentistry Practice.1,200 sq ft 4ops, 29 yrs in present location. Gross Receipts $274K with adjusted net income of $89K. Owner to retire.
- **LOS ANGELES:** *For Sale* - General Dentistry Practice: This practice 80% Dentical and has approximately 2000 active patients. Owner has operated in same location for 31 years. 2009 receipts were $709,000.6 Equipped tx rms, laser, Intra-Oral camera Pano and Ceph. Call for details. #14319 SALE PENDING
- **MODESTO:** *For Sale* - General Dentistry Practice. 5 operatories, 32-years in practice. Gross Receipts $884K w/adjusted net income of $346. Dentrix, Cerec, and Intra-Oral camera. Owner to retire. #14308 SOLD
- **NAPA:** *For Sale* - General Dentistry Practice. Gross Receipts $800K, with adjusted net income $250K. Fee for Service. 1300 sq ft 4 ops 6 hygiene days 38 yrs in present location, 30 yrs in previous location. Owner to retire.
- **NORTHERN CALIFORNIA:** *For Sale* - Pediatric practice. Owner has operated in same location for 32 years. Approx. 1,760 active patients, 1,160 sq. ft., Panoramic X-ray, Dexis Digital and Dentrix software in this 5-chair office. 2009 Gross Receipts $713K with 48% overhead. Owner retiring. Call for details.
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- **OROVILLE:** *For Sale* - General Dentistry Practice. Owner dentist recently deceased. 2009 collections $770K. Very nice stand alone dental building with basement. 7 ops digital x-ray 5 days of hygiene.. Bldg 3,000 sqft Basement 540 sq ft. Temporary Dentist in place. SOLD
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- **ROSEVILLE:** *For Sale* - General Dentistry Practice. Great Location. 2009 GR $900K with adjusted net income of $300K. 1,975 sq. ft. with 4 ops, 8 days hygiene/wk. Digital, Intraoral camera, Dentrix, Trojan, fiber optics, P & C chairs - all less than 5 years old. Owner is retiring. #14327
- **SACRAMENTO/ROSEVILLE:** *For Sale* - One of many partners is retiring in this highly successful General Dentistry Group Practice. Intra-Oral camera, Digital Pano-Dexis, electronic charts, owner Financing. Call for further information. #14334
- **SAN FRANCISCO:** *For Sale-Patient Base for Sale*-Owner passed away last June and the practice has continued on 4 days a week with an associate. Lease can't be serviced. There are approx. 1,000 acive patients in the practice. The patient base can be purchased at no risk to buyer since the purchase price is paid according to the receipts collected on the patients that transfer. #14312 SOLD
- **SAN DIEGO:** *For Sale*-General Dentistry Practice. This office is plumbed for 4 ops. 3 ops. are equipped with Promo Equipment. Lease is $2,200 per month. 2009 receipts were $185,645. PPO and Fee for service practice. #14315
- **SAN DIEGO:** *For Sale*-General Dentistry Practice. 6 ops, Intra-Oral camera, Eagle Soft Software. Office square feet 2,300 with 3 years remaining on lease. 2009 Gross Receipts $1,448,520, with an adjusted net income of $545K. Doctor would like to phase out then retire. #14331 SALE PENDING
- **SAN DIEGO/CITY HEIGHTS:** For Sale-General Dentistry practice. Owner has operated in same location for 12 years. Approx. 1,000 active patients, Panoramic X-ray, Intra-Oral camera, in this 3-chair office. #14321
- **SAN JOSE:** *For Sale* - 3 op office space & equipment only in south valley area of San Jose. Fully equipped including hand instruments. If you are going to start up a practice or add a satellite practice you can save hundreds of thousands of dollars. New lease available from landlord with the option to purchase suite. #14330
- **SANTA BARBARA:** *For Sale* - General Dentistry Practice. This excellent practice's 2009 gross Receipts $810K with steady increase every year. Practice has 6 days of hygiene. 1,690 sq. ft., 5 ops, Laser, Intra-Oral camera, Schick Digital X-Ray, Datacon software. Doctor has been practice in same location for the past eleven years of his 31 years in Santa Barbara. Doctor is retiring. SALE PENDING
- **TORRANCE:** For Sale- General Dentistry Practice: Owner has operated in same location for 20 years. Approx. 1,000 active patients, 1,080 sq. ft., Brican System, and Camsight software in this 2 equipped, 3 available-chair office. 2009 Gross receipts $434K with 38% overhead. Owner relocating. #14320
- **TRACY:** For Sale- Equipment, furnishings, and leaseholds only. In the Central Valley. Fully equipped including 4 Belmont Accutrac chairs, 2 Midmark chairs, 6 DCI rear delivery units, 3 Gendex X-ray units, 1 Soridex digital x-ray processor, 1 Statim 5000, 1 Harvey autoclave. 2,800 sq. ft., 6 Ops. New lease available from landlord. SOLD

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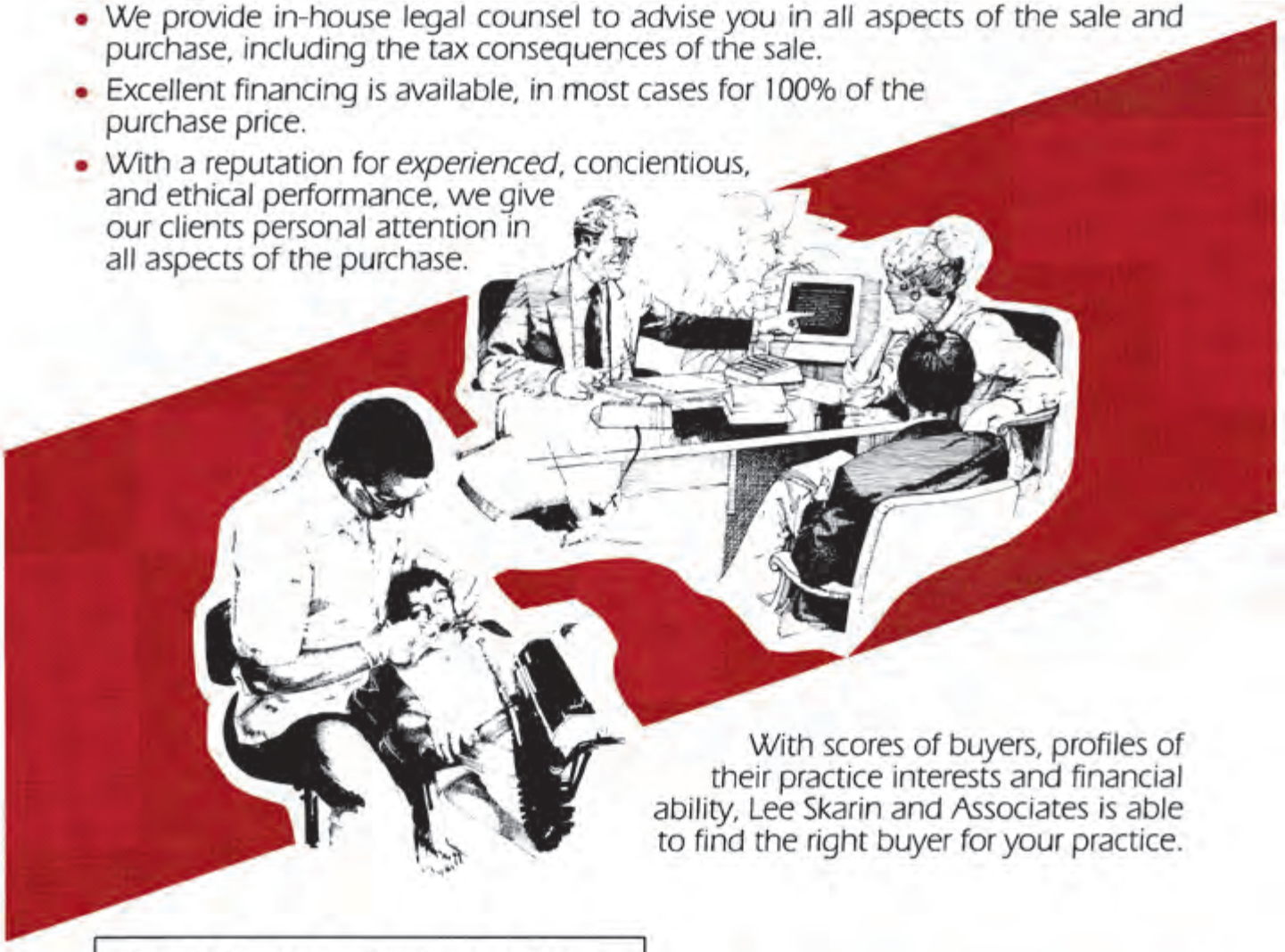

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DR. BOB, CONTINUED FROM 58

of PetSmart where the manager rushes out to kiss the hem of my garment.

For eons the image of pet fish was that of a bowl of turgid water with a couple of goldfish aimlessly finning about. Counted as being among the major soporifics of all times, the only thing to dispel the apathy was the fact that goldfish, particularly those won at fairs and carnivals, had a life expectancy only slightly longer than fruit flies.

Times have changed. Not the fish, of course; PetSmart guarantees them to be submersible for 14 days, but if you haven't dispatched them with tender, loving care by then, you're on your own.

Fish bowls, however, are now aquariums and priced accordingly. They range from 2.5-gallon tanks to those large enough to float the U.S.S. Ronald Reagan. Like computer printers where the expense is not in the machine, but in the ink, fish tanks and the fish themselves are considered constantly upgradeable or disposable. The big money is in accessories. Any tropical fish store will happily introduce the neophyte aquarium seeker to more accessories than the entire garment, jewelry and electronic industries ever dreamed of.

The walls of an upscale store will be lined with literally thousands of fish, segregated by an equal number of criteria based on their aggressiveness, predilection for frozen bloodworms over color-enhancing flakes and whether they wished to be adopted into a conservative or liberal household. This negates any expectation of just announcing to an attendant that you are interested in acquiring an aquarium. Just like waltzing into a Subway or a Starbucks franchise and asking for a sandwich or a cup of coffee, only a thousand times more complicated.

Fish are simple; once having adopted a color scheme and fin arrangement, they assume the intelligence of amoeba. They eat, they poop and revolve clockwise or counterclockwise depending on the hemisphere. They tend to float upside down after a while feigning sleep, sometimes before you get them home. Assembling a functioning aquarium, however, defies whatever instinct you may have had for self-preservation.

Remembering the lovely, clear water panorama of the doctor's fish tank, we steer our clerk over to stare at the displayed fish. He steers us right back.

"What size tank are you thinking of?" he asked.

"Oh, I dunno. About so big," I answered, holding up my hands about a yard apart.

"OK, that would be a 75-gallon tank."

Because we are neither marine biologists nor persons in full possession of our faculties at this time, we don't realize that a tank that size will weigh roughly 17,000 pounds fully equipped with water, gravel, pumps, filters, little plastic plants and big rocks so the fish will have someplace to hide where we will never see them again until they float to the top. Our entire house will have to be strengthened with a new foundation and steel girders. Floor-to-ceiling space built to accommodate all the medicines and remedies required to cope with fish ailments will be mandatory.

We settled on a 10-gallon tank that could only be considered an asset to our home if it were filled with cans of Chicken-of-the-Sea solid white albacore.

"Here," the clerk said, "is what we recommend to protect the fish's slime coat." I would have argued that a slime coat remover would be among the first things any fastidious fish would request. It challenges my imagination that a fish would swim by and remark silkily to an acquaintance, "Nice slime coat! Mind if I ask what you use to protect it?" This line might work on a fish of the opposite gender, but fish themselves can't determine this and they all use the same bathroom.

"And this bottle is the water conditioner," aquarium guy droned on. "This one is the water clarifier and this one is the ammonia neutralizer. You'll need this one for the nitrates and this roll-on dispenser is the best one on the market for an underfin deodorant."

He paused for a breath. "A package of algae wafers for the bottom feeders, plus a submersible water heater for when the water becomes cold during the months ending in 'r' or 'y' are indispensable," he explained, depositing them in the second of two shopping carts we seem to have acquired. "Oh, and the lights for the tank top and the little net to scoop out the occupants who have unfortunately succumbed to corrosive Korean fin aquaplasia because you negligently administered Mongolian gill framistitis remedy instead," he smirked prophetically.

"Now let's talk about the fish," aquarium guy pushed on. "Each fish requires a gallon of water for each inch of its length."

"Why?" I interrupted. "A gallon of water weighs eight pounds, these fish don't weigh a tenth of an ounce."

"Weight has nothing to do with it. They need cruising space so the most fish I can sell you is four." I can tell he sincerely regrets this stricture, but I understand they have to be compatible or they will kill each other out of a built-in genetic antipathy.

"Unless they come from the same nonaggressive family of middle-dwellers, in which case you can have five," he hastened to add. At mongering fish, our guy has no peer.

My wife nodded attentively and affixed me with the "shut-up" version of The Look.

Apparently fish from different species go around giving little gang signs with their fins, particularly on Saturday nights. Sunday morning the whole tank has to be cordoned off with yellow tape until the coroner arrives. Never buy an aquarium on a Saturday I decide.

I look around for my wife, but she seems to have drifted off to look at parakeets that are separated from the cockatiels because they will kill each other. There is a lot of specieism going on at PetSmart. The caged dogs are raising such a ruckus with the adjacent cats that the hamsters and iguanas have crept into their respective warrens. Meanwhile the fish have gathered into carnivorous pile-ups along the walls waving their fins and crying, "Take me! Take me!"

I take a cab instead. Quiet has settled over the house for a while. It will be cheaper to just visit the doctor more often, even if it isn't a covered expense. ■■■■

CDA JOURNAL, VOL 39, Nº1

Don't Get Soaked Buying an Aquarium

During the course of our union and parenting, I have learned that pets of any persuasion represent the domestic equivalent of astronomers' Black Hole.

Robert E. Horseman, DDS

ILLUSTRATION BY DAN HUBIG

In every medical specialist's reception area I've been in recently — and I've cooled my heels in a lot of them — a beautiful salt-water aquarium has been a salient feature of the décor. This is a well-calculated move on the part of savvy decorators. They recognize that once you concede none of the available magazines hold any interest for you, the hypnotic effect of watching colorful fish gracefully circling their tank does wonders for taking your mind off the concerns that brought you there in the first place.

"We should get a fish tank at home," my wife declared after one of our medical visits.

"No, we shouldn't," I replied. During the course of our union and parenting, I have learned that pets of any persuasion represent the domestic equivalent of astronomers' Black Hole. Preadoption papers are cheerfully signed by our progeny, declaring themselves dedicated to total responsibility for the care of the current victim under consideration. They know that perjury by minors is not a felony. Our garage, of course, has been the ultimate depository of tanks, cages, terrariums, exercise wheels, scratching posts and obituaries of hundreds of doomed transient fauna that passed through our doors.

My record is clear. Having vigorously opposed the acquisition of each and every one of these sacrificial pets on humanitarian grounds, I was ready for the next question.

"Salt water or fresh?" she pondered. I lapsed into a catatonic silence, realizing we were about to impart new meaning to the term "disposable income." Shortly after a brief marital exchange of good-natured persiflage during which I sob quietly into an industrial Sham-Wow to palliate my disappointment at having capitulated once again, I find myself on the doorstep

CONTINUES ON 57

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